Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: BHP Billiton Iron Ore Pty Ltd

Licence: L5415/1988/9

Registered office: Level 1, City Square Brookfield Place
125 St Georges Terrace
PERTH WA 6000

ACN: 008 700 981

Premises address: Wheelarra Hill (Jimblebar) Iron Ore Mine
Tenements L52/109, L52/163, I126948, AM70/266 and ML244SA
NEWMAN WA 6753
as depicted in Schedule 1

Issue date: Thursday, 5 November 2015

Commencement date: Tuesday, 17 November 2015

Expiry date: Saturday, 16 November 2030

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	75 million tonnes per annual period
6	Mine dewatering	50,000 tonnes or more per year	23.5 gigalitres per annual period (5.11 gigalitres reinjected, 2.19 gigalitres discharged to Jimblebar Creek and Copper Creek, and 16.2 gigalitres discharged to Ophthalmia Dam)
54	Sewage facility	100 cubic metres or more per day	120 cubic metres per day
64	Class II putrescible landfill site	20 tonnes or more per year	1,580 tonnes per annual period
73	Bulk storage of chemicals, etc	1,000 cubic metres in aggregate	4,000 cubic metres in aggregate

Conditions
Subject to this Licence and the conditions set out in the attached pages.

Date signed: 13 October 2016
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Alana Kidd
Manager Licensing – Resource Industries
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This licence is issued under Part V of the Act. Conditions contained within the licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises. Operating without a licence is an offence under the Act.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
BHP Billiton Iron Ore Pty Ltd (BHP Billiton Iron Ore) operates the Wheelarra Hill (Jimblebar) Iron Ore Mine. Jimblebar is situated predominantly within mining lease AM70/266. BHP Billiton Iron Ore (Jimblebar) Pty Ltd is the holder of the mining lease, pursuant to the *Iron Ore (McCamey's Monster) Authorisation Agreement Act 1972*, except in an area that is subject to ownership by the Wheelarra Hill Joint Venture. The split between the partners of AM70/266 is as follows:

- BHP Billiton Iron Ore (Jimblebar) Pty Ltd 51%;
- Maanshan Iron and Steel Company Limited 10%;
- Shagang (Australia) Pty Ltd 10%;
- Tangshan Iron and Steel Company Limited 10%;
- Wugang (Australia) Pty Ltd 10%;
- Itochu Minerals and Energy Australia Pty Ltd 4.8%; and
- Mitsui Iron Ore Corporation 4.2%.

Jimblebar was opened in March 1989 and is located approximately 40 kilometres (km) east of Newman in the Pilbara region of Western Australia. The closest neighbouring property is Sylvania Pastoral Station, which is located approximately 18 km south of the project site and is the closest residence.

BHP Billiton Iron Ore operates crushing, screening and train loading infrastructure at Jimblebar. Iron Ore is sent by rail approximately 450 km to Port Hedland for ship loading and export overseas. Mine dewatering is required to facilitate the mining of ore below the water table. Abstracted water is preferentially used as a water supply for the mining operations. Water in excess of site demand is currently disposed of via reinjection or discharged to Ophthalmia Dam and/or Jimblebar and Copper Creeks.

In January 2011 a works approval (W4655/2010/1) was granted for the construction of new ore handling infrastructure to increase the capacity of the mine from 15 million tonnes per annum (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. Ancillary infrastructure included a landfill, wastewater treatment plants (WWTPs), bulk chemical storage facilities and associated infrastructure.

On 21 April 2016 Licence L5415/1988/9 was amended to approve the construction and subsequent operation of the Orebody 31 dewatering infrastructure and discharge point to Ophthalmia Dam. The prescribed premises boundary was extended to include Orebody 31, dewatering pipelines and discharge point, and the Category 6 approved production capacity was increased.

The Orebody 31 deposit will sustain production at Jimblebar as the Orebody 18 deposit is depleted. Orebody 31 is located approximately 10 km from Jimblebar and is being developed and managed by the Jimblebar operation. The proposal to develop Orebody 31, including the abstraction and discharge

of groundwater, was the subject of an Assessment on Proponent Information by the Environmental Protection Authority. Ministerial Statement 1021, for the development of the Orebody 31 deposit, was granted on the 12 March 2015. The existing infrastructure at Orebody 18 will be utilised to process ore from the Orebody 31 deposit.

Orebody 31 will have significant dewatering requirements as 70% of the orebody is located below the water table. Water abstracted from dewatering activities will be preferentially used as a water supply and will support Orebody 31 mining activities. Surplus water management for Orebody 31 has two aspects. The first is ongoing discharge of up to 16.2 gigalitres per annum (GLpa) to Ophthalmia Dam and the second is short-term contingency discharge to a tributary of Jimblebar Creek during emergency events or during major storm events when stormwater management is required.

The feasibility of creek discharge has been assessed under a hydrodynamic trial, which involved up to 2.5 GLpa of surplus water being discharged to Jimblebar Creek for a period of 18 months. The Licensee sought a 5C Licence amendment under the *Rights in Water and Irrigation Act 1914*, for approval to commence this hydrodynamic trial. Baseline riparian vegetation and hydrological condition surveys have been undertaken for the area. During the trial, changes to the baseline conditions and potential impacts to the riparian vegetation and surrounding land use were evaluated to determine whether creek discharge is feasible in the long term. DER approval was not required under Part V of the EP Act as the proposed activities were outside of an already prescribed premise and water was not being abstracted for the purpose of mining.

Construction requirements relating to the Orebody 18 MAR Project outstanding works were included in the Licence when it was amended on 21 April 2016. These works were originally approved under Works Approval W5808/2015/1. Compliance documentation has been submitted for one of two reinjection bores. Following the submission of compliance documentation for the outstanding works, the Licensee is authorised to operate the MAR project without having to apply for a further amendment, if there is no variation to the original proposal.

This amended Licence is the result of an amendment sought by the Licensee to allow the ongoing contingency discharge of mine dewater to a tributary of Jimblebar Creek, amend the Orebody 18 and South Jimblebar MAR programs, update conditions relating to sewage monitoring and update the prescribed premises address.

