

BHP

**Biodiversity
Environmental
Management Plan**

Version 5.0

DRAFT

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Note to Reader:

The obligations to meet the requirements of Ministerial Statement conditions are addressed in the Schedules of this Biodiversity Environmental Management Plan. All other information is considered supporting information, and is not subject to Department of Water and Environmental Regulation (DWER) compliance auditing, nor does it require DWER endorsement to be amended.

Document Amendment Record

Version	Page Number	Version description	Key changes	Date of Change
1.0	ALL	Submitted to meet the requirements of Ministerial Statement 1021 Condition 6.	New document.	02/11/2016
2.0	ALL	Revised document. Submitted to meet the requirements of Ministerial Statement 1037 Conditions 5, 6 and 7.	Addition of Schedule 2.	10/02/2017
3.0	ALL	Revised document following OEPA stakeholder consultation, to align to “Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans”.	Schedule structure changed to be based on asset rather than Ministerial Statement. Addition of Stakeholder Consultation and Rationale and approach sections.	11/08/2017
4.0	ALL	Submitted to meet the requirements of Ministerial Statement 679 conditions 11 and 12.	Update to Schedules 2 and 5, and Appendix 3.0	XX/10/2017
5.0	ALL	Submitted to support the assessment of the Mining Area C Southern Flank Public Environment Review	Addition of Schedule 7 Update to Appendix 3.0	XX/10/2017

Summary

Proponent	Title of proposal / operation	Ministerial Statement Number	EMP Purpose	Key environmental factors and objectives	Key provisions in the plan
BHP Billiton Iron Ore Pty Ltd	Orebody 31	1021		Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained	<ul style="list-style-type: none"> Avoid direct impacts to <i>Acacia</i> sp. East Fortescue, through the modification of the Development Envelope and implementation of Project Aboriginal Heritage Review (PEAHR) process. Response actions to be implemented in the event that trigger/threshold criteria are exceeded include, but are not limited to: <ul style="list-style-type: none"> Implement additional dust control practices during operations in the vicinity of 'impact populations'; Alter waste material disposal practices to reduce dust generation; and Rehabilitate northern side of OSA adjacent to 'impact populations' as soon as practicable.
	Eastern Ridge	1037	Implementation of condition requirements	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained	<ul style="list-style-type: none"> Avoid direct impacts (i.e. clearing) to known locations of <i>Eremophila magnifica</i> subsp. <i>velutina</i>, where practicable. Minimise impacts to conservation significant flora and habitat of conservation significant fauna, by implementing the PEAHR process prior to land disturbance. Alter surplus water discharge regime and/or alter abstraction regime to minimise impacts to riparian vegetation Avoid direct impacts to the known locations of Pilbara Olive Python habitat, through the modification of the Development Envelope and implementation of the PEAHR process.
	Yandi	679		Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained	<ul style="list-style-type: none"> Minimise impacts to conservation significant flora and habitat of conservation significant fauna, by implementing the PEAHR process prior to land disturbance. Conduct weed hygiene inspections on ground-engaging equipment prior to arriving at site. Implement weed management controls specific to the target species as required.
	Mining Area C (Southern Flank)	X	Support the assessment of the Mining Area C Southern Flank Public Environment Review	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained	<ul style="list-style-type: none"> Avoid direct impacts to ghost bat cave buffer zones, by implementing the PEAHR process prior to land disturbance. Minimise impacts to all known ghost bat cave locations and foraging habitat, by avoiding direct impacts where practicable and implementing the PEAHR process prior to land disturbance.

1. Context, Scope and Rationale

This Biodiversity Environmental Management Plan (BEMP) has been compiled by BHP Billiton Iron Ore Pty Ltd (BHP) to meet 'external' Regulatory (Environmental Protection Authority (EPA)) requirements. Those requirements are to develop and submit an 'Environment Management Plan (EMP)' and relevant 'Schedules' in accordance with the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (EPA, 2016) (the 'Instructions') to demonstrate how the business meets the intent of various biodiversity-related implementation conditions under Ministerial Statements.

The provisions of the Instructions permit a Proponent to:

- cover one or more key environmental factors for a particular proposal, and
- cover one or more operations or Ministerial Statements.
(EPA, 2016, p. i),

BHP has utilised these provisions in this particular document to manage an identified number of biodiversity assets to meet its **biodiversity management objectives** in the **Pilbara Region**¹ of Western Australia (WA). BHP's management-based objective for biodiversity in the Pilbara Region is:

where practicable, avoid and mitigate impacts to significant flora species and vegetation communities, where they occur within BHP's area of influence to an acceptable level.

The regional biodiversity assets within the Pilbara area to which a Ministerial Statement implementation condition applies, have been identified as:

- *Acacia* sp. East Fortescue - Orebody 31 Iron Ore Mining Project – Jimblebar Hub;
- Conservation significant species – Eastern Ridge Hub and Yandi;
- *Eremophila magnifica* subsp. *veluntina* – Eastern Ridge Hub;
- Riparian vegetation (*Eucalyptus camaldulensis* subsp. *refulgens* and *E. victrix*) – Eastern Ridge Hub;
- Conservation significant fauna – Eastern Ridge Hub and Yandi;
- Pilbara Olive Python habitat – Eastern Ridge Hub; and
- Ghost bats (*Macroderma gigas*) – Mining Area C (Southern Flank)

This document is one of a number of 'EMPs', which have been, or are being, developed by BHP to address its various environmental management requirements within the Pilbara Region. This particular document is known within BHP as the BEMP. As such, reference to 'EMP' and 'BEMP' herein are both considered to refer to this document.

In accordance with the Instructions (EPA, 2016), the following sub-sections outline the Proposals that this BEMP addresses (Section 1.1), the relevant key environmental factors (Section 1.2), the condition requirements applicable to those Proposals (Section 1.3) and the rationale and approach underlying this BEMP (Section 1.4).

¹ Further explained in Section 1.1

1.1. Proposals

BHP currently operates a number of iron ore mines and associated rail and port infrastructure within the Pilbara Region of WA (**Figure 1**). Current mining operations include the:

- Newman Joint Venture (NJV) hub located approximately two kilometres (km) west of Newman Township and consisting of Mount Whaleback, and Orebodies 29, 30 and 35;
- Mining Area C (MAC) located approximately 90 km north west of Newman Township;
- Orebody 18 and Wheelarra Hill (Jimblebar) Mine located approximately 35 km east of Newman Township;
- Eastern Ridge consisting of Orebodies 23, 24 and 25; located approximately 5 km east of Newman Township; and
- Yandi Mine located approximately 100 km north-west of Newman Township.

However, not all activities within these hubs are governed by Ministerial Statements containing contemporary biodiversity-related implementation conditions requiring an EMP to be developed and endorsed by the CEO. As such, for the purposes of this section and to meet the requirements of the Instructions (EPA, 2016), **Table 1** lists only the Proposals for which a Ministerial Statement has been issued that includes a contemporary implementation condition requiring an EMP to be developed for a biodiversity-related asset in the Pilbara Region.

Table 1: Proposals for which Ministerial Statement implementation conditions require the development of a Schedule for a biodiversity-related regional asset.

BHP Hub	Ministerial Statement Number	Title of proposal on Ministerial Statement	Proposal (exact wording in the Ministerial Statement)	Relevant Schedule in this BEMP
Jimblebar Hub	1021	Orebody 31 Iron Ore Mine Project	"The Proposal is to construct and operate an open-cut iron ore mine, and associated infrastructure, approximately 40 kilometres (km) east of Newman."	Schedule 1
Eastern Ridge Hub	1037	Eastern Ridge Iron Ore Revised Proposal	"The Proposal is to undertake mining and associated activities at Eastern Ridge, located approximately 3km north-east of Newman".	Schedules 2, 3, 4, 5 and 6
Yandi	679	Marillana Creek (Yandi) Life of Mine Proposal	"Life-of-mine proposal to mine iron ore within Mining Leases 270SA and 47/292 at a rate of approximately 45 million tonnes per annum, and subsequent rehabilitation and decommissioning of the site, as documented in schedule 1 of this statement."	Schedules 2 and 5

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BHP Hub	Ministerial Statement Number	Title of proposal on Ministerial Statement	Proposal (exact wording in the Ministerial Statement)	Relevant Schedule in this BEMP
Mining Area C (Southern Flank)	X	TBC	<p>TBC (Draft is below)</p> <p>The proposal is to undertake mining and associated activities at Mining Area C, located approximately 100 km north-west of Newman.</p> <p>The proposal involves open-pit mining above and below the water table at Northern and Southern Flank. The proposal includes pit dewatering, and the construction and operation of associated mine infrastructure.</p>	Schedule 7

For a more in-depth detailed summary of each of the Proposals listed in **Table 1**, refer to **Appendix 1 – Proposal/Operation Summaries**.

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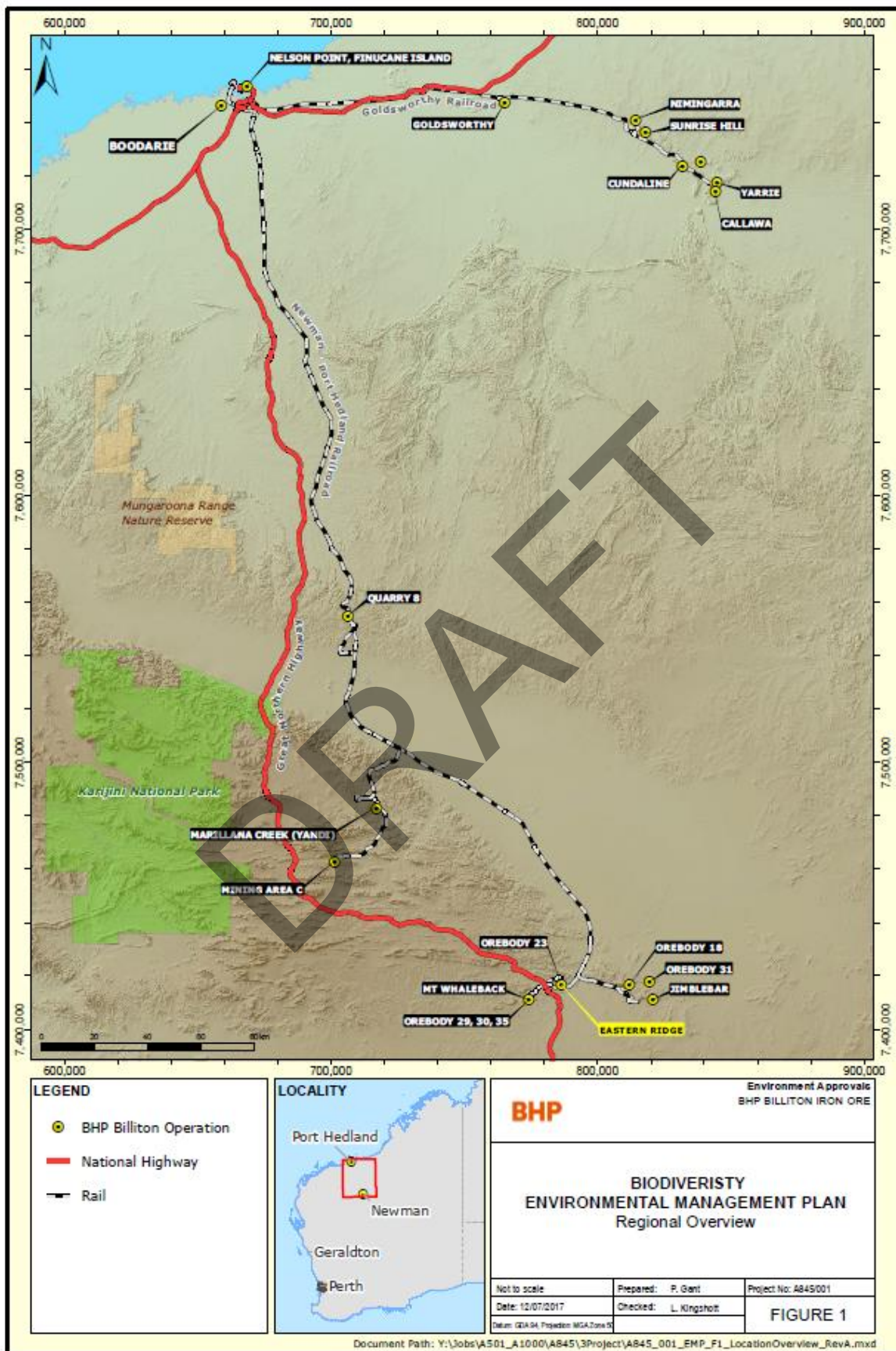


Figure 1: Regional Overview – Biodiversity Environmental Management Plan

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1.2. Key environmental factors

The Instructions require for each environmental factor (relevant to the Proposals detailed in Table 1 of Section 1.1), that a Proponent describes:

1. “the proposal activities which would affect the key environmental factor; and
2. the site-specific environmental value, existing and/or potential uses, ecosystem health condition or sensitive component of the key environmental factor which will be affected”. (EPA, 2016, p. ii)

The key environmental factors applicable to the Proposals presented in Section 1.1 are listed in **Table 2**.

Table 2: Key environmental factors for which a Schedule has been developed in this BEMP

BHP Hub	Title of proposal / operation	Ministerial Statement Number	Key environmental factors	Values	Impacts
Jimblebar Hub	Orebody 31 Iron Ore Mine Project	1021	Flora and Vegetation	Acacia sp. East Fortescue	<ul style="list-style-type: none"> • Land disturbance
					<ul style="list-style-type: none"> • Dust
Eastern Ridge Hub	Eastern Ridge Revised Proposal	1037	Flora and Vegetation	Conservation significant flora	<ul style="list-style-type: none"> • Land disturbance
				<i>Eremophila magnifica</i> subsp. <i>velutina</i>	<ul style="list-style-type: none"> • Land disturbance
			Terrestrial Fauna	Riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>)	<ul style="list-style-type: none"> • Groundwater drawdown • Surplus water - waterlogging
				Conservation significant fauna	<ul style="list-style-type: none"> • Land disturbance
Yandi	Marillana Creek (Yandi) Life of Mine Proposal	679	Flora and Vegetation	Conservation significant flora	<ul style="list-style-type: none"> • Land disturbance • Weeds
			Terrestrial Fauna	Conservation significant fauna	<ul style="list-style-type: none"> • Land disturbance
Mining Area C (Southern Flank)	TBC	TBC	Flora and Vegetation	Conservation significant flora	<ul style="list-style-type: none"> • Weeds
			Terrestrial Fauna	Conservation significant fauna	<ul style="list-style-type: none"> • Land disturbance

1.3. Condition requirements

In accordance with the requirements of the Instructions (EPA, 2016), a list of those Ministerial Statement implementation conditions, for which a Schedule has been developed within this BEMP is provided below in **Table 3**. The relevant Schedule number is also included in **Table 3**.

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Table 3: Ministerial Statement conditions and requirements for which a Schedule has been developed in this BEMP

Ministerial Statement	Operation	Condition No.	Environmental Factor	Condition Requirements	Schedule	Asset
No. 1021	Orebody 31	Condition 6	Flora and vegetation	<p>6 Acacia sp. East Fortescue flora species (Flora and Vegetation):</p> <p>6-1 The proponent shall ensure that the implementation of the Orebody 31 Iron Ore Mine proposal does not affect the viability of <i>Acacia</i> sp. East Fortescue at the population level, through the implementation of Conditions 6-2 to 6-15.</p> <p>6-6 In the event that advice from the Department of Parks and Wildlife following a review of the survey report of Condition 6-5 indicates that the conservation status of <i>Acacia</i> sp. East Fortescue meets Priority 1 flora or higher, the proponent shall, within six months of ground disturbing activities related to the development of the Overburden Storage Area, prepare a Plan, in consultation with the Department of Parks and Wildlife, and to the satisfaction of the CEO. The Plan shall for the Orebody 31 Iron Ore Mine:</p> <ol style="list-style-type: none"> (1) Specify management actions that will be implemented to ensure the management objective in Condition 6-1 is achieved; (2) Identify and spatially define the proposed monitoring sites and rationale for the location of these sites to assess plant health (3) Detail the proposed frequency and timing of monitoring; (4) Develop an appropriate monitoring methodology and measurable indicators of plant health; (5) Specify appropriate plant health criteria that will trigger the implementation of management actions to ensure condition 6-1 is being met; and (6) Specify trigger management actions to be implemented in the event that the trigger criteria specified by Condition 6-6(5) are reached. 	Schedule 1	<i>Acacia</i> sp. East Fortescue
No. 1037	Eastern Ridge	Condition 5 Condition 6	Flora and vegetation	<p>5 Management-based Condition Environmental Management Plans</p> <p>5-1 Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objectives in conditions 6-1 and 7-1 will be met.</p> <p>5-2 The Condition Environmental Management Plan/s shall:</p> <ol style="list-style-type: none"> (1) specify the environmental objectives to be achieved, as specified in conditions 6-1 and 7-1; (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions; (3) specify measurable management targets to determine the effectiveness of the risk-based management actions; (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring; (5) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded; (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to: <ol style="list-style-type: none"> a) verification of the implementation of management actions; and b) reporting on the effectiveness of management actions against management targets. <p>6 Flora and Vegetation - conservation significant flora species and vegetation</p> <p>6-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:</p> <ol style="list-style-type: none"> (1) minimise impacts to Priority flora species, including <i>Eremophila magnifica</i> subsp. <i>velutina</i>. (2) minimise impacts to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>) health. <p>6-2 The Condition Environmental Management Plan/s required by condition 5-1 shall include provisions required by condition 5-2, to address potential impacts on conservation significant flora and vegetation health including from, but not limited to, changes to groundwater levels and from weeds.</p>	Schedule 2	Conservation significant flora
		Condition 5 Condition 6	Flora and vegetation	<p>5 Management-based Condition Environmental Management Plans</p> <p>5-1 Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objectives in conditions 6-1 and 7-1 will be met.</p> <p>5-2 The Condition Environmental Management Plan/s shall:</p> <ol style="list-style-type: none"> (1) specify the environmental objectives to be achieved, as specified in conditions 6-1 and 7-1; (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions; (3) specify measurable management targets to determine the effectiveness of the risk-based management actions; (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring; (5) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded; (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to: <ol style="list-style-type: none"> a) verification of the implementation of management actions; and b) reporting on the effectiveness of management actions against management targets. 	Schedule 3	<i>Eremophila magnifica</i> subsp. <i>velutina</i>

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Ministerial Statement	Operation	Condition No.	Environmental Factor	Condition Requirements	Schedule	Asset
				<p>6 Flora and Vegetation - conservation significant flora species and vegetation</p> <p>6-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:</p> <p>(1) minimise impacts to Priority flora species, including <i>Eremophila magnifica</i> subsp. <i>velutina</i>.</p> <p>6-2 The Condition Environmental Management Plans required by condition 5-1 shall include provisions required by condition 5-2, to address potential impacts on conservation significant flora and vegetation health including from, but not limited to, changes to groundwater levels and from weeds.</p>		
		Condition 5 Condition 6	Flora and vegetation	<p>5 Management-based Condition Environmental Management Plans</p> <p>5-1 Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objectives in conditions 6-1 and 7-1 will be met.</p> <p>5-2 The Condition Environmental Management Plan/s shall:</p> <p>(1) specify the environmental objectives to be achieved, as specified in conditions 6-1 and 7-1;</p> <p>(2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions;</p> <p>(3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p> <p>(4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p> <p>(5) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded;</p> <p>(6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <p>a) verification of the implementation of management actions; and</p> <p>b) reporting on the effectiveness of management actions against management targets.</p> <p>6 Flora and Vegetation - conservation significant flora species and vegetation</p> <p>6-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:</p> <p>(2) minimise impacts to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>) health.</p> <p>6-2 The Condition Environmental Management Plan/s required by condition 5-1 shall include provisions required by condition 5-2, to address potential impacts on conservation significant flora and vegetation health including from, but not limited to, changes to groundwater levels and from weeds.</p>	Schedule 4	Riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>)
		Condition 5 Condition 7	Terrestrial Fauna	<p>5 Management-based Condition Environmental Management Plans</p> <p>5-1 Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objectives in conditions 6-1 and 7-1 will be met.</p> <p>5-2 The Condition Environmental Management Plan/s shall:</p> <p>(1) specify the environmental objectives to be achieved, as specified in conditions 6-1 and 7-1;</p> <p>(2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions;</p> <p>(3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p> <p>(4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p> <p>(5) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded;</p> <p>(6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <p>a) verification of the implementation of management actions; and</p> <p>b) reporting on the effectiveness of management actions against management targets.</p> <p>7 Terrestrial Fauna- conservation significant terrestrial fauna</p> <p>7-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective:</p> <p>(1) minimise direct and indirect impacts on conservation significant fauna species, including Pilbara Olive Python, and their habitat.</p>	Schedule 5	Conservation significant fauna
					Schedule 6	Pilbara Olive Python
No. 679	Yandi	Condition 11	Terrestrial Flora Terrestrial Fauna	<p>11 Conservation of Significant Flora and Fauna</p> <p>11-1 Prior to any ground-disturbing activity following the formal authority issued to the decision-making authorities under section 45(7) of the Environmental Protection Act 1986, the proponent shall prepare a Significant Species Management Programme to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.</p> <p>The objective of this Programme is to maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.</p>	Schedule 2 Schedule 5	Conservation significant flora Conservation significant fauna

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Ministerial Statement	Operation	Condition No.	Environmental Factor	Condition Requirements	Schedule	Asset
				<p>This Programme shall include:</p> <ol style="list-style-type: none"> (1) surveys, prior to ground-disturbing activities, where baseline surveys have identified the likelihood of significant impact (see note) on flora and fauna species, vegetation associations and habitat areas for species of conservation significance; (2) a description of the identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance; (3) modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance; (4) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas; (5) species-specific management plans where mining or creek diversion activities are likely to impact on known locations of significant flora and fauna species, vegetation associations and habitat areas of conservation significance; (6) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified; (7) allowance for the staging of mining operations; and (8) reporting procedures and schedule. <p>Note: -'significant impact' will be determined by the Minister for the Environment acting on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.</p> <p>11-2 The proponent shall review and revise the Significant Species Management Programme required by condition 11-1 at intervals not exceeding five years.</p> <p>11-3 The proponent shall implement the Significant Species Management Programme required by condition 11-1.</p> <p>11-4 The proponent shall make the Significant Species Management Programme required by condition 11-1 publicly available.</p>		
		Condition 12	Terrestrial Flora	<p>12 Weeds</p> <p>12-1 Within 12 months following the formal authority issued to the decision-making authorities under section 45(7) of the Environmental Protection Act 1986, the proponent shall prepare a Weed Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.</p> <p>The objective of this Plan is to minimise the spread of weed species.</p> <p>This Plan shall include:</p> <ol style="list-style-type: none"> (1) the location, approximate number and type of each weed species which has been recorded during previous vegetation surveys; (2) weed control and eradication measures and monitoring activities to manage weeds; (3) weed species which have not been recorded within the project area, but which have the potential to occur; (4) weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering; and (5) reporting procedures and schedule. <p>12-2 The proponent shall review and revise the Weed Management Plan required by condition 12-1 at intervals not exceeding five years.</p> <p>12-3 The proponent shall implement the Weed Management Plan required by condition 12-1.</p> <p>12-4 The proponent shall make the Weed Management Plan required by condition 12-1 publicly available.</p>	Schedule 2	Conservation significant flora
X	Mining Area C (Southern Flank)	X	Flora and vegetation	<p>X Management-based Condition Environmental Management Plans</p> <p>X Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objective in condition X will be met.</p> <p>X The Condition Environmental Management Plan/s shall:</p> <ol style="list-style-type: none"> (1) specify the environmental objectives to be achieved, as specified in condition X; (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition X. Failure to implement one or more of the management actions represents non-compliance with these conditions; (3) specify measurable management targets to determine the effectiveness of the risk-based management actions; (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring; (5) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded; (6) provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to: <ol style="list-style-type: none"> a) verification of the implementation of management actions; and b) reporting on the effectiveness of management actions against management targets. <p>X Flora and vegetation - conservation significant flora</p> <p>X-1 The proponent shall manage the implementation of the proposal to meet the following environmental objectives:</p>	Schedule 2	Conservation Significant Flora

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Ministerial Statement	Operation	Condition No.	Environmental Factor	Condition Requirements	Schedule	Asset
				<ul style="list-style-type: none"> minimise the spread of weed species <p>X-2 The Condition Environmental Management Plan/s required by condition X shall include provisions required by condition X, to address potential impacts on conservation significant flora including from, but not limited to, weeds.</p>		
			Terrestrial Fauna	<p>X Management-based Condition Environmental Management Plans</p> <p>X Within 6 months of issue of this Statement or as otherwise agreed by the CEO, the proponent shall prepare and submit a Condition Environmental Management Plan/s to demonstrate that the environmental objective in condition X will be met.</p> <p>X The Condition Environmental Management Plan/s shall:</p> <ul style="list-style-type: none"> (7) specify the environmental objectives to be achieved, as specified in condition X; (8) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition X. Failure to implement one or more of the management actions represents non-compliance with these conditions; (9) specify measurable management targets to determine the effectiveness of the risk-based management actions; (10) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring; (11) specify a process for revision of management actions and changes to proposal activities, in the event that the management targets are not achieved. The process shall include an investigation to determine the cause of the management targets being exceeded; (12) provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to: <ul style="list-style-type: none"> c) verification of the implementation of management actions; and d) reporting on the effectiveness of management actions against management targets. <p>X Terrestrial Fauna- conservation significant terrestrial fauna</p> <p>X-1 The proponent shall manage the implementation of the proposal to meet the following environmental objective:</p> <ul style="list-style-type: none"> (1) avoid, where possible, and minimise impacts as far as practicable to conservation significant fauna <i>Macroderma gigas</i> and its habitat. (2) minimise impacts as far as practicable to the habitats of short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007' 	Schedule 7 Schedule 8	Ghost bats (<i>Macroderma gigas</i>) Short Range Endemic Species

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1.4. Rationale and approach

This section provides a concise description of the rationale and approach for this BEMP and discusses the environmental objectives for the identified biodiversity regional assets to which implementation conditions (and Schedules) apply.

The following sections summarise:

- survey findings;
- key assumptions and uncertainties;
- the management approach; and
- the rationale for choice of provisions,

as is required by the Instructions (EPA, 2016, p. ii).

1.4.1. Overall objective, purpose and scope of this BEMP

As previously mentioned, this BEMP has been compiled by BHP to meet 'external' Regulatory (EPA) requirements to develop and submit an EMP and relevant Schedules to demonstrate how the business meets the intent of various biodiversity-related implementation conditions.