The licences and works approvals issued for the Premises since 2000 are:

Instrument log		
Instrument	**Issued**	**Description**
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 involves 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 includes 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 involves the abstraction of groundwater for the purposes of mining followed by reinjection of this water into injection bores. There are two stages: • **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 (m^3/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 are not valid, enforceable and/or risk based

Severance
It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

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

'Annual Audit Compliance Report' means a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department's website;

'annual period' means the inclusive period from 1 July until 30 June in the following year;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

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

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

'CEO' for the purpose of notification means;
Chief Executive Officer
Department Division 3 Part V of the *Environmental Protection Act 1986*
Locked Bag 33 Cloisters Square
PERTH WA 6850
Email: info@der.wa.gov.au;

'cfu/100mL' means colony forming units per 100 millilitres;

'Clean Fill' has the meaning defined in Landfill Definitions;

'controlled waste' has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*;

'EC' means Electrical Conductivity;

'Department' means the department established under section 35 of the *Public Sector Management Act* 1994 and designated as responsible for the administration of Division 3 Part V of the *Environmental Protection Act 1986*;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'GL/a' means gigalitres per annum;

'HDPE' mean high density polyethylene;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'kL' means kilolitres;

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time;

'Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009)' means the document entitled 'Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009) published by the Chief Executive Officer and as amended from time to time;

'Licence' means this Licence numbered L5415/1988/9 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'L/s' means litres per second;

'MAR' means managed aquifer recharge;

'mbgl' means metres below ground level;

'm^3' means cubic metres;

'm^3/day' means cubic metres per day;

'mg/L' means milligrams per litre;

'µS/cm' means micro Siemens per centimetre;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'Putrescible Waste' has the meaning defined in Landfill Definitions;

'quarterly' means the 4 inclusive periods from 1 April to 30 June, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

't/a' means tonnes per annum; and

'WWTP' means wastewater treatment plant.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.2 Premises operation

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	1,580 tonnes per annual period	None specified
Inert Waste Type 2		None specified
Putrescible Waste		None specified
Clean Fill		None specified
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.

1.2.2 The Licensee shall ensure that where waste does not comply with condition 1.2.1 it is removed from the Premises by the delivery vehicle or, where that is not possible, stored in a segregated storage area or container and removed to an appropriately authorised facility as soon as practicable.

1.2.3 The Licensee shall ensure that wastes accepted onto the Premises are only subjected to the process(es) set out in Table 1.2.2 and in accordance with any process limits described in that Table.

Table 1.2.2: Waste processing

Waste type	Process(es)	Process limits[1,2]
Inert Waste Type 1	Receipt, handling and disposal of waste by landfilling	<u>All waste types</u> Disposal of waste by landfilling shall only take place within the landfill areas shown on the Premises Map in Schedule 1 The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2 m
Putrescible Waste		
Clean Fill		

Inert Waste Type 2		Tyres and conveyor belts shall only be landfilled in overburden storage areas located within the prescribed premises boundary shown in Schedule 1.
Sewage	Biological, physical and chemical treatment	120 m^3/day

Note 1: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*.
Note 2: Additional requirements for the burial of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.

1.2.4 The Licensee shall manage the landfilling activities to ensure:
(a) waste is levelled and compacted as soon as practicable after it is discharged;
(b) waste is placed and compacted to ensure all faces are stable and capable of retaining restoration material; and
(c) restoration of a cell or phase takes place within 6 months after disposal in that cell or phase has been completed.

1.2.5 The Licensee shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.2.3 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.2.3: Cover requirements [1]

Waste Type	Material	Depth	Timescales
Inert Waste Type 1	Inert and incombustible material	Sufficient to ensure the waste is completely covered and that no waste is exposed	Weekly or as soon as practicable after deposit and prior to compaction
Putrescible Waste			
Inert Waste Type 2 (Tyres and conveyor belts only)	Soil	500 mm	As soon as practical following the achievement of final waste levels in the area(s) in which tyres are deposited.

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.

1.2.6 The Licensee shall prevent unauthorised access to the landfill.

1.2.7 The Licensee shall ensure that wind-blown waste is contained within the boundary of the Premises and that wind-blown waste is returned to the tipping area on at least a monthly basis.

1.2.8 The Licensee shall manage the wastewater treatment ponds in a manner such that:
(a) stormwater runoff resulting from site drainage shall be prevented from entering the wastewater treatment ponds or causing erosion of the outer pond embankments;
(b) overtopping of the ponds shall not occur, except as a result of an extreme rainfall event; and
(c) vegetation and debris (emergent or otherwise) is prevented from growing or accumulating in the pond wastewaters or on the inner pond embankments.

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 cells to achieve a permeability of $<10^{-9}$ m/s; • any contaminated runoff from the treatment cells is contained; • a maximum of 400,000 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

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[1]	**Category description**[1]	**Premises production or design capacity limit**
5	Processing or beneficiation of metallic or non-metallic ore	75,000,000 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 Dam[2] and tributary of Jimblebar Creek
73	Bulk storage of chemicals, etc	4,000 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

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	All, including Drawings and	2 February 2015

	Documentation for Works Approval, February 2015, BHP Billiton Iron Ore Pty Ltd.	Appendices	
	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

Note 1: Where the details and commitments of the documents listed in condition 1.3.11 are inconsistent with any other condition of this Licence, the conditions of this Licence shall prevail.

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.

1.2.13 The Licensee shall operate the Orebody 18 MAR Project in accordance with the conditions of this Licence, following submission of the compliance document and commissioning report required under condition 4.3.1.

1.2.14 The Licensee shall operate the Orebody 31 mine dewatering infrastructure and discharge of surplus mine dewatering water to Ophthalmia Dam, in accordance with the conditions of this Licence, following submission of the compliance document required under condition 4.3.1.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Point source emissions to surface water

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
FNJV0150 – Orebody 31 Creek discharge	Contingency discharge to creek line (tributary of Jimblebar Creek) during high rainfall, maintenance and/or emergency events	

2.3 Point source emissions to groundwater

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 HMG0056P HMG0054P		

2.4 Emissions to land

2.4.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.4.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this licence.

Table 2.4.1: Emissions to land		
Emission point reference and location on Map of emission points	**Description**	**Source including abatement**
L2	Unlined evaporation pond	Treated wastewater from the Wheelarra oily WWTP lined pond

2.4.2 The Licensee shall not cause or allow emissions to land greater than the limits listed in Table 2.4.2.

Table 2.4.2: Emission limits to land			
Emission point reference	**Parameter**	**Limit (including units)**	**Averaging period**
L2	Total Recoverable Hydrocarbons	15 mg/L	Spot sample

3 Monitoring

3.1 General monitoring

3.1.1 The Licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.

3.1.2 The Licensee shall ensure that:
(a) monthly monitoring is undertaken at least 15 days apart; and
(b) quarterly monitoring is undertaken at least 45 days apart.

3.1.3 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

3.1.4 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of point source emissions to surface water

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of point source emissions to surface water

Emission point reference	Parameter	Units	Frequency
South Jimblebar JBDMDW001 JBDMDW002 Orebody 31 FNJV0150 (Creek discharge points)	Flow rate	L/s	Monthly (when discharging)
	Cumulative volume	k/L	
South Jimblebar JBDMDEW001 (Main pipeline sample point) Orebody 31 FNJV0150	pH[1]	pH units	Quarterly (when discharging)
	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	
Ophthalmia Dam Discharge Point	Flow rate	L/s	Quarterly (when discharging)
	Cumulative flow rate	k/L	

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

3.3 Monitoring of point source emissions to groundwater

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 HMG0054P HMG0056P	Water Level	mbgl	Monthly (when reinjecting)
	Cumulative Volume	kL	
	Flow rate	L/s	
Jimblebar JBDMDEW001 (Main pipeline sample point) Orebody 18 HMG0054P HMG0056P	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

3.4 Monitoring of emissions to land

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

Table 3.4.1: Monitoring of emissions to land

Emission point reference	Parameter	Units	Frequency
L2	Total Recoverable Hydrocarbons	mg/L	Quarterly
	Flow rate	L/s	
	pH[1]	pH units	

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

3.5 Ambient environmental quality monitoring

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 HSJ0169M JBGW0080M	Standing water level	mbgl	Spot sample	Monthly

JBGW0117M JBGW0009P JBGW0435RM HMG0109M HMG0115M HMG0119M HMG0121M				
HSJ0169M JBGW0080M JBGW0009P JBGW0115M HMG0109M HMG0115M HMG0119M HMG0121M	Electrical Conductivity	µS/cm	Spot sample	Quarterly
	pH[1]	pH units		
	Total Dissolved Solids	mg/L		
HSJ0169M JBGW0115M JBGW0009P HMG0109M HMG0115M HMG0119M HMG0121M	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 downstream (JBSW005) 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

3.6 Process monitoring

3.6.1 The Licensee shall undertake the monitoring in Table 3.6.1 according to the specifications in that table.

Table 3.6.1: Process monitoring

Monitoring point reference	Process description	Parameter	Limit	Averaging period	Frequency
L1 – Jimblebar Oily Wastewater Treatment Plant	Treated wastewater from the Jimblebar oily WWTP used for dust suppression	Total Recoverable Hydrocarbons	15 mg/L	Spot sample	Quarterly

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee must submit to the CEO by 1 October each year an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions in this Licence for the Annual Period.

4.1.3 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

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	None specified
Table 3.5.1	Ambient 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 3.5.2	Creek line 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 (water reused for dust suppression)	None specified
4.1.2	Compliance	None specified
4.1.3	Complaints summary	None specified

Note 1: Forms are in Schedule 2.

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and Licence limits.

4.3 Notification

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]
1.2.11	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 1.2.6; and b) be signed by a person authorised to represent the Licensee and contain the printed name and position of that	Within 7 days of the completion of construction	None specified

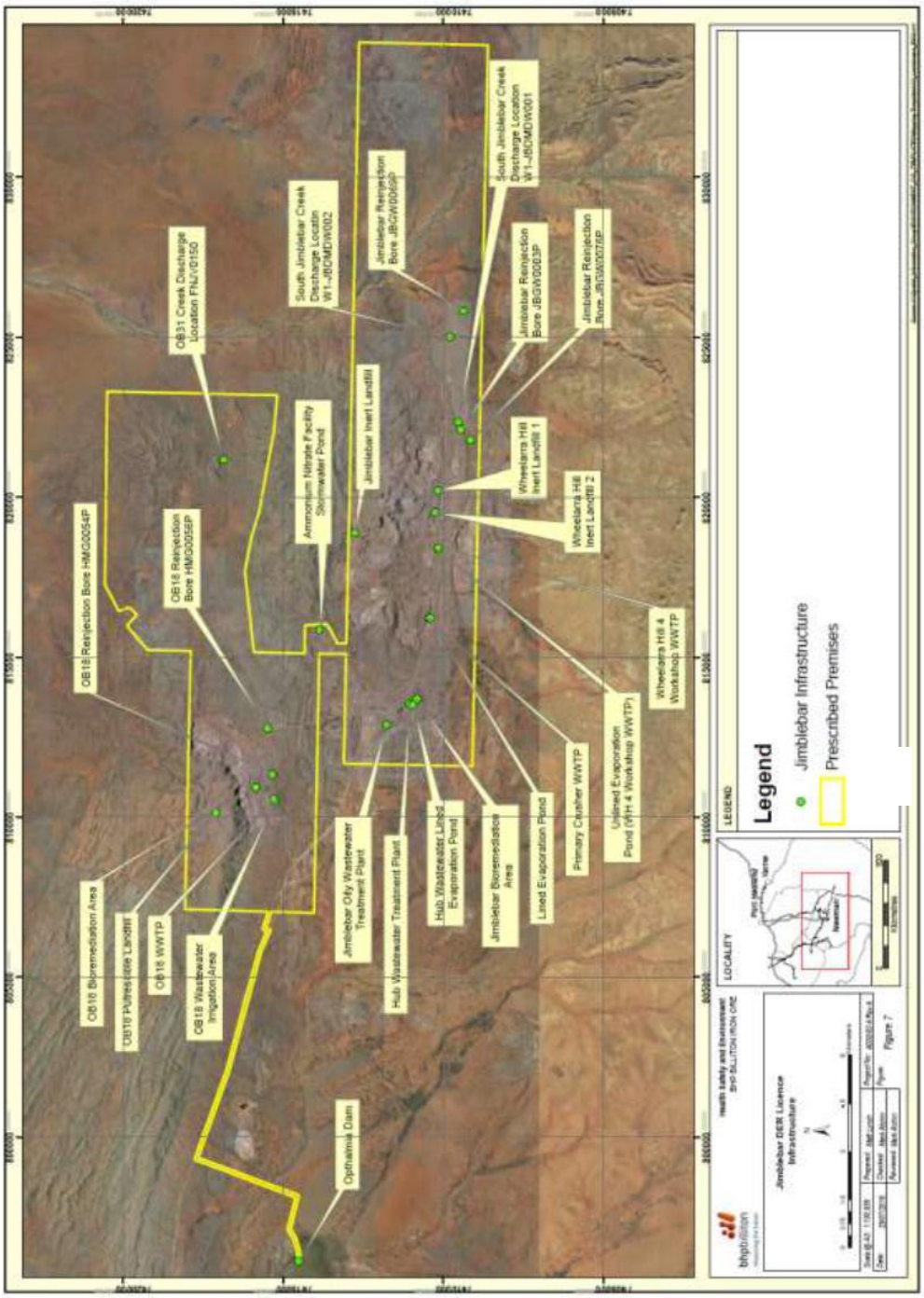
	person within the company		
1.2.11	The Licensee shall submit a compliance document to the CEO, following construction of the Orebody 31 dewatering infrastructure and Ophthalmia Dam discharge point. The compliance document shall: c) certify that the works were constructed in accordance with the documents specified in Table 1.2.6; 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
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 1.2.6; 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
-	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 practicable	N1
3.1.4	Calibration report	As soon as practicable.	None specified
	Copies of original monitoring reports submitted to the Licensee 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.