From a regional perspective, BHP has been undertaking baseline biological surveys on most of its Pilbara tenements since the 1990s. Comprehensive baseline and targeted flora and vegetation and fauna surveys are undertaken to support environmental impact assessment (EIA) and management. This BEMP seeks to:

... where practicable, avoid and mitigate impacts to significant flora species and vegetation communities and significant fauna species and fauna habitat, where they occur within BHP's area of influence to an acceptable level.

This will be achieved through:

- prescribing standardised systems and processes to avoid conservation significant flora species and vegetation communities;
- detailing the management actions and strategies that will be implemented to mitigate potential impacts to significant flora species and vegetation communities during the planning, construction and operation of BHP mines, projects and associated infrastructure; and
- outlining the monitoring, inspection, reporting, and management plan review programs that will be implemented in a consistent manner during the life of BHP's projects.

The biodiversity-related assets, within the Pilbara Region, which have been identified as requiring a 'Schedule' to be developed are:

- *Acacia* sp. East Fortescue - Orebody 31 Iron Ore Mining Project – Jumblebar Hub (Schedule 1);
- Conservation significant flora– Eastern Ridge Hub, Yandi and Mining Area C (Southern Flank) (Schedule 2);
- *Eremophila magnifica* subsp. *veluntina* – Eastern Ridge Hub (Schedule 3);
- Riparian vegetation (*Eucalyptus camaldulensis* subsp. *refulgens* and *E. victrix*) – Eastern Ridge Hub (Schedule 4);
- Conservation significant fauna – Eastern Ridge Hub and Yandi (Schedule 5);
- Pilbara Olive Python habitat – Eastern Ridge Hub (Schedule 6);

- Ghost bats (*Macroderma gigas*) and its habitat – Mining Area C (Southern Flank) (Schedule 7); and
- Short Range Endemic Species – Mining Area C (Southern Flank) (Schedule 8);

For these above-listed biodiversity-related assets, management actions, targets and proposed monitoring parameters have been developed in this BEMP and specifically included in the relevant Schedules for the endorsement of the CEO of the EPA. The Schedules are intended to be stand-alone documents.

1.4.2. Surveys – general

Ordinarily, baseline surveys are conducted at a tenement scale. This ensures a regional understanding of flora and vegetation and fauna communities which enables informed management in a regional context and an assessment at a Proposal level of impact and area of influence beyond its direct footprint. Baseline surveys are reviewed on a five-yearly basis to ensure they remain current and applicable for management. In these reviews, survey timing, methodology and extent are considered against contemporary standards. The results of the survey are considered against taxonomic and conservation significance changes over the past five years and the potential for future operational activity in the area.

Targeted surveys may be undertaken to update baseline information or to resolve particular survey or study gaps. Targeted surveys may also be undertaken prior to approved land clearing if there is an identified risk of Declared Rare Flora or Priority 1 species occurring in a proposed impact area.

1.4.3. Management Approach – General

BHP has a Project Environmental Aboriginal Heritage Review (PEAHR) process to manage the implementation of its environmental, Aboriginal heritage, land tenure and legal obligations prior to and during land disturbance activities. All ground disturbance activities will be required to meet the requirements of the PEAHR process, as well as relevant legislative and regulatory requirements and BHP's Sustainable Development Policy. Additionally, the PEAHR process provides a mechanism whereby technical and professional advice can be provided to the business regarding environmental aspects, land access and Aboriginal heritage planning and management issues. The PEAHR system consists of an electronic workflow process linked to a geographical information system. The objectives of the PEAHR process are to:

- identify the significant environmental*, Aboriginal heritage and legal aspects of proposed activities;
- ensure that, through appropriate environmental Aboriginal heritage and land access planning and management, BHP activities comply with all legal and other obligations;
- avoid, minimise and mitigate the number and nature of environmental*, Aboriginal heritage and land tenure impacts and ensure adequate environmental performance of BHP operations; and
- provide a mechanism for continuous improvement.

*In relation to this BEMP, environmental aspects particularly consider conservation significant fauna, flora and habitat.

1.4.4. Value specific rationale and approach

The Instructions (EPA, 2016) require a “concise” description of the rationale and approach for the EMP against the environmental objective for each regional asset. **Appendix 3 – Rationale and Context** outlines the survey and study findings, key assumptions and uncertainties, management approach and rationale for choice of provisions regarding each value.

2. EMP provisions

Please refer to the Schedule sections.

3. Adaptive Management and review of the EMP

BHP applies an adaptive management framework for implementing management measures identified in this BEMP. Adaptive management is a structured, iterative process to decision making. An integral component is the application of the mitigation hierarchy (avoid, minimise and rehabilitate environmental impacts, prior to applying offsets as a last resort).

The framework embeds a cycle of monitoring, reporting and implementing change where required. It allows an evaluation of the management controls so that they are progressively improved and refined, or alternative solutions adopted, to ensure the outcome-based objectives are achieved. The key steps of the adaptive management approach are outlined in **Figure 2**.

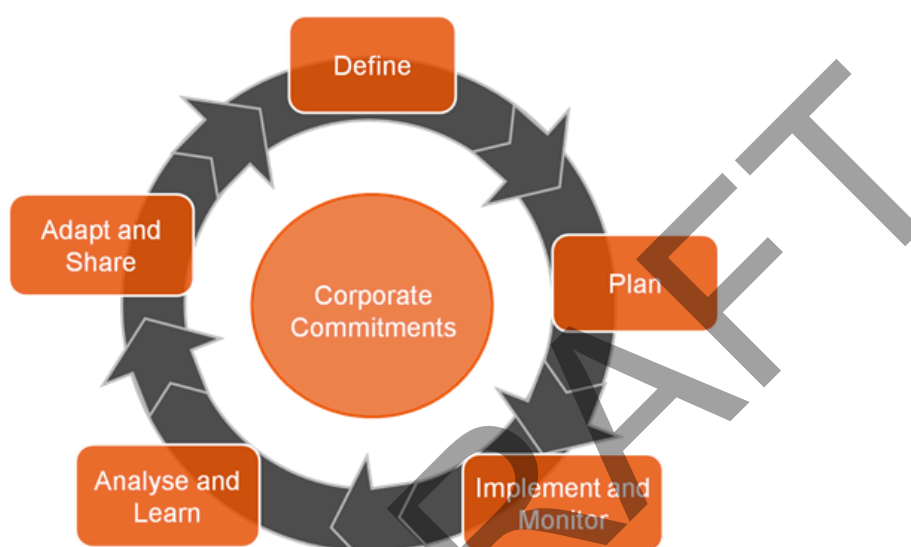


Figure 2: BHP's adaptive management approach

3.1. Review and update of this BEMP

This BEMP will be reviewed and updated to ensure it addresses the relevant conditions and is being implemented effectively. Changes may arise from, but not limited to, a change of scope, request by proponent or regulator for a change to Ministerial Conditions or this BEMP, stakeholder consultation comments or from opportunities for improvement.

Table 3 will be updated to include date of review and details of subsequent Schedules. New and/or revised Schedules will be provided for review and endorsement by the CEO as per the requirements of the respective Ministerial Statement implementation conditions. It is proposed that the number of conditions included in Table 3 will vary in the future, including when:

- new Proposals are approved and conditioned through Part IV of the Environmental Protection Act 1986 (EP Act);
- existing Proposals subject to historic EP Act Part IV conditions are revised and brought under this BEMP though, for example, a section 46 process; and/or
- the CEO has confirmed by notice in writing that it has been demonstrated that the objective in the relevant condition is being and will continue to be met and therefore implementation of commitments or aspects of the BEMP are no longer required.

4. Stakeholder consultation

BHP undertakes regular and ongoing stakeholder engagement as part of its core business activities. BHP aims to facilitate regular, open and honest dialogue to understand expectations, concerns and interests of stakeholders and incorporate them into business planning to help build strong, mutually beneficial relationships. The main objectives of the consultation programme are to:

- provide information and the opportunity to comment to relevant government agencies, local authorities and to other groups or individuals who may potentially be interested in a Proposal; and
- where relevant, discuss and allow stakeholder comments on Proposals to be incorporated into this BEMP.

BHP will continue to engage with Traditional Owners through targeted consultation and via administration of Native Title heritage agreements.

Please refer to **Appendix 2 – Stakeholder Consultation** for details of specific consultation activities, relevant to this BEMP.

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5. References

- BHP Environment Department (2000) *Orebody 25 Priority Flora Species Survey*.
- Biologic (2013a) *Orebody 25 Targeted Vertebrate Fauna Survey*. Report prepared for BHP.
- Biologic (2013b) *OB 24 Targeted Vertebrate Fauna Survey*. Report prepared for BHP.
- Biota Environmental Sciences (2001) *Baseline Biological and Soil Surveys and Mapping for ML244SA West of the Fortescue River*. Report prepared for BHP.
- Eco Logical (2012) *OB 37 Level 1 Vertebrate Fauna Assessment*. Report prepared for BHP.
- Ecologia Environment (1995) *Orebody 25 Biological Assessment Survey*. Report prepared for BHP.
- Ecologia Environment (1996) *Jimblebar Rail Spur Biological Assessment Survey*. Report prepared for BHP.
- Ecologia Environment (2004) *OB 24 Expansion Biological Survey*. Report prepared for BHP.
- ENV Australia (2006) *OB 24 Flora And Fauna Assessment Phase II*. Report prepared for BHP.
- ENV Australia (2009) *Orebody 25 to Newman Flora and Vegetation Assessment*. Report prepared for BHP.
- ENV Australia (2011) *Eastern Ridge (OB 23/24/25) Fauna Assessment*. Report prepared for BHP.
- ENV Australia (2012) *Eastern Ridge (OB23/24/25) Flora and Vegetation Report*. Report prepared for BHP.
- Environment Protection Authority (2016a) *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual*. Perth, Western Australia
- Environment Protection Authority (2016b) *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans*
- GHD (2008) *Report for Myopic Project Area, Newman Flora and Fauna Assessment*. Report prepared for BHP.
- Onshore Environmental (2012) *OB25 Targeted Significant Flora Survey and Vegetation Mapping of Homestead Creek*. Report prepared for BHP.
- Onshore Environmental (2013) *Targeted Flora and Vegetation Survey Orebody 24*. Report prepared for BHP.
- Onshore Environmental (2014a) *OB 31 Second Season Level 2 Flora and Vegetation Assessment*. Report prepared for BHP.
- Onshore Environmental (2014b) *OB 31 / Wheelarra Hill North Targeted Flora Survey*. Report prepared for BHP.
- Onshore Environmental (2015a) *Eastern Ridge Flora and Vegetation Environmental Impact Assessment*. Report prepared for BHP.
- Onshore Environmental (2015b) *Orebody 31 Flora and Vegetation Environmental Impact Assessment*. Report prepared for BHP.
- Onshore Environmental (2015c) *Targeted Flora Survey Acacia sp. East Fortescue*. Report prepared for BHP.
- Onshore Environmental and Biologic (2009) *Biological Survey Myopic Exploration Leases*. Report prepared for BHP.
- Outback Ecology (2009) *Jimblebar Linear Development Terrestrial Vertebrate Fauna Assessment*. Report prepared for BHP.
- Threatened Species Scientific Committee (2008) *Commonwealth Conservation Advice on Liasis olivaceus barroni (Olive Python (Pilbara subspecies))*. Department of the Environment, Water, Heritage and the Arts. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/66699-conservation-advice.pdf>.

Biodiversity Environmental Management Plan

Schedule 1 – *Acacia* sp. East Fortescue

To meet the requirements of Conditions 6-1 and 6-6 of Ministerial Statement 1021

EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	<i>Acacia</i> sp. East Fortescue – Priority 1 flora taxon.		
Objective:	6-1: The proponent shall ensure that the implementation of the Orebody 31 Iron Ore Mine proposal does not affect the viability of <i>Acacia</i> sp. East Fortescue at the population level.		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Acacia</i> sp. East Fortescue population, due to potential indirect impact (i.e. dust). Direct impacts (clearing) to <i>Acacia</i> sp. East Fortescue were avoided through project design.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>6-6 (1) Specify management actions that will be implemented to ensure the management objective in Condition 6-1 is achieved</p>			<p>4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known.</p> <p>4-6 The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>The Compliance Assessment Report shall:</p> <ul style="list-style-type: none"> (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1; <p>6-8 (3) In the event that the monitoring specified in the Plan, indicates that the trigger criteria specified in the Plan have been exceeded, the proponent shall provide a report to the CEO within 30 days of an event, referred to in condition 6-8, occurring. The report shall include:</p> <ul style="list-style-type: none"> (a) details of trigger management actions implemented; and (b) the findings of the investigation required by condition 6-8(2).
<p>Avoid</p> <ul style="list-style-type: none"> • Avoid direct impacts to <i>Acacia</i> sp. East Fortescue, through the modification of the Development Envelope, as depicted in Schedule 1 Figure(s). • Avoid direct impacts to <i>Acacia</i> sp. East Fortescue buffer areas (as depicted in Schedule 1 Figure(s)), by implementing the PEHR process prior to land disturbance. 	<p>No unauthorised disturbance as a result of BHP activities beyond the Development Envelope or within the <i>Acacia</i> sp. East Fortescue buffer areas.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p>	<p>Notification of potential management target or objective non-compliance will be provided to the Director General of the DWER, and the DBCA, within 7 days of that potential non-compliance being known. A report including any corrective actions identified will be provided to the Director General of the DWER, and the DBCA, once an investigation into the potential non-compliance has been completed.</p> <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the Director General of the DWER by 1 October each year.</p> <p>The Compliance Assessment Report shall:</p> <ul style="list-style-type: none"> (1) be endorsed by BHP's CEO or a person delegated to sign on the CEO's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