Schedule 1: Maps

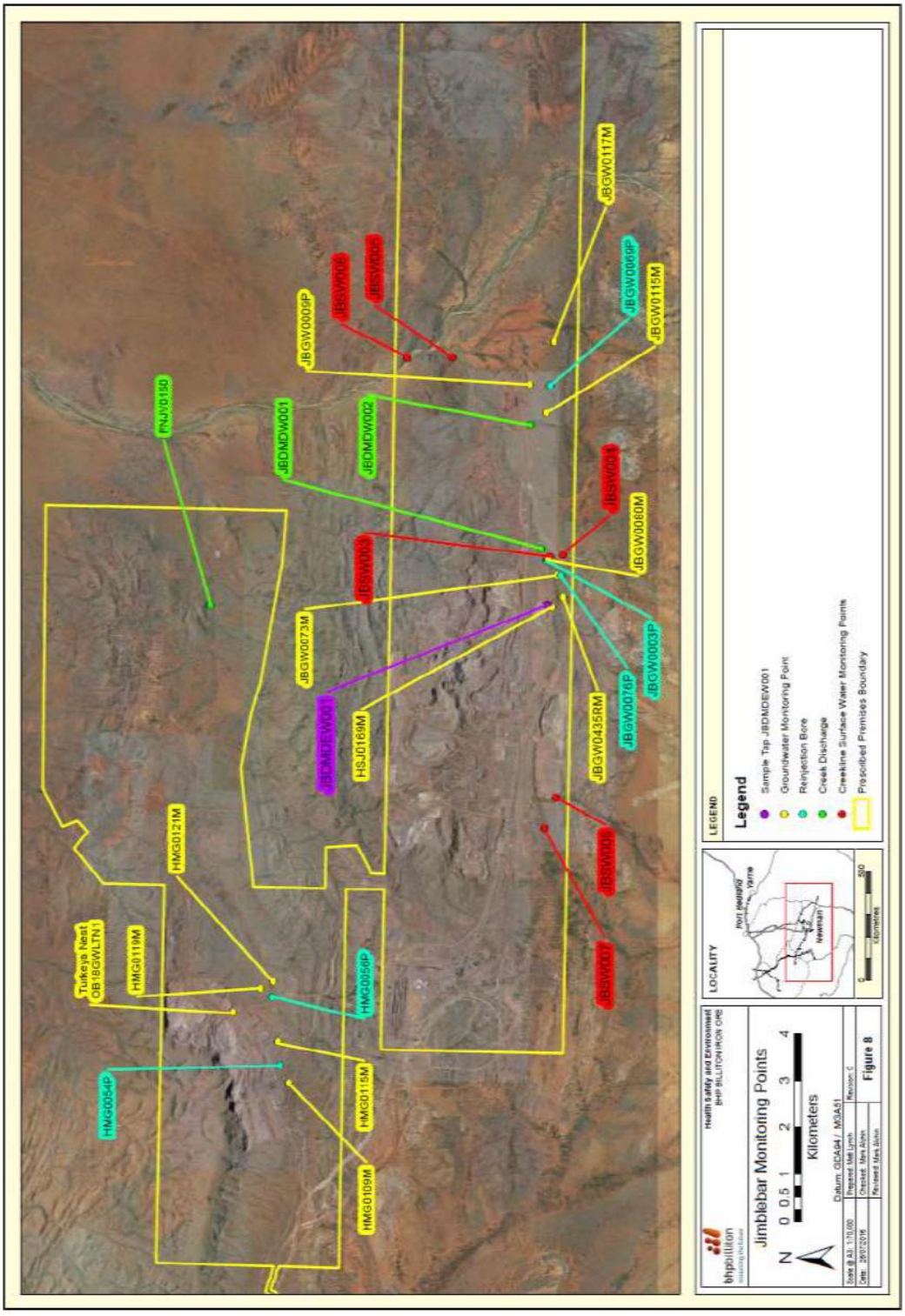
Premises map and location of containment infrastructure, emission points to land and monitoring locations

The Premises is shown in the map below. The yellow line depicts the Premises boundary. The location of the containment infrastructure, emission points and monitoring locations defined in Tables 1.2.4, 2.2.1, 2.3.1, 2.4.1, 3.4.1 and 3.6.1 are shown below.



Map of emission points and monitoring locations

The locations of the emission points and monitoring locations defined in Tables 3.2.1, 3.3.1 and 3.5.1 are shown below.



Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

Licence: L5415/1988/9 Licensee: BHP Billiton Iron Ore Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of BHP Billiton Iron Ore Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

Partial Decision Document

Environmental Protection Act 1986, Part V

Proponent: BHP Billiton Iron Ore Pty Ltd

Licence: L5415/1988/9

Registered office:	Level 1, City Square Brookfield Place 125 St Georges Terrace PERTH WA 6000
ACN:	008 700 981
Premises address:	Wheelarra Hill (Jimblebar) Iron Ore Mine Tenements L52/109, L52/163, I126948, AM70/266 and ML244SA NEWMAN WA 6753
Issue date:	Thursday, 5 November 2015
Commencement date:	Tuesday, 17 November 2015
Expiry date:	Saturday, 16 November 2030

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:	Haley Brunel Licensing Officer
Decision Document authorised by:	Alana Kidd Manager Licensing – (Resource Industries)

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☐ Licence amendment ☒ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	5	75 million tonnes per annual period
	6	23.5 gigalitres per annual period
	54	120 cubic metres per day
	64	1,580 tonnes per annual period
	73	4,000 cubic metres in aggregate
Application verified Application fee paid	Date: N/A Date: N/A	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes☒ No☐	
Was the proposal referred to the Environmental	Yes☒ No☐	Referral decision No: 978, 1558,

Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?		1796, 1847, 2047 Managed under Part V ☐ Assessed under Part IV ☒
Is the proposal subject to Ministerial Conditions?	Yes☒ No☐	Ministerial statement No: 439, 683, 809, 857, 1021 EPA Report No: 840, 1168, 1335, 1371, 1559
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☒ No☐ Department of Water consulted Yes ☒ No ☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒ If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes☐ No☒ If Yes, include details here, eg Site is subject to SO_2 requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

BHP Billiton Iron Ore Pty Ltd (BHP Billiton) operates the Wheelarra Hill (Jimblebar) Iron Ore Mine, approximately 40 kilometres (km) east of Newman in the Pilbara region of Western Australia. The closest sensitive receptor is Sylvania Pastoral Station, which is located approximately 18 km south of the project site and is the closest residence.

BHP Billiton Iron Ore operates crushing, screening and train loading infrastructure at Jimblebar. Iron Ore is sent by rail approximately 450 km to Port Hedland for ship loading and export overseas. Mine dewatering is required to facilitate the mining of ore below the water table. Abstracted water is preferentially used as a water supply for the mining operations. Water in excess of site demand is currently disposed of via reinjection or discharged to Ophthalmia Dam and/or Jimblebar and Copper Creeks.

The Licensee has applied to amend Licence L5415/1988/9 to include an additional surface water discharge point to allow for the contingency discharge of surplus mine dewater from Orebody 31 to a tributary of Jimblebar Creek. The emission point is to provide options for surplus water disposal when reuse or recycle options are not available; and during high rainfall, emergency or maintenance events. The category 6 approved production capacity remains unchanged.

At the time of this amendment, the Orebody 18 and South Jimblebar Managed Aquifer Recharge (MAR) monitoring requirements, premises address and sewage monitoring requirements have also been updated; and DER has also implemented changes to ensure that conditions are valid, enforceable and/or risk-based. Accordingly, conditions considered not to be valid, enforceable and/or risk based have been removed from the Licence.

DER has also considered whether the risk profile of emissions and discharges from the premises has significantly changed since the previous Licence was granted. No significant changes have occurred. DER's assessment and decision making with respect to the changes to the Licence are described in Table 4 of this document.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	Definitions Conditions 1.1.5, 1.2.1 and 1.2.2 (removed)	In accordance with recent administrative changes implemented within the Department, the definition of CEO has been updated and definitions for 'Annual Audit Compliance Report' and 'Department' included in the Licence. Guidance Statement *Setting conditions* (DER, October 2015) states that conditions imposed on Licences must be valid, enforceable and/or risk based. Noting the requirements of this Guidance Statement, conditions 1.1.5, 1.2.1 and 1.2.2 have been removed from the Licence, explained further below. Previous condition 1.1.5 specified: *"The Licensee shall operate and maintain all pollution control and monitoring equipment to the manufacturer's specifications or any relevant and effective internal management system."* This condition is not enforceable as it is not clear or certain in that the pollution control equipment and monitoring equipment required to be operated and maintained is not specified. The requirements to achieve compliance are not clear. Previous condition 1.2.1 specified: *"The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment*	Guidance Statement *Setting conditions* (DER, October 2015)