Biodiversity Environmental Management Plan

Outcome-based provisions			
Environment criteria: • Trigger criteria • Threshold criteria	Response actions: • Trigger level actions • Threshold level actions	Monitoring	Reporting
<p>6-6 (5) Specify appropriate plant health criteria that will trigger the implementation of management actions to ensure condition 6-1 is being met;</p>	<p>6-6 (6) Specify trigger management actions to be implemented in the event that the trigger criteria specified by Condition 6-6(5) are reached</p>	<p>6-6 (2) Identify and spatially define the proposed monitoring sites and rationale for the location of these sites to assess plant health 6-6 (3) Detail the proposed frequency and timing of monitoring; and 6-6 (4) Develop an appropriate monitoring methodology and measurable indicators of plant health.</p>	<p>4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known. 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO. The Compliance Assessment Report shall: (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1 6-8 (3) In the event that the monitoring specified in the Plan, indicates that the trigger criteria specified in the Plan have been exceeded, the proponent shall provide a report to the CEO within 30 days of an event, referred to in condition 6-8, occurring. The report shall include: (a) details of trigger management actions implemented; and (b) the findings of the investigation required by condition 6-8(2).</p>
<ul style="list-style-type: none"> Statistically significant difference over at least three monitoring periods in the quantitative plant health indicator between potential impact and control monitoring sites. 	<p>Response actions to be implemented in the event that trigger/threshold criteria are exceeded include, but are not limited to:</p> <ul style="list-style-type: none"> Implement additional dust control practices during operations in the vicinity of 'impact populations, such as: <ul style="list-style-type: none"> Water carts; Water cannons; Application of chemical dust suppressant; Alter waste material disposal practices to reduce dust generation, for example: <ul style="list-style-type: none"> Increase cycle time between waste material deposition Decrease waste material deposition load volume Accelerate progressive rehabilitation of northern side of OSA adjacent to 'impact populations'. 	<p>Monitoring outcomes from impact populations will be compared to the control population. Using photo-point monitoring techniques, conduct quarterly monitoring of <i>Acacia</i> sp. East Fortescue.</p> <p>Monitoring Point Location</p> <ul style="list-style-type: none"> Photo-point monitoring sites will be installed at each potential 'impact population', as depicted in Schedule 1 Figure(s). Four photo-point monitoring sites to be established at each 'control population', as depicted in Schedule 1 Figure(s). The location and number of monitoring sites will be amended as required. <p>Timing and Frequency</p> <ul style="list-style-type: none"> Monitoring will be undertaken at each site and data will be evaluated quarterly. Monitoring program will be reviewed at regular intervals and amended as required. <p>Monitoring Methodology</p> <ul style="list-style-type: none"> A quantitative indicator of population health will be used to compare the potential impact populations with the control population. The population health indicator used will be the overall quantity of photosynthetic material from sample individuals within each population. This indicator of plant health may change depending on findings in accordance with the principles of adaptive management. Quarterly qualitative visual inspection of impact populations and plants assessed using a qualitative scoring method and taking into account, indicators such as flowering, seed set and recruitment. <p>Ancillary Data</p> <ul style="list-style-type: none"> Local weather station data will be used to assist in the quarterly analysis of monitoring results. Qualitative visual inspection results will be used to validate the quantitative results. 	<p>Notification of potential trigger/threshold criteria or objective non-compliance will be provided to the Director General of the DWER, and the DBCA, within 7 days of that potential non-compliance being known.</p> <p>In the event that the monitoring indicates that the trigger criteria have been exceeded, a report will be submitted to the Director General of the DWER, and the DBCA, within 30 days of an event, referred to in condition 6-8, occurring. The report shall include: (a) details of trigger management actions implemented; and (b) the findings of the investigation required by condition 6-8(2).</p> <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to DWER by 1 October each year.</p> <p>The Compliance Assessment Report shall: (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.</p>

Biodiversity Environmental Management Plan

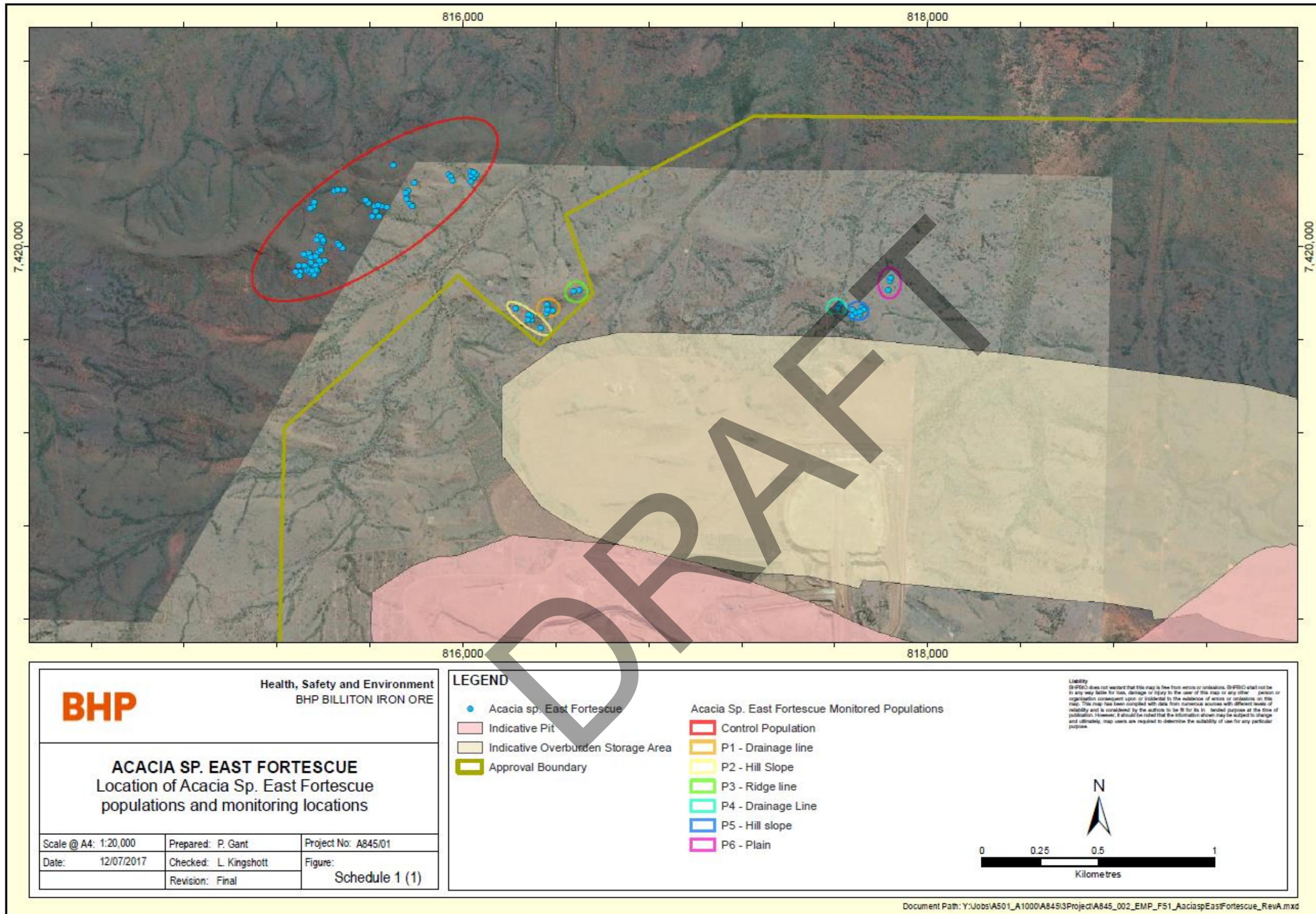


Figure Schedule 1(1) – Location of Acacia Sp. East Fortescue populations and monitoring locations

Biodiversity Environmental Management Plan

Schedule 2 – Conservation Significant Flora

To meet the requirements of Conditions 6-1 (1), 6-2 and 5-2 of Ministerial Statement 1037, and Conditions 11-1 and 12-1 of Ministerial Statement 679.

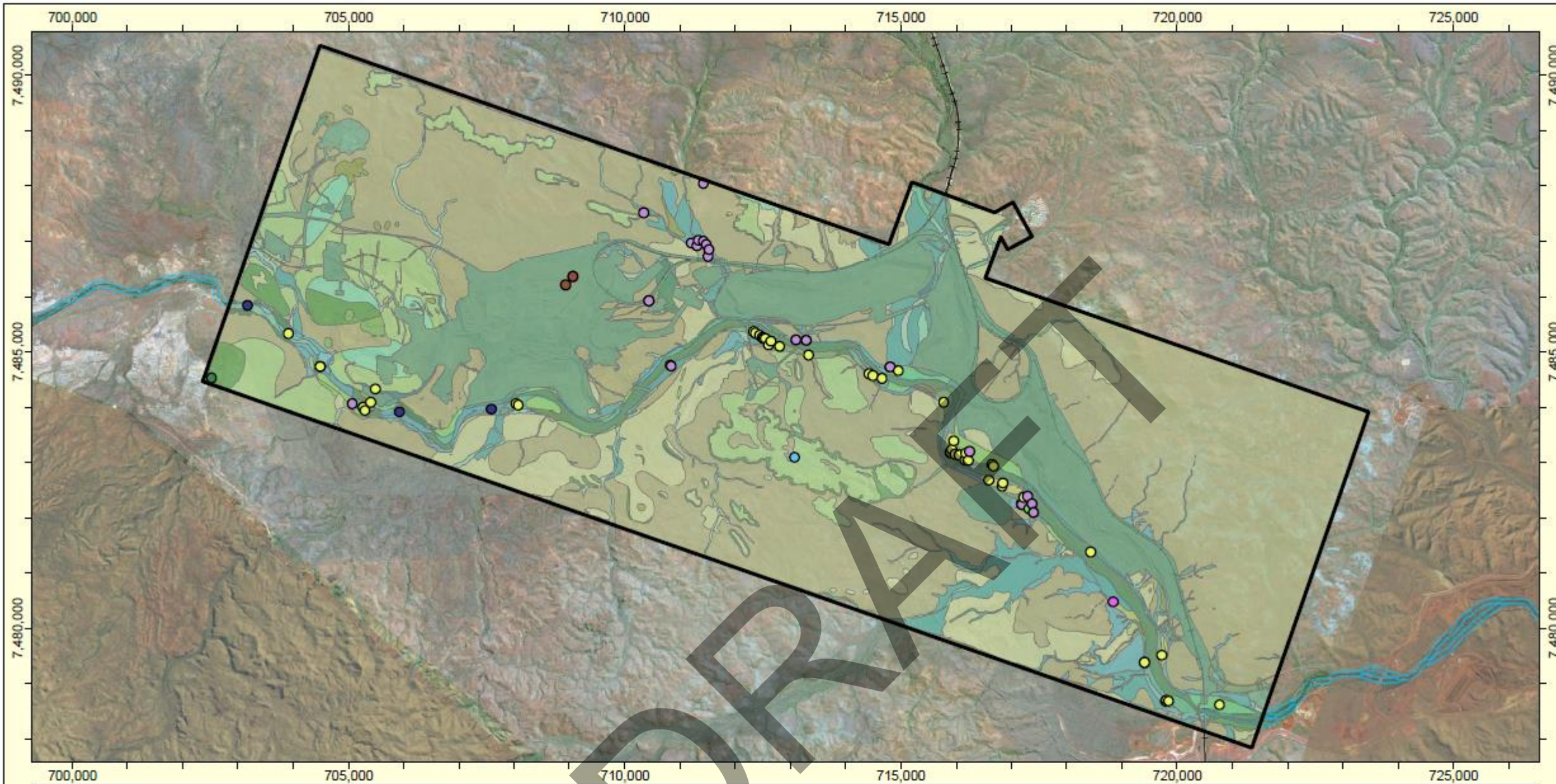
EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	Priority flora taxa within relevant Development Envelope(s)		
Objective:	<p>MS1037 6-1 (1) and 5-2 (1): Minimise impacts to conservation significant flora species</p> <p>MS679 11-1: Maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge</p> <p>MS679 12-1: Minimise the spread of weed species</p> <p>MSX X: Minimise the spread of weed species</p>		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of conservation significant flora, due to direct loss of habitat or introduced flora species.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>MS1037 5-2 (2) and MSX X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in MS1037 conditions 6-1 and 7-1 and MSX condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p> <p>MS679 11-1(3) modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance</p> <p>MS679 11-1(4) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(5) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(7) allowance for the staging of mining operations</p> <p>MS679 12-1(2) weed control and eradication measures and monitoring activities to manage weeds</p> <p>MS679 12-1(4) weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering</p>	<p>MS1037 5-2 (3) and MSX X specify measurable management targets to determine the effectiveness of the risk-based management actions</p>	<p>MS1037 5-2 (4) and MSX X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring</p> <p>MS679 11-1(6) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified</p> <p>MS679 12-1(2) weed control and eradication measures and monitoring activities to manage weeds</p> <p>MS679 12-1(4) weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering</p>	<p>MS1037 3-5 and MSX X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>MS1037 3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months ;</p> <p>MSX X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>MS1037 5-2 (6) and MSX X provide the format and timing to demonstrate that MS1037 condition 5-1 and MSX condition X has been met for the reporting period in the Compliance Assessment Report required by MS1037 condition 3-6 and MSX condition X including, but not limited to:</p> <p>(a) verification of the implementation of management actions; and</p> <p>(b) reporting on the effectiveness of management actions against management target/s;</p> <p>MS1037 5-4 (1) and MSX X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>MS1037 5-4 (3) and MSX X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by MS1037 condition 5-4(1) and MSX condition X. The report shall include:</p> <p>(a) cause of management targets being exceeded;</p> <p>(b) the findings of the investigation required by conditions 5-4(2);</p> <p>(c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and</p> <p>(d) relevant changes to proposal activities;</p> <p>MS1037 5-5 (1) and MSX X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>MS1037 5-5 (4) and MSX X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by MS1037 condition 5-5(1) and MSX condition X. The report shall include:</p> <p>(a) cause for failure to implement management actions;</p> <p>(b) the findings of the investigation required by MS1037 conditions 5-5(2) and 5-5(3) and MSX condition(s) X;</p> <p>(c) relevant changes to proposal activities; and</p> <p>(d) measures to prevent, control or abate the environmental harm which may have occurred.</p> <p>MS679 11-1(8) and MS679 12-1(5) reporting procedures and schedule.</p>
<p>Minimise</p> <ul style="list-style-type: none"> Minimise impacts to conservation significant flora, by implementing the PEHR process prior to land disturbance. Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. 	<p>No unauthorised disturbance beyond the Development Envelope.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p>	<p>Notification of potential non-compliance will be provided to the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> the potential exceedance will be reported in writing to the DWER within 21 days of the potential exceedance being identified a report will be provided to the DWER within 90 days of the potential exceedance being reported, and shall include: <ol style="list-style-type: none"> cause of management targets being exceeded; the findings of potential exceedance investigation; details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and relevant changes to proposal activities



Biodiversity Environmental Management Plan










EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	Priority flora taxa within relevant Development Envelope(s)		
Objective:	<p>MS1037 6-1 (1) and 5-2 (1): Minimise impacts to conservation significant flora species</p> <p>MS679 11-1: Maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge</p> <p>MS679 12-1: Minimise the spread of weed species</p> <p>MSX X: Minimise the spread of weed species</p>		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of conservation significant flora, due to direct loss of habitat or introduced flora species.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>MS1037 5-2 (2) and MSX X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in MS1037 conditions 6-1 and 7-1 and MSX condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p> <p>MS679 11-1(3) modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance</p> <p>MS679 11-1(4) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(5) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(7) allowance for the staging of mining operations</p> <p>MS679 12-1(2) weed control and eradication measures and monitoring activities to manage weeds</p> <p>MS679 12-1(4) weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering</p>	<p>MS1037 5-2 (3) and MSX X specify measurable management targets to determine the effectiveness of the risk-based management actions</p>	<p>MS1037 5-2 (4) and MSX X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring</p> <p>MS679 11-1(6) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified</p> <p>MS679 12-1(2) weed control and eradication measures and monitoring activities to manage weeds</p> <p>MS679 12-1(4) weed control measures and/or monitoring activities to be used to minimise the potential for weed species which have not been previously recorded in the project area from entering</p>	<p>MS1037 3-5 and MSX X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>MS1037 3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months ;</p> <p>MSX X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>MS1037 5-2 (6) and MSX X provide the format and timing to demonstrate that MS1037 condition 5-1 and MSX condition X has been met for the reporting period in the Compliance Assessment Report required by MS1037 condition 3-6 and MSX condition X including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>MS1037 5-4 (1) and MSX X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>MS1037 5-4 (3) and MSX X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by MS1037 condition 5-4(1) and MSX condition X. The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>MS1037 5-5 (1) and MSX X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>MS1037 5-5 (4) and MSX X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by MS1037 condition 5-5(1) and MSX condition X. The report shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of the investigation required by MS1037 conditions 5-5(2) and 5-5(3) and MSX condition(s) X; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred. <p>MS679 11-1(8) and MS679 12-1(5) reporting procedures and schedule.</p>
<p>Minimise</p> <ul style="list-style-type: none"> • Conduct weed hygiene inspections on ground-engaging equipment prior to arriving at site. • Implement weed management controls to specific species and activities as required. 	<p>No declared weeds introduced to the Development Envelope as result of BHP activities.</p>	<p>Undertake periodic weed surveys.</p>	<p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the DWER within 7 days of the potential failure to implement being identified 2. a report will be provided to the DWER within 21 days of the potential failure to implement being reported, and shall include: <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s


Note that the process for revision of management actions (required by **MS1037 condition 5-2 (5)** and **MSX condition X**), will be to submit a revised schedule to the Director General of the DWER for endorsement. The process for revision of changes to proposal activities (required by MS 1037 condition 5-2 (5) and **MSX condition X**), will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C. Note that the requirements of **MS679 11-1 (1), 11-1(2), 12-1(1) and 12-1(3)** are addressed in **Appendix 3 – Rationale and Context**, Figure Schedule 2(2) and Figure Schedule 2(3).

Biodiversity Environmental Management Plan



		Health, Safety and Environment BHP BILLITON IRON ORE	
		<p style="text-align: center;">YANDI Conservation Significant Flora and Vegetation Associations</p> 	
Scale @ A4: 1:100,000	Prepared: P. Gant	Project No: A845/09	
Date: 19/10/2017	Checked: L. Kingshott	Figure: Schedule 2 (2)	
	Revision: Draft		

 Ministerial Statement 679 Approval Boundary	 <i>Goodenia nuda</i>
 <i>Acacia subtiliformis</i>	 <i>Ipomoea racemigera</i>
 <i>Amaranthus centralis</i>	 <i>Isotropis parviflora</i>
 <i>Aristida lazaridis</i>	 <i>Lepidium catapycnon</i>
	 <i>Rostellularia adscendens</i> var. <i>latifolia</i>



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Biodiversity Environmental Management Plan

Vegetation Association		
Cleared	Hummock Grassland of <i>Triodia wiseana</i> with High Open Shrubland of <i>Acacia inaequilatera</i> and <i>Acacia bivenosa</i> over Low Open Shrubland of <i>Indigofera rugosa</i> and <i>Senna artemisioides</i> subsp. <i>oligophylla</i> on red silty loam on dolerite hill crests	Open Herbs of <i>Potamogeton tricarinatus</i> with Open Woodland of <i>Eucalyptus camaldulensis</i> and Very Open Sedges of <i>Typha domingensis</i> , <i>Schoenoplectus subulatus</i> and <i>Cyperus vaginatus</i> on dolerite platforms of major drainage line with brown light clay
Closed Hummock Grassland of <i>Triodia brizoides</i> and <i>Triodia wiseana</i> with Shrubland of <i>Eremophila fraseri</i> and High Open Shrubland of <i>Acacia bivenosa</i> and <i>Acacia kempeana</i> on brown silty loam on high dolerite hills	Hummock Grassland of <i>Triodia wiseana</i> , <i>Triodia brizoides</i> and <i>Triodia pungens</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> over High Open Shrubland of <i>Acacia maitlandii</i> , <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> and <i>Acacia bivenosa</i> on red brown sandy loam on hill crests and upper hill slopes	Open Hummock Grassland of <i>Triodia basedowii</i> , <i>Triodia schinzii</i> and <i>Triodia pungens</i> with Low Open Woodland of <i>Corymbia hamersleyana</i> , <i>Hakea lorea</i> subsp. <i>lorea</i> and <i>Acacia aptaneura</i> over High Open Shrubland of <i>Acacia dictyophleba</i> , <i>Acacia sclerosperma</i> and <i>Acacia pachyacra</i> on red sand on sand plains and islands between river channels
Closed Tussock Grassland of <i>*Cenchrus ciliaris</i> and <i>*Cenchrus setiger</i> with Low Open Forest of <i>Acacia citrinoviridis</i> and Scattered Low Trees of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> on brown sandy loam on banks and floodplains of major drainage lines	Hummock Grassland of <i>Triodia wiseana</i> , <i>Triodia brizoides</i> and <i>Triodia</i> sp. <i>Shovelanna Hill</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Eucalyptus xerothermica</i> and <i>Corymbia hamersleyana</i> over Low Open Shrubland of <i>Ptilotus calostachyus</i> , <i>Ptilotus astrolasius</i> and <i>Acacia hilliana</i> on brown loam on hill crests and upper hill slopes	Open Scrub of <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Petalostylis labicheoides</i> and <i>Acacia monticola</i> over Open Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia</i> sp. <i>Shovelanna Hill</i> (S.van Leeuwen 3835) with Low Open Woodland of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> on red brown sandy loam on minor drainage lines
Herbs of <i>Dysphania rhadinostachya</i> , <i>Tribulus hirsutus</i> and <i>Ptilotus aervoides</i> on brown clay on undulating stony plains	Hummock Grassland of <i>Triodia wiseana</i> , <i>Triodia pungens</i> and <i>Triodia</i> sp. <i>Shovelanna Hill</i> (S. van Leeuwen 3835) with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over Open Shrubland of <i>Acacia pruinocarpa</i> , <i>Acacia aptaneura</i> and <i>Acacia ancistrocarpa</i> on red brown loam on plains and low hills	Open Woodland of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> over Low Open Woodland of <i>Acacia citrinoviridis</i> and <i>Acacia coriacea</i> subsp. <i>pendens</i> over High Open Shrubland of <i>Melaleuca glomerata</i> on river bed with brown sand
High Open Forest of <i>Melaleuca argentea</i> , <i>Eucalyptus camaldulensis</i> var. <i>refulgens</i> and <i>Eucalyptus victrix</i> over High Open Shrubland of <i>Melaleuca glomerata</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> and <i>Acacia trachycarpa</i> over Very Open Sedges of <i>Cyperus vaginatus</i> on alluvial gravelly soils on major drainage channels with seasonal pools	Low Open Forest of <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over Open Hummock Grassland of <i>Triodia melvillei</i> , <i>Triodia wiseana</i> and <i>Triodia pungens</i> over Tussock Grassland of <i>Themeda triandra</i> , <i>Chrysopogon fallax</i> and <i>Aristida inaequiglumis</i> on red brown loam on stony plains	Shrubland of <i>Acacia bivenosa</i> , <i>Acacia dictyophleba</i> and <i>Acacia maitlandii</i> over Open Hummock Grassland of <i>Triodia pungens</i> over Open Tussock Grassland of <i>Themeda triandra</i> , <i>Paraneurachne muelleri</i> and <i>Eulalia aurea</i> on brown sandy loam on minor drainage lines
High Shrubland of <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Acacia sericophylla</i> with Scattered Trees of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> over Open Tussock Grassland of <i>Themeda</i> sp. <i>Mt Barricade</i> (M.E. Trudgen 2471), <i>Themeda triandra</i> and <i>Cymbopogon procerus</i> on brown loam and gravels on major drainage channels	Low Open Forest of <i>Acacia aptaneura</i> over Open Hummock Grassland of <i>Triodia pungens</i> , <i>Triodia wiseana</i> and <i>Triodia basedowii</i> over Open Tussock Grassland of <i>*Cenchrus ciliaris</i> and <i>Chrysopogon fallax</i> on red brown sandy loam on sandy plains and undulating low hills	Tussock Grassland of <i>Themeda triandra</i> , <i>Chrysopogon fallax</i> and <i>Eulalia aurea</i> with Low Open Woodland of <i>Eucalyptus xerothermica</i> , <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> and Shrubland of <i>Petalostylis labicheoides</i> , <i>Acacia pachyacra</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> on red sandy loam on medium drainage lines
Hummock Grassland of <i>Triodia basedowii</i> and <i>Triodia pungens</i> with High Open Shrubland of <i>Hakea lorea</i> subsp. <i>lorea</i> , <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> and Scattered Low Trees of <i>Corymbia hamersleyana</i> on red brown loamy sand on stony plains	Low Open Forest of <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> , <i>Eucalyptus victrix</i> and <i>Eucalyptus xerothermica</i> over High Shrubland of <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Gossypium robinsonii</i> over Open Tussock Grassland of <i>Themeda triandra</i> , <i>Eulalia aurea</i> and <i>Cymbopogon procerus</i> on red brown clay loam on major drainage lines	Tussock Grassland of <i>Themeda triandra</i> , <i>Eriachne mucronata</i> and <i>Themeda</i> sp. <i>Mt Barricade</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> and <i>Corymbia ferriticola</i> over High Shrubland of <i>Acacia tumida</i> var. <i>pilbarensis</i> , <i>Gossypium robinsonii</i> and <i>Petalostylis labicheoides</i> on red brown sandy loam on narrowly incised rocky drainage lines
Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia longiceps</i> with Low Woodland of <i>Eucalyptus xerothermica</i> , <i>Acacia citrinoviridis</i> and <i>Corymbia hamersleyana</i> over High Shrubland of <i>Petalostylis labicheoides</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> and <i>Gossypium robinsonii</i> on red brown clay loam on medium drainage lines and surrounding floodplains	Low Open Heath of <i>Corchorus crozophorifolius</i> and <i>Tephrosia rosea</i> var. <i>Fortescue creeks</i> (M.I.H. Brooker 2186) with Scattered Trees of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> and Scattered Tussock Grasses of <i>Eriachne tenuiculmis</i> , <i>*Cenchrus ciliaris</i> and <i>Eriachne pulchella</i> subsp. <i>dominii</i> on creekbed of major drainage line with brown clay loam	Tussock Grassland of <i>Themeda triandra</i> , <i>Eulalia aurea</i> and <i>Aristida inaequiglumis</i> with Open Woodland of <i>Eucalyptus victrix</i> and <i>Corymbia aspera</i> and High Open Shrubland of <i>Gossypium robinsonii</i> , <i>Eremophila longifolia</i> and <i>Atalaya hemiglauca</i> on plains with brown sandy loam
Hummock Grassland of <i>Triodia sp. Shovelanna Hill</i> (S. van Leeuwen 3835) with Low Open Woodland of <i>Corymbia deserticola</i> subsp. <i>deserticola</i> and <i>Hakea chordophylla</i> over Open Shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> on red brown sandy loam on footslopes and stony plains	Low Woodland of <i>Acacia citrinoviridis</i> , <i>Acacia coriacea</i> subsp. <i>pendens</i> and <i>Atalaya hemiglauca</i> with Open Hummock Grassland of <i>Triodia pungens</i> and Open Tussock Grassland of <i>Eriachne tenuiculmis</i> and <i>Enneapogon lindleyanus</i> on raised levee banks of major drainage line with brown loam	Tussock Grassland of <i>Themeda triandra</i> , <i>Eulalia aurea</i> and <i>Eriachne tenuiculmis</i> with High Shrubland of <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Acacia tumida</i> var. <i>pilbarensis</i> and <i>Petalostylis labicheoides</i> and Open Woodland of <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> on red brown silty loam on medium drainage lines and flood plains
Hummock Grassland of <i>Triodia sp. Shovelanna Hill</i> (S. van Leeuwen 3835), <i>Triodia pungens</i> and <i>Triodia wiseana</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and Open Shrubland of <i>Acacia bivenosa</i> , <i>Acacia pachyacra</i> and <i>Acacia ancistrocarpa</i> on red brown loam on footslopes, low undulating hills and stony plains	Open Forest of <i>Eucalyptus camaldulensis</i> var. <i>refulgens</i> , <i>Eucalyptus victrix</i> and <i>Melaleuca argentea</i> over Low Open Forest of <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Acacia ampliceps</i> and <i>Atalaya hemiglauca</i> over Open Sedges of <i>Typha domingensis</i> and <i>Cyperus vaginatus</i> on brown sandy clay loam along major rivers with permanent water	Woodland - Open Woodland of <i>Eucalyptus camaldulensis</i> and <i>Eucalyptus victrix</i> over Low Woodland of <i>Acacia coriacea</i> subsp. <i>pendens</i> , <i>Atalaya hemiglauca</i> and <i>Eucalyptus victrix</i> over Open Hummock Grassland of <i>Triodia pungens</i> and <i>Triodia longiceps</i> on levees and channel islands of major drainage lines with brown sandy loam
Hummock Grassland of <i>Triodia sp. Shovelanna Hill</i> (S. van Leeuwen 3835), <i>Triodia wiseana</i> and <i>Triodia pungens</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> over Low Open Shrubland of <i>Acacia hilliana</i> and <i>Acacia adoxa</i> var. <i>adoxo</i> on red brown sandy loam on hill slopes	Open Heath of <i>Acacia adsurgens</i> , <i>Androcalva luteiflora</i> and <i>Dodonaea pachyneura</i> over Open Hummock Grassland of <i>Triodia pungens</i> with Low Open Woodland of <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> on brown loamy sand on minor drainage lines	Woodland of <i>Eucalyptus victrix</i> , <i>Acacia citrinoviridis</i> and <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> over Low Open Shrubland of <i>Tephrosia rosea</i> var. <i>clementii</i> , <i>Corchorus crozophorifolius</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> over Very Open Tussock Grassland of <i>*Cenchrus ciliaris</i> , <i>Eulalia aurea</i> and <i>Themeda triandra</i> on brown loamy sand on channels of major drainage lines
Hummock Grassland of <i>Triodia wiseana</i> and <i>Triodia angusta</i> with Open Mallee of <i>Eucalyptus socialis</i> subsp. <i>eucentrica</i> and Open Shrubland of <i>Acacia bivenosa</i> , <i>Petalostylis labicheoides</i> and <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> on light brown clay loam on calcrete plains and rises		