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		system." This condition is not valid as it inconsistently regulates activities below prescribed category thresholds. DER has assessed the risk associated with spills of environmentally hazardous materials to determine if specific regulatory controls are required on the Licence. <u>Emission description</u> *Emission:* Spills of environmentally hazardous materials, including hydrocarbons, detergents and glues/paints, outside of engineered containment systems. *Impact:* Soil contamination, impacts to groundwater and surface water quality, ecosystem disruption, depending on nature and volume of material released to the environment. *Controls:* The Licensee has developed the *Jimblebar Hub Water Management Plan* to satisfy condition 6 of Ministerial Statement (MS) 683, and conditions 9-2 and 10-1 of MS 857. Under this plan, the Licensee outlines management measures to minimise potential impacts on surface water resources, including removing spills and leaks outside of low permeability compounds for appropriate disposal. Regional groundwater table is typically at least 50 metres below the surface. Groundwater at this depth is unlikely to be impacted by minor spills of environmentally hazardous materials outside of containment areas. Creek systems in the project area are ephemeral, flowing after rainfall events. Impacts to surface water from runoff of contaminated water are unlikely if spills	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		are attended to quickly. It is the responsibility of the Licensee to ensure compliance with other legislative requirements, including Australian Standard 1940-2004 – The storage and handling of flammable and combustible liquids, which specifies that clean up action needs to be initiated immediately following a leak or spill. Risk Assessment *Consequence:* Insignificant *Likelihood:* Unlikely *Risk rating:* Low Regulatory Controls: The risk associated with spills outside of engineered containment systems is low, therefore no further regulatory controls are being applied to the Licence at this time. The general provisions of the *Environmental Protection Act 1986* with respect to the causing of pollution and environmental harm apply, as does subsidiary legislation including the *Environmental Protection (Unauthorised Discharges) Regulations 2004*. Residual Risk: *Consequence:* Insignificant *Likelihood:* Unlikely *Risk rating:* Low Previous condition 1.2.2 specified: *"The Licensee shall:* *(a) implement all practical measures to prevent stormwater run-of*	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		becoming contaminated by the activities on the Premises; and *(b) treat contaminated or potentially contaminated stormwater as necessary prior to being discharge from the Premises.*[1] *Note 1: The Environmental Protection (Unauthorised Discharges) Regulations 2004 make it an offence to discharge certain materials into the environment"* This condition is not enforceable as it is not sufficiently clear or certain what stormwater infrastructure is required to be constructed and maintained, or if any specific management actions are required. DER has assessed the risk associated with the discharge of potentially contaminated stormwater to determine if any further regulatory controls are required. <u>Emission description</u> *Emission:* Discharge of potentially contaminated stormwater from operational areas to the environment. *Impact:* Impacts to groundwater and surface water quality, ecosystem disruption. *Controls:* Under the *Jimblebar Hub Water Management Plan* the Licensee has described key water management aspects for the operations, including treating stormwater that collects in hydrocarbon storage areas to acceptable levels prior to discharge. The Licensee has measures in place to minimise potential impacts on surface water resources which are also outlined in the *Jimblebar Hub Water Management Plan*, including but not limited to: • preventing uncontaminated stormwater from entering oily wastewater and wastewater treatment systems through grading and drainage designs;	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		• treated contaminated or potentially contaminated runoff to achieve a TRH concentrations of less than 5 mg/L prior to discharge to the environment; • installation of waste management structures at workshops, vehicle washdown bays, refuelling depots and laboratories. Structures may include protective bunding, skimmers, silt traps, fuel and oil traps, drains and sealed collection sumps. • Stormwater directed away from landfill area; • Appropriate storage of waste materials (lubricants, coolant, hydraulic fluids etc); and • Sediment basins, vegetated buffer strips or other effective measures installed and maintained at all off-site stormwater discharge points. Regional groundwater table is typically at least 50 metres below the surface. Creek systems in the project area are ephemeral, flowing after rainfall events. <u>Risk Assessment</u> *Consequence:* Minor *Likelihood:* Rare *Risk rating:* Low <u>Regulatory Controls:</u> Appropriate stormwater management is implemented under the *Jimblebar Hub Water Management Plan*, required under MS 683 and 857. The site will be subject to DER compliance inspections; including an inspection of stormwater management infrastructure, and an evaluation of the effectiveness of procedures and infrastructure in place to manage stormwater. The general provisions of the *Environmental Protection Act 1986* with respect	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		to the causing of pollution and environmental harm apply, as does subsidiary legislation including the *Environmental Protection (Unauthorised Discharges) Regulations 2004*. Due to the low risk and management practices implemented on site, no further regulatory controls are required on the Licence at this time. Residual Risk: *Consequence:* Minor *Likelihood:* Rare *Risk rating:* Low	
Premises operation	Condition 1.2.3 (previously 1.3.3)	The tyre disposal requirements outlined in Table 1.2.2 have been removed as these are duplicated requirements outlined in the *Environmental Protection Regulations 1987*.	Application supporting documentation
Point source emissions to surface water and monitoring	Condition 2.2.1	The Licensee is currently developing the Orebody 31 deposit at Jimblebar. An additional emission point to surface water is being included on the Licence to allow for the ongoing contingency discharge of surplus mine dewater from Orebody 31 to a tributary of Jimblebar creek. DER's assessment and decision making with respect to this point source emission to surface water is detailed in Appendix A.	Orebody 31 Iron Ore Mine Project – Environmental Referral Document, (BHP Billiton Iron Ore Pty Ltd, March 2015) Surplus Water Management Plan – Orebody 31, (Version 1, BHP Billiton Iron Ore Pty Ltd) Eastern Pilbara Water Resource Management Plan (Version 3, BHP Billiton Iron

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
			Ore Pty Ltd)
Point source emissions to groundwater and monitoring	Condition 2.3.1 and 3.3.1	**Orebody 18 MAR** The construction of two reinjection bores to manage surplus water at Orebody 18 was approved under Works Approval W5808/2015/1. The construction and operating requirements related to this MAR program were subsequently integrated into the Licence via a Licence amendment issued 21 April 2016. Injection bore HMG0056P has been converted from a production bore to a reinjection bore and is currently operational. The second production bore, HMG0055P, which was to be converted into reinjection bore, is not suitable as the bore column has failed and is now full with gravel which cannot be flushed. To maintain surplus water management at Orebody 18, the Licensee is substituting HMG0055P for the nearby HMG0054P. Bore HMG0054P is located 1 km west of HMG0055P and is screened in the same Tertiary alluvium and Paraburdoo Dolomite which is better suited for injection compared to the Tertiary alluvium and Marra Manda Iron Formation. The Licensee has advised that in combination with the commissioned reinjection bore HMG0056P, there will be enough capacity to manage small volumes of surplus water from Orebody 18; at a rate of 1 ML/day ranging to 3 ML/day during peak times. Condition 2.3.1 has been updated to replace injection bore HMG0055P with HMG0054P. Condition 3.3.1 specifies the monitoring requirements for point source emissions to surface water and has been updated to reflect the change to the reinjection bores at Orebody 18.	Application supporting documentation
Point source emissions to land and monitoring	Condition 2.4.1 and 3.4.1	**Wheelarra Hill Workshop Wastewater Treatment Plant (WWTP)** The Wheelarra Hill Workshop WWTP has a design capacity of 8 m^3 per day. The WWTP is a sequencing batch reactor type plant which operates the extended aeration mode of the activated sludge process. Treated wastewater	General provisions of the *Environmental Protection Act 1986*