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Figure Schedule 2(2) – Location of Conservation Significant Flora (Yandi)

Biodiversity Environmental Management Plan

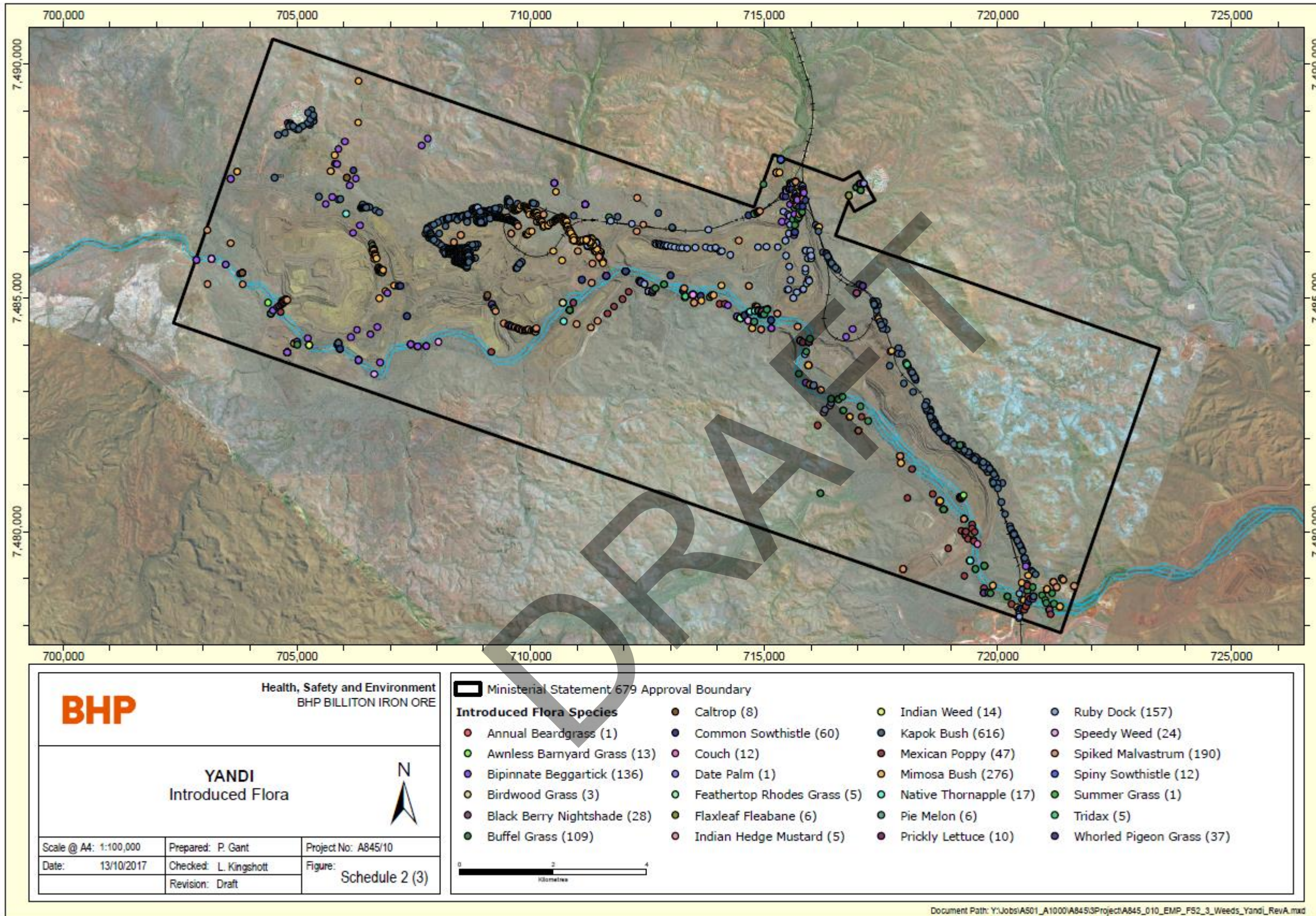


Figure Schedule 2(3) – Location of Weeds (Yandi)

Biodiversity Environmental Management Plan

Schedule 3 – *Eremophila magnifica* subsp. *velutina*

To meet the requirements of Conditions 6-1 (1), 6-2 and 5-2 of Ministerial Statement 1037.

EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	<i>Eremophila magnifica</i> subsp. <i>velutina</i> – Priority 3 flora taxon.		
Objective:	6-1 (1) and 5-2 (1) : Minimise impacts to <i>Eremophila magnifica</i> subsp. <i>velutina</i> .		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Eremophila magnifica</i> subsp. <i>velutina</i> , due to direct loss of habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred.
<p>Avoid</p> <ul style="list-style-type: none"> • Avoid direct impacts (i.e. clearing) to known locations of <i>Eremophila magnifica</i> subsp. <i>velutina</i>, where practicable. <p>Rehabilitate</p> <ul style="list-style-type: none"> • Progressive rehabilitation as described in the Eastern Ridge Mine Closure Plan will be implemented using local top soil, and including the use of <i>Eremophila magnifica</i> subsp. <i>velutina</i> material. • Research and development will be undertaken on the propagation and establishment of <i>Eremophila magnifica</i> subsp. <i>velutina</i> in rehabilitation in the Eastern Pilbara. 	<p>Retention of self-sustaining population(s) of <i>Eremophila magnifica</i> subsp. <i>velutina</i> within the Development Envelope.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p> <p>Rehabilitation monitoring undertaken in accordance with the Mine Closure Plan and BHP Rehabilitation monitoring standard.</p>	<p>Notification of potential non-compliance will be provided to the Director General of the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the Director General of the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the Director General of the DWER within 90 days of the exceedance being reported, and shall include:: <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities

Biodiversity Environmental Management Plan

EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	<i>Eremophila magnifica</i> subsp. <i>velutina</i> – Priority 3 flora taxon.		
Objective:	6-1 (1) and 5-2 (1) : Minimise impacts to <i>Eremophila magnifica</i> subsp. <i>velutina</i> .		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Eremophila magnifica</i> subsp. <i>velutina</i> , due to direct loss of habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred.
			<p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the Director General of the DWER within 7 days of the potential failure to implement being identified 2. a report will be provided to the Director General of the DWER within 21 days of the potential failure to implement being reported, and shall include <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the Director General of the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MS1037 condition 5-2 (5)**), will be to submit a revised schedule to the Director General of the DWER for endorsement. The process for revision of changes to proposal activities required by MS 1037 condition 5-2 (5)), will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.

Biodiversity Environmental Management Plan

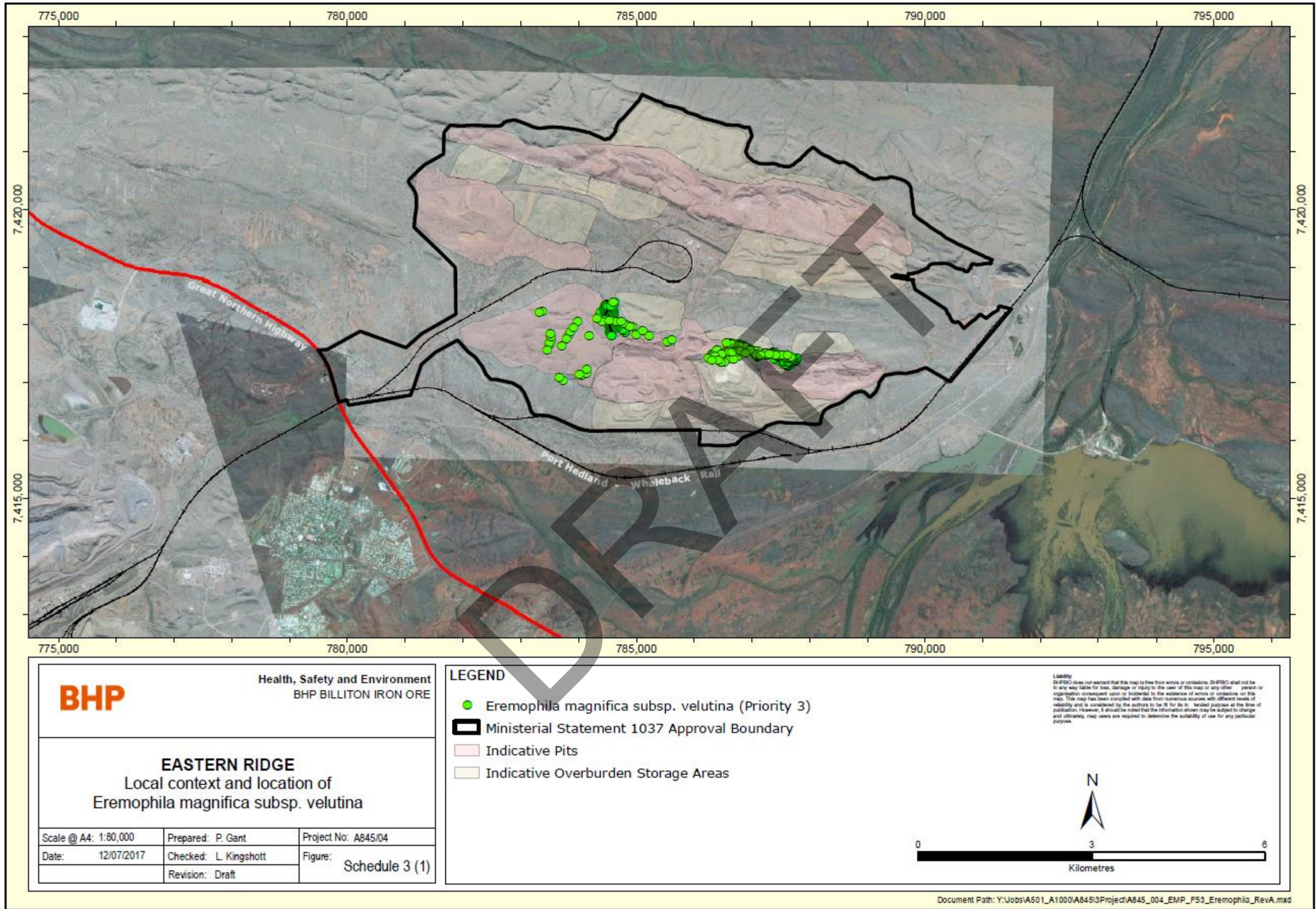


Figure Schedule 3(1) – Local context and location of *Eremophila magnifica* subsp. *velutina*

Biodiversity Environmental Management Plan

Schedule 4 – Riparian vegetation (*Eucalyptus camaldulensis* subsp. *refulgens* and *E. victrix*)

To meet the requirements of Conditions 6-1 (2), 6-2 and 5-2 of Ministerial Statement 1037.