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		from this facility is discharged to an unlined evaporation pond, which also receives treated water from the Wheelarra oily water separator. Under the Guidance Statement *Licensing and works approval process* (DER, September 2015), the Wheelarra Hill Workshop WWTP is considered a secondary activity and therefore, not subject to licence conditions. Monitoring results provided in the 2014-2015 Annual Environmental Report for the WWTP indicates that the quality of water discharged to the unlined pond is unlikely to pose a risk to the receiving environment. Condition 2.4.1 has been updated to remove the reference to Wheelarra Hill Workshop WWTP. Condition 3.4.1 has been updated to remove the requirements to monitor parameters associated with the WWTP waste stream, being Biochemical Oxygen Demand, Total Suspended Solids, Total Nitrogen, Total Phosphorus and Faecal Coliforms. It is noted that the general provisions of *the Environmental Protection Act 1986* with respect to the causing of pollution and environmental harm apply, as does relevant subsidiary legislation including the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.	*Environmental Protection (Unauthorised Discharges) Regulations 2004* Guidance Statement *Licensing and works approval process* (DER, September 2015) Application supporting documentation
Ambient environmental monitoring	Condition 3.5.1	**South Jimblebar MAR Monitoring Program** The Licensee currently operates a MAR and creek discharge program at South Jimblebar to provide surplus water management options for the South Jimblebar mining area. The program is currently comprised of three operating reinjection bores, and two creek discharge locations to Jimblebar Creek (only one of which has been commissioned). A comprehensive monitoring network of seven monitoring bores provides oversight of potential mounding and hydraulic connectivity. Two of these bores, JBGW0020M and JBGW0064M, have been impacted by a progressing	Application supporting documentation

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		waste dump making them no longer serviceable as monitoring bores. Condition 3.5.1 has been updated to remove monitoring bore JBGW0064M and replace it with JBGW0073M. The replacement bore is situated near reinjection bore JBGW0076P and has long-term records dating back to 2010. Monitoring results from the replacement bore demonstrate that it is appropriately located to identify changes to groundwater levels as a result of reinjection. Monitoring bore JBGW0020M was destroyed in May 2016 as part of a waste dump expansion, so has been replaced with monitoring bore HSJ0169M. The bore is to be located as close as possible to the original location of JBGW0020M. Historical records indicate that water levels in bore JBGW0020M responded primarily to dewatering and showed little response to reinjection. **Orebody 18 MAR Monitoring Program** The ambient groundwater monitoring requirements have been updated to include an additional monitoring bore to the west of the new injection bore HMG0054P; required to provide a cross sectional view of any mounding or mixing as result of reinjection. Condition 3.5.1 has been updated to include monitoring bore HMG0109M, which will complement the existing monitoring network.	
Information	Condition 4.1.2 Condition 4.3.1	Condition 4.1.2 relating to the annual compliance report, has been updated to reflect recent administrative changes implemented within the Department. Table 4.2.1 has also been updated to reflect the removal of the compliance report template from the Licence. The Licensee will be required to access the form on DER's website. Notification requirements related to the submission of compliance documentation and a commissioning report for Orebody 18 are specified under	N/A

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		condition 4.3.1. These requirements will continue to apply to the works related to Orebody 18, including the replacement of the second reinjection bore.	
Licence duration	-	In accordance with DER's Guidance Statement, *Licence Duration,* a duration period of 15 years has been previously specified for this Licence.	Guidance Statement, *Licence Duration* (DER, November 2014)

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
15/09/2016	Proponent sent a copy of draft instrument	**Table 1.2.1** – request that the specification in Table 1.2.1 be updated to reflect that the quantity limit applies to the outflow, not the inflow. **Table 3.2.1 –** request that the frequency for monitoring of FNJV0150 be changed from 'Quarterly' to 'Quarterly (when discharging)', as it may not always be possible to collect a hydrochemistry sample from this discharge location.	Table 1.2.1 has been updated with a note that specifies that the quality limit for the sewage treatment is measured at outflow. Change accepted and Table 3.2.1 has been updated.

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Point Source Emissions to Surface Water

Orebody 31 – Jimblebar Creek tributary discharge

Orebody 31 has significant dewatering requirements as 70% of the orebody is located below the water table. Water abstracted from dewatering activities is preferentially used as a water supply and supports Orebody 31 mining activities. Water demands are anticipated to range between 0.75 and 3.65 gigalitres per annum (GLpa) depending upon the production activities and climate.

Surplus water management for Orebody 31 has two aspects. The first is ongoing discharge of up to 16.2 GLpa to Ophthalmia Dam and the second is short-term contingency discharge to a tributary of Jimblebar Creek during emergency or high rainfall events when stormwater management may be required. The construction and operation of the Ophthalmia Dam discharge point has been approved by DER under an amendment to Licence L5415/1988/9 issued 21 April 2016.

On 9 September 2015 the Licensee commenced a hydrodynamic trial which involved up to 2.5 GLpa of groundwater being discharged to the tributary of Jimblebar Creek. The main objectives of the trial were to improve the understanding of the required orebody dewatering volumes and assess the capacity of Jimblebar creek to receive surplus mine dewater. DER approval was not required under Part V of the EP Act as the proposed activities were outside of an already prescribed premise and water was not being abstracted for the purpose of mining.

The trial is nearing completion and the Licensee is now seeking to include the creek line emission point on the licence to allow for the ongoing contingency discharge of surplus mine dewater from Orebody 31.

The development of Orebody 31, including the dewatering and discharge of surplus dewatering water to Ophthalmia Dam and Jimblebar Creek, was assessed by the EPA and approved under Ministerial Statement 1021 (MS1021) on 12 November 2015. Clearing associated with the project has been undertaken using Ministerial Statement 1021 and Native Vegetation Clearing Permits CPS 2296/3, CPS 2527/4, CPS 3012/2, CPS 3547/2 and CPS 6834/1 (currently under assessment by the Department of Mines and Petroleum).

The surplus water discharged to Ophthalmia Dam will be managed in accordance with *the Eastern Pilbara Surplus Water Management Plan* (BHPBIO, version 3) and the *Orebody 31 Surplus Water Management Plan* (BHPBIO, version 1.0). The *Eastern Pilbara Surplus Water Management Plan* has been developed to meet conditions 7 and 8 of MS1021, and has been endorsed by the OEPA.

The management of surplus water, as described in these plans is in accordance with the Department of Water Policy 20.09 *Use of Mine Dewatering Surplus*, which stipulates that mine dewatering volumes must first be used for mitigation of environmental impacts and fit-for-purpose onsite activities. Any dewatering volumes that remain after these requirements have been met constitute mine dewatering surplus with options for management as follows:

1. Transfer water to meet operational demands;
2. Reinjection back into an aquifer; and
3. Controlled release to the environment.

DER's assessment of the discharge of surplus mine dewater from Orebody 31 to Jimblebar Creek is detailed below.

Normal operation

Emission description

Emission: Contingency discharge of surplus mine dewater to a tributary of Jimblebar Creek during high rainfall, emergency or maintenance situations. Water discharged will be fresh to marginal, ranging in pH from 7.2 to 8.7 and salinity between 900 to 1800 µS/cm.

The water quality is based on a compilation of water quality sampling from 15 existing production bores as well as ongoing water sampling from the three pumping bores as part of the Orebody 31 hydrodynamic trial. Laboratory results indicate no parameters are outside the site specific water quality thresholds.

Impact: Potential impacts to riparian flora and vegetation from waterlogging of soils due to discharge occurring during natural no-flow conditions. The baseline environmental survey has identified *Acacia citrinoviridis* as a species which could potentially be impacted by ongoing saturation of the root zone.

Potential impacts to downstream water quality. Jimblebar Creek is a major ephemeral tributary of the upper portion of the Fortescue River catchment, which drains into the Fortescue Marsh around 80 km north of Orebody 31.

Creek bed erosion at emission point.

Controls: The Licensee has developed the *Eastern Pilbara Water Resource Management Plan* (BHPBIO, version 3.0) to meet the requirements of conditions 7 of MS1021, which requires BHPBIO to manage the discharge of surplus mine dewater from Orebody 31 in a manner that minimises impacts to the riparian vegetation along Jimblebar Creek.

Under this plan, the Licensee has established the following thresholds:

- dewater discharge extending no further than 16 km from the discharge point under natural no-flow conditions (also been specified under MS1021);
- mine dewater remaining in the main drainage channel of Jimblebar Creek under natural no-flow conditions; and
- undertaking monthly monitoring for pH and total dissolved solids (TDS) at the discharge point, with pH levels between 6 and 9 and TDS to be less than 3,000 mg/L.

The adaptive management hierarchy for Jimblebar Creek focuses on investigation, action and mitigation of potential environmental impacts and exceedances of management thresholds. Exceeding one of the threshold values will activate the adaptive management hierarchy, as described below.

1. **Investigation Stage**
   Investigation is undertaken to evaluate and characterise the change identified. Results may inform future surplus water discharge programs (timing, volume, rate of discharge etc) and management options proposed, should the threshold values be reached.

2. **Action Stage**
   Prepares and implements water management options to avoid potential impact to a receiving receptor or exceedance of threshold values. If reached, the Licensee will initiate an assessment to investigate whether there is a potential for the unpredicted trend to impose a negative impact on the environment, and if so, recommend further adaptive management options, including potential corrective actions.

3. **Mitigation Stage**
   Corrective action is immediately required to prevent unacceptable impact or reverse the trends. Corrective actions to be identified at the Action Stage.

The Licensee will report to the OEPA within 30 days of a management threshold being exceeded, in accordance with the requirements of MS1021.

The Licensee has also committed to at least three months of no discharge outside of natural flow conditions within Jimblebar Creek to minimise the risk to riparian vegetation from the ongoing saturation of their root zone.

Riparian vegetation health will be monitored in order to verify the effectiveness of water management objectives on vegetation health. On-ground monitoring of indicator tree species within Jimblebar Creek will be undertaken 6 months after dewater discharge has occurred under natural no-flow conditions.

Erosion control measures have been implemented to minimise scouring of the creek bed during discharge. The discharge point consists of a single outlet structure with perforations designed to distribute and dissipate energy as the flow discharges to the creek. Rip rap has been placed over and around the outlet structure to further encourage energy dissipation.

Downstream impacts to water quality are unlikely due to the anticipated maximum extent of the wetting front (16 km) and anticipated water quality.

A flow meter has been installed 500 m upstream of the discharge location.

Risk Assessment
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Regulatory Controls
Ministerial approval for the development of the Orebody 31 Iron Ore Mine was issued under MS1021, published on 12 November 2015.

The report and recommendations of the EPA (Report number 1559, EPA, September 2015) recommended the application of conditions relating to the management of potential impacts to the riparian vegetation along Jimblebar Creek. Condition 7 of approved Ministerial Statement 1021 requires the occupier to prepare a management plan, in consultation with the Department of Water, to manage impacts to riparian vegetation along Jimblebar Creek.

Condition 2.2.1 of the Licence has been updated to authorise the contingency discharge of mine dewater from Orebody 31 to a tributary of Jimblebar Creek.

Condition 3.2.1 has been updated to require flow and water quality monitoring during discharge events.

To avoid regulatory duplication with Part IV of the EP Act, controls relating to vegetation health monitoring have not been applied to the operating Licence. Sufficient regulatory controls are applied via the *Eastern Pilbara Water Resource Management Plan,* which has been developed and implemented under condition 7 of MS1021, and endorsed by the OEPA.

Residual Risk

Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Abnormal or emergency

Emission description

Emission: Discharge of dewatering water to the environment as a result of pipeline rupture

Impact: Impacts to soil and groundwater, vegetation impacted through inundation.

Controls: The water quality from the Orebody 31 aquifer is fresh to marginal, ranging in pH from 7.2 to 8.7 and salinity between 900 to 1800 µS/cm. The water quality is based on a compilation of water quality sampling from 15 existing production bores as well as ongoing water sampling from the three pumping bores as part of the Orebody 31 hydrodynamic trial. Laboratory results to date indicate no parameters are outside the site specific water quality thresholds.

Flowmeters will be located at the start and end of the main transfer pipeline to detect possible leaks between the transfer pump station and discharge point. The majority of the main transfer pipeline will be located adjacent to the main road into Jimblebar, making any leaks easily visible.

Risk Assessment
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Regulatory Controls
The risks associated with overtopping of water storage ponds and pipelines rupturing has been assessed as low. No specified conditions relating to the management of this infrastructure has been included in the Licence.

Residual Risk
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low