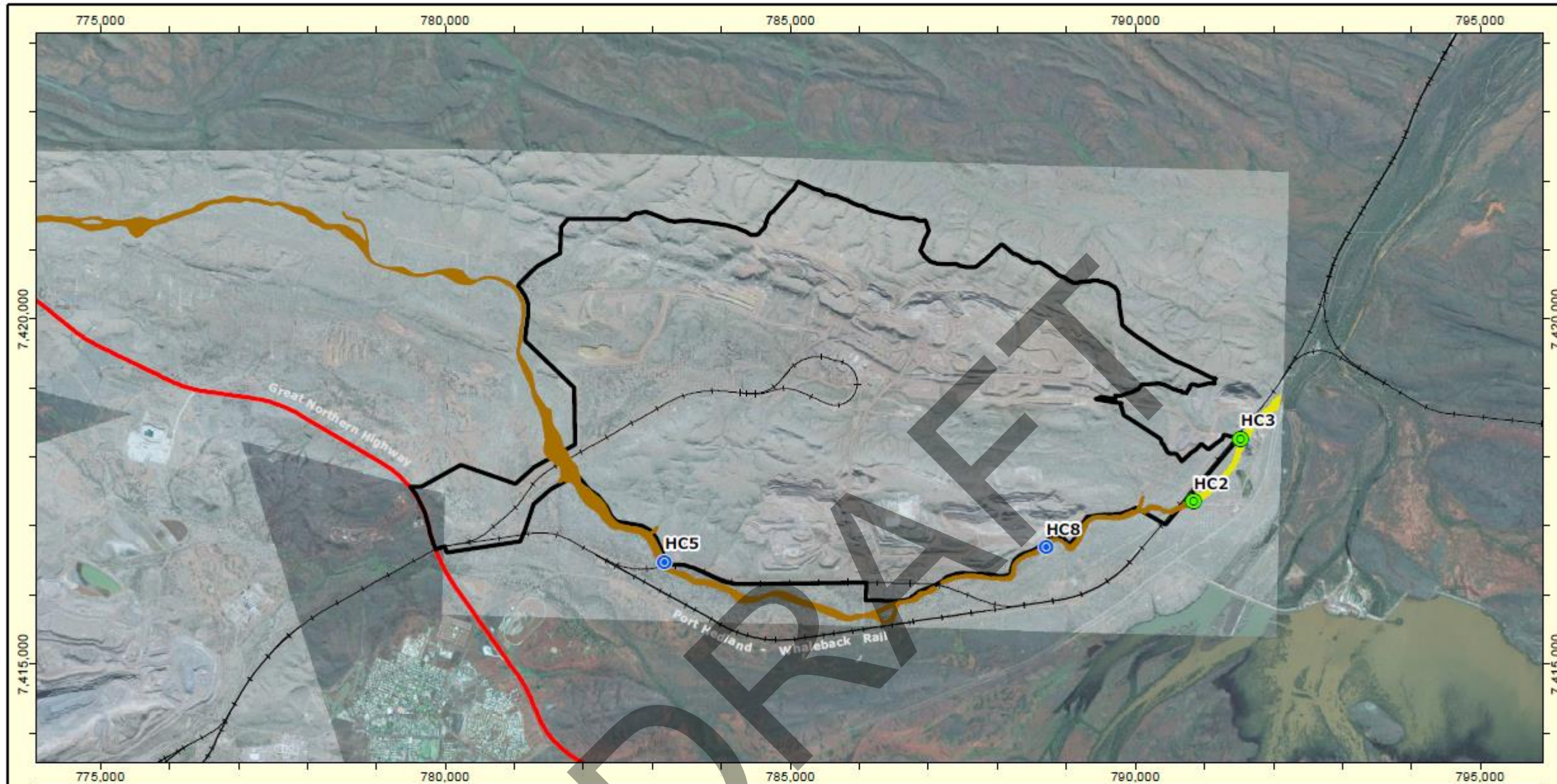
EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	Riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>).		
Objective:	6-1 (2) and 5-2 (1) : Minimise impacts to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>) health.		
Key impacts and risks:	Risk to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>), affecting biological diversity and ecological integrity, due to changes in groundwater levels		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred.
<p>Trigger level actions</p> <ul style="list-style-type: none"> • alter surplus water discharge regime; and/or • alter abstraction regime <p>Threshold level actions</p> <ul style="list-style-type: none"> • alter surplus water discharge regime; and/or • alter abstraction regime 	<p><i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i> at monitoring sites 2 and 3 and reference sites 5 or 6, and 8:</p> <ul style="list-style-type: none"> • Trigger criteria – a vegetation condition score of ≤ 2 across 3 or more or 30%, whichever is lesser, of monitoring (impact) sites during one sample period, unless decline is consistent with regional decline in vegetation (established from comparison with reference sites). 	<p>Frequency: Annual.</p> <p>Parameters: Vegetation health of <i>Eucalyptus victrix</i> and <i>Eucalyptus camaldulensis</i>,</p> <p>Methodology: Qualitative assessment of vegetation health of key indicator species, with vegetation health in each monitoring site allocated a score of 0-5, with 0 comprising 'most plants dead' and 5 comprising 'no evidence of stress'.</p> <p>Error! Reference source not found. Schedule 4 (1) depicts the</p>	<p>Notification of potential non-compliance will be provided to the Director General of the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate a potential exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the Director General of the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the Director General of the DWER within 90 days of the potential exceedance being reported, and shall include: <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities

Biodiversity Environmental Management Plan

EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.		
Values:	Riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>).		
Objective:	6-1 (2) and 5-2 (1) : Minimise impacts to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>) health.		
Key impacts and risks:	Risk to riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>), affecting biological diversity and ecological integrity, due to changes in groundwater levels		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred.
	<ul style="list-style-type: none"> • Threshold criteria – a vegetation condition score of ≤ 2 across 5 or more, or 50%, whichever is lesser, of monitoring (impact) sites during one sample period, unless decline is consistent with regional decline in vegetation (established from comparison with reference sites). 	Riparian Vegetation monitoring sites.	<p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the Director General of the DWER within 7 days of the potential failure to implement being identified 2. a report will be provided to the Director General of the DWER within 21 days of the potential failure to implement being reported, and shall include: <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to Director General of the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MS1037 condition 5-2 (5)**), will be to submit a revised schedule to the Director General of the DWER for endorsement. The process for revision of changes to proposal activities required by MS 1037 condition 5-2 (5)), will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.

Biodiversity Environmental Management Plan



BHP Health, Safety and Environment
BHP BILLITON IRON ORE

EASTERN RIDGE
Riparian Vegetation Monitoring

Scale @ A4: 1:80,000	Prepared: P. Gant	Project No: A845/05
Date: 25/07/2017	Checked: L. Kingshott	Figure: Schedule 4 (1)
	Revision: Draft	

LEGEND

- Ministerial Statement 1037 Approval Boundary
- Riparian Vegetation Monitoring Sites**
- Impact
- Reference
- Homestead Creek Reach Zones**
- Zone 1
- Zone 2

Liability
BHP does not warrant that this map is free from errors or omissions. BHP shall not be in any way liable for loss, damage or injury to the user of this map or any other person or organisation consequent upon or incidental to the existence of errors or omissions on this map. This map has been compiled with data from numerous sources with different levels of reliability and is considered by the authors to be fit for its intended purpose at the time of publication. However, it should be noted that the information shown may be subject to change and ultimately, map users are required to determine the suitability of use for any particular purpose.

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Biodiversity Environmental Management Plan

Schedule 5 – Conservation Significant Fauna

To meet the requirements of Conditions 7-1, 7-2 and 5-2 of Ministerial Statement 1037 and Condition 11-1 of Ministerial Statement 679.

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Values:	Conservation significant fauna taxa, and their habitat, within relevant Development Envelope(s).
Objective:	MS1037 7-1 and 5-2(1) : minimise direct and indirect impacts on conservation significant fauna species, and their habitat. MS679 11-1 : Maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of conservation significant fauna, due to direct loss of habitat.

Management-based provisions

Management Actions	Management Targets	Monitoring	Reporting
<p>MS1037 5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p> <p>MS679 11-1(3) modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance</p> <p>MS679 11-1(4) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(5) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(7) allowance for the staging of mining operations</p>	<p>MS1037 5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions</p>	<p>MS1037 5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring</p> <p>MS679 11-1(6) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified</p>	<p>MS1037 3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>MS1037 3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months ;</p> <p>MS1037 5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (c) verification of the implementation of management actions; and (d) reporting on the effectiveness of management actions against management target/s; <p>MS1037 5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>MS1037 5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1) . The report shall include:</p> <ul style="list-style-type: none"> (e) cause of management targets being exceeded; (f) the findings of the investigation required by conditions 5-4(2); (g) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (h) relevant changes to proposal activities; <p>MS1037 5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>MS1037 5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (e) cause for failure to implement management actions; (f) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (g) relevant changes to proposal activities; and (h) measures to prevent, control or abate the environmental harm which may have occurred. <p>MS679 11-1(8) reporting procedures and schedule.</p>
<p>Minimise</p> <ul style="list-style-type: none"> • Minimise impacts to habitat of conservation significant fauna by implementing the PEHR process prior to land disturbance. • Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. 	<p>No unauthorised disturbance beyond the Development Envelope.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p>	<p>Notification of potential non-compliance will be provided to the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the DWER within 90 days of the exceedance being reported, and shall include: <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities <p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the Director General of the DWER within 7 days of the potential failure to implement being identified

Biodiversity Environmental Management Plan

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.		
Values:	Conservation significant fauna taxa, and their habitat, within relevant Development Envelope(s).		
Objective:	MS1037 7-1 and 5-2(1): minimise direct and indirect impacts on conservation significant fauna species, and their habitat. MS679 11-1: Maintain the abundance, diversity, geographic distribution, conservation status and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of conservation significant fauna, due to direct loss of habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>MS1037 5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p> <p>MS679 11-1(3) modification of land clearing plans and evaluation of alternative mine plans or creek diversion designs, where practicable, to minimise or avoid impacts on identified flora and fauna species, vegetation associations and habitat areas for species of conservation significance</p> <p>MS679 11-1(4) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(5) appropriate demarcation of identified populations and/or individuals of species of conservation significance or habitat areas suitable for fauna species of conservation significance in the vicinity of the disturbance areas</p> <p>MS679 11-1(7) allowance for the staging of mining operations</p>	<p>MS1037 5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions</p>	<p>MS1037 5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring</p> <p>MS679 11-1(6) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on conservation significant species are identified</p>	<p>MS1037 3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>MS1037 3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months ;</p> <p>MS1037 5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (c) verification of the implementation of management actions; and (d) reporting on the effectiveness of management actions against management target/s; <p>MS1037 5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>MS1037 5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1) . The report shall include:</p> <ul style="list-style-type: none"> (e) cause of management targets being exceeded; (f) the findings of the investigation required by conditions 5-4(2); (g) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (h) relevant changes to proposal activities; <p>MS1037 5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>MS1037 5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (e) cause for failure to implement management actions; (f) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (g) relevant changes to proposal activities; and (h) measures to prevent, control or abate the environmental harm which may have occurred. <p>MS679 11-1(8) reporting procedures and schedule.</p>
			<p>2. a report will be provided to the DWER within 21 days of the potential failure to implement being reported, and shall include:</p> <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MS1037 condition 5-2 (5)**), will be to submit a revised schedule to the Director General of the DWER for endorsement. The process for revision of changes to proposal activities required by MS 1037 condition 5-2 (5), will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.
 Note that the requirements of **MS679 11-1 (1), 11-1(2), 12-1(1) and 12-1(3)** are addressed in **Appendix 3 – Rationale and Context**, Figure Schedule 5(2).

Biodiversity Environmental Management Plan

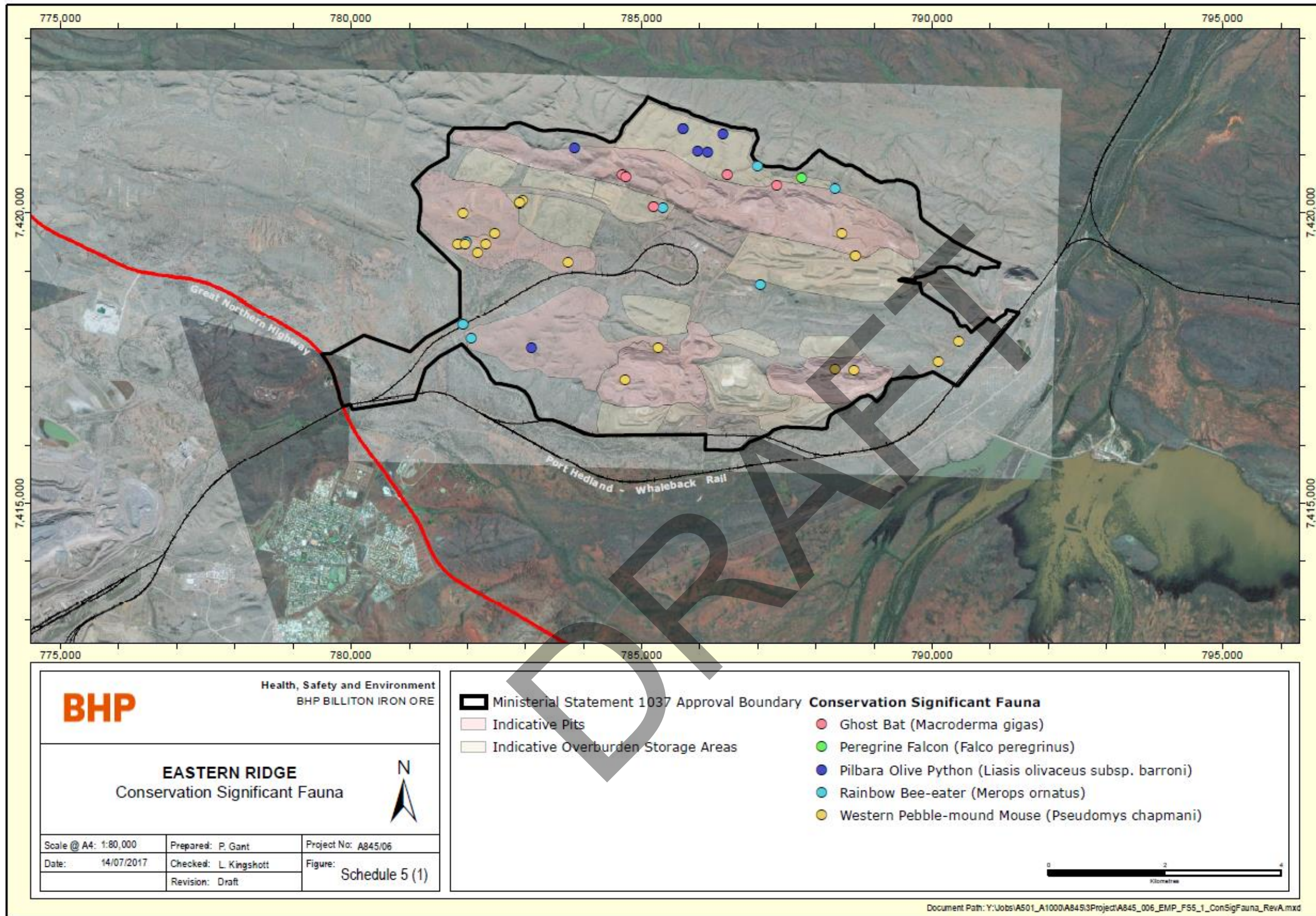


Figure Schedule 5(1) – Conservation Significant Fauna (Eastern Ridge)

Under Development

Figure Schedule 5(2) – Conservation Significant Fauna (Yandi)

DRAFT

Biodiversity Environmental Management Plan

Schedule 6 – Pilbara Olive Python

To meet the requirements of Conditions 7-1, 7-2 and 5-2 of Ministerial Statement 1037.

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Values:	Pilbara Olive Python - listed as <i>Rare or Likely to become Extinct</i> under the <i>Wildlife Conservation Act 1950</i> .
Objective:	7-1 and 5-2(1) : minimise direct and indirect impacts on the Pilbara Olive Python and its habitat.
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of Pilbara Olive Python habitat, due to direct loss of habitat.

Management-based provisions

Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (e) cause for failure to implement management actions; (a) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (b) relevant changes to proposal activities; and (c) measures to prevent, control or abate the environmental harm which may have occurred.
<p>Avoid</p> <ul style="list-style-type: none"> • Avoid direct impacts to the known locations of Pilbara Olive Python habitat (waterholes), through the modification of the Development Envelope, as depicted in Schedule 6 Figure(s). <p>Minimise</p> <ul style="list-style-type: none"> • Minimise impacts to Pilbara Olive Python habitat (waterholes), by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. • Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. 	<p>No unauthorised disturbance beyond the Development Envelope.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p>	<p>Notification of potential non-compliance will be provided to the Director General of the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the Director General of the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the Director General of the DWER within 90 days of the exceedance being reported, and shall include: <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities

Biodiversity Environmental Management Plan

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.		
Values:	Pilbara Olive Python - listed as <i>Rare or Likely to become Extinct</i> under the <i>Wildlife Conservation Act 1950</i> .		
Objective:	7-1 and 5-2(1): minimise direct and indirect impacts on the Pilbara Olive Python and its habitat.		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of Pilbara Olive Python habitat, due to direct loss of habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>5-2 (2) specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in conditions 6-1 and 7-1. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>5-2 (3) specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>5-2 (4) specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>3-6 The proponent shall submit to the CEO a Compliance Assessment Report by 1 October each year addressing compliance in the previous financial year, or as agreed in writing by the CEO. The first Compliance Assessment Report shall be submitted by 1 October 2017 addressing the compliance for the period from the date of issue of this Statement, notwithstanding that the first reporting period may be less than 12 months;</p> <p>5-2 (6) provide the format and timing to demonstrate that condition 5-1 has been met for the reporting period in the Compliance Assessment Report required by condition 3-6 including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>5-4 (1) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>5-4 (3) In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition 5-4(1). The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions 5-4(2); (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities; <p>5-5 (1) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification; and</p> <p>5-5 (4) In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall provide a report to the CEO within 21 days of the reporting required by condition 5-5(1). The report shall include:</p> <ul style="list-style-type: none"> (e) cause for failure to implement management actions; (a) the findings of the investigation required by conditions 5-5(2) and 5-5(3); (b) relevant changes to proposal activities; and (c) measures to prevent, control or abate the environmental harm which may have occurred.
			<p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the Director General of the DWER within 7 days of the potential failure to implement being identified 2. provide a report to the Director General of the DWER within 21 days of the potential failure to implement being reported, and shall include: <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the Director General of the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MS1037 condition 5-2 (5)**), will be to submit a revised schedule to the Director General of the DWER for endorsement. The process for revision of changes to proposal activities required by MS 1037 condition 5-2 (5)), will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.

Biodiversity Environmental Management Plan

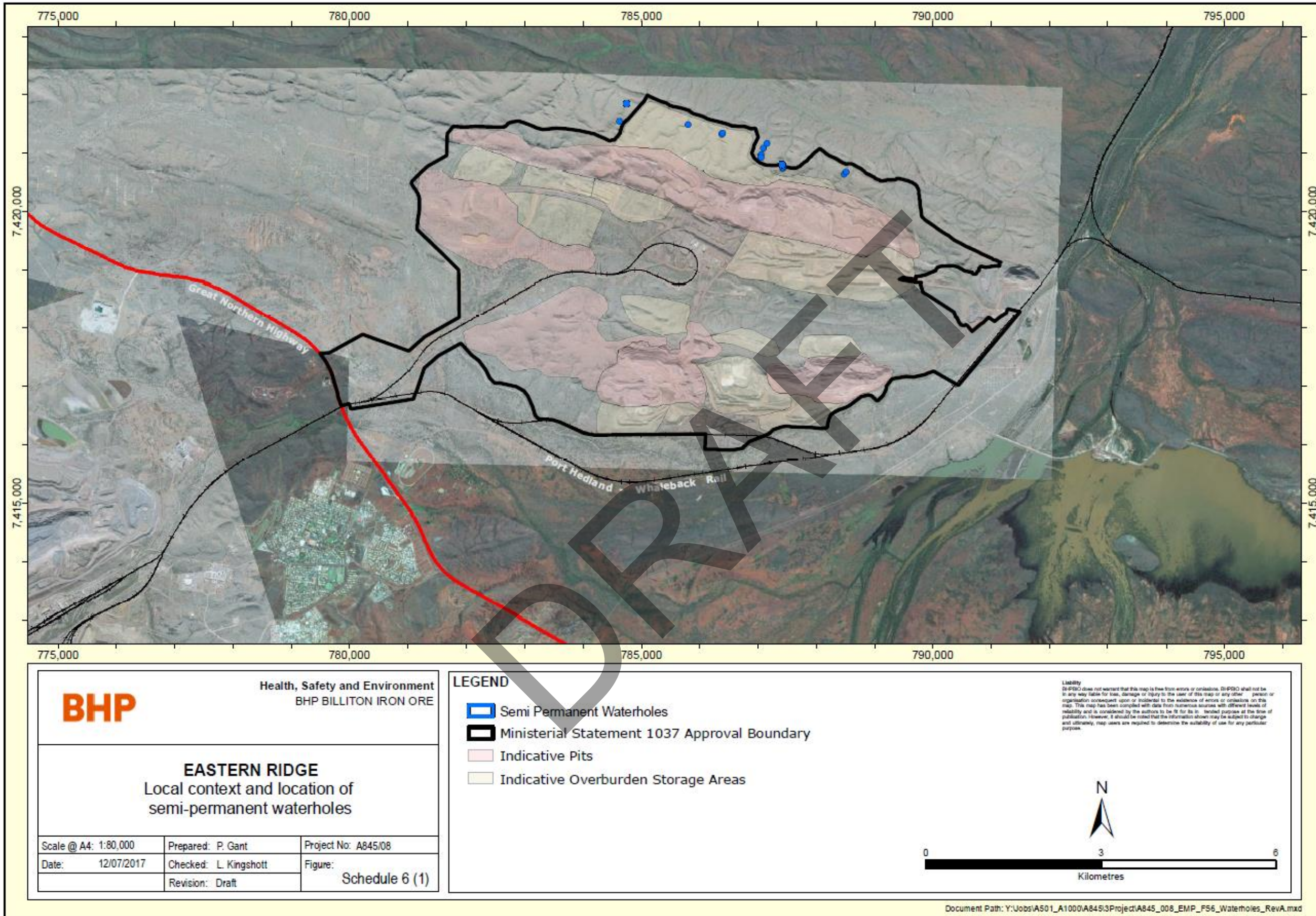


Figure Schedule 6(1) – Local context and location of Pilbara Olive Python habitat (semi-permanent waterholes)

Biodiversity Environmental Management Plan

Schedule 7 – Ghost bats (*Macroderma gigas*)

To meet the requirements of Condition(s) X Ministerial Statement X.

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Values:	Ghost bat (<i>Macroderma gigas</i>) - listed as <i>Vulnerable</i> under the <i>Wildlife Conservation Act 1950</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i>
Objective:	X: avoid, where possible, and minimise impacts as far as practicable to conservation significant fauna <i>Macroderma gigas</i> and its habitat.
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Macroderma gigas</i> and its habitat, due to direct loss of habitat (roosts) and indirect impacts due to loss of foraging habitat.

Management-based provisions

Management Actions	Management Targets	Monitoring	Reporting
<p>X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>X specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>The Compliance Assessment Report shall:</p> <ol style="list-style-type: none"> (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition X <p>X provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to:</p> <ol style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition X. The report shall include:</p> <ol style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions X; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities <p>X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification;</p>
<p>Avoid</p> <ul style="list-style-type: none"> • Avoid direct impacts to ghost bat cave buffer zones (depicted in Figure Schedule 7(1)), by implementing the PEHR process prior to land disturbance. <p>Minimise</p> <ul style="list-style-type: none"> • Minimise impacts to all known ghost bat cave locations (depicted in Figure Schedule 7(1)) and foraging habitat, by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. <p>Rehabilitation</p> <ul style="list-style-type: none"> • Progressive rehabilitation within foraging range will be undertaken using <i>Eucalyptus leucophloia</i> or other large tree species (<2 km from ghost bat caves). 	<p>No unauthorised disturbance beyond the Development Envelope or within ghost bat cave buffer zones (depicted in Figure Schedule 7(1)).</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p> <p>Rehabilitation monitoring undertaken in accordance with the Mine Closure Plan and BHP Rehabilitation monitoring standard.</p>	<p>Notification of potential non-compliance will be provided to the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the DWER within 90 days of the exceedance being reported, and shall include: <ol style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities <p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the DWER within 7 days of the potential failure to implement being identified

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EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.		
Values:	Ghost bat (<i>Macroderma gigas</i>) - listed as <i>Vulnerable</i> under the <i>Wildlife Conservation Act 1950</i> and the <i>Environment Protection and Biodiversity Conservation Act 1999</i>		
Objective:	X: avoid, where possible, and minimise impacts as far as practicable to conservation significant fauna <i>Macroderma gigas</i> and its habitat.		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Macroderma gigas</i> and its habitat, due to direct loss of habitat (roosts) and indirect impacts due to loss of foraging habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>X specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>The Compliance Assessment Report shall:</p> <ol style="list-style-type: none"> (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition X <p>X provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to:</p> <ol style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition X. The report shall include:</p> <ol style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions X; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities <p>X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification;</p>
			<p>2. provide a report to the DWER within 21 days of the potential failure to implement being reported, and shall include:</p> <ol style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ol style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MSX condition X**), will be to submit a revised schedule to the DWER for endorsement. The process for revision of changes to proposal activities required by **MSX condition X**, will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.

Biodiversity Environmental Management Plan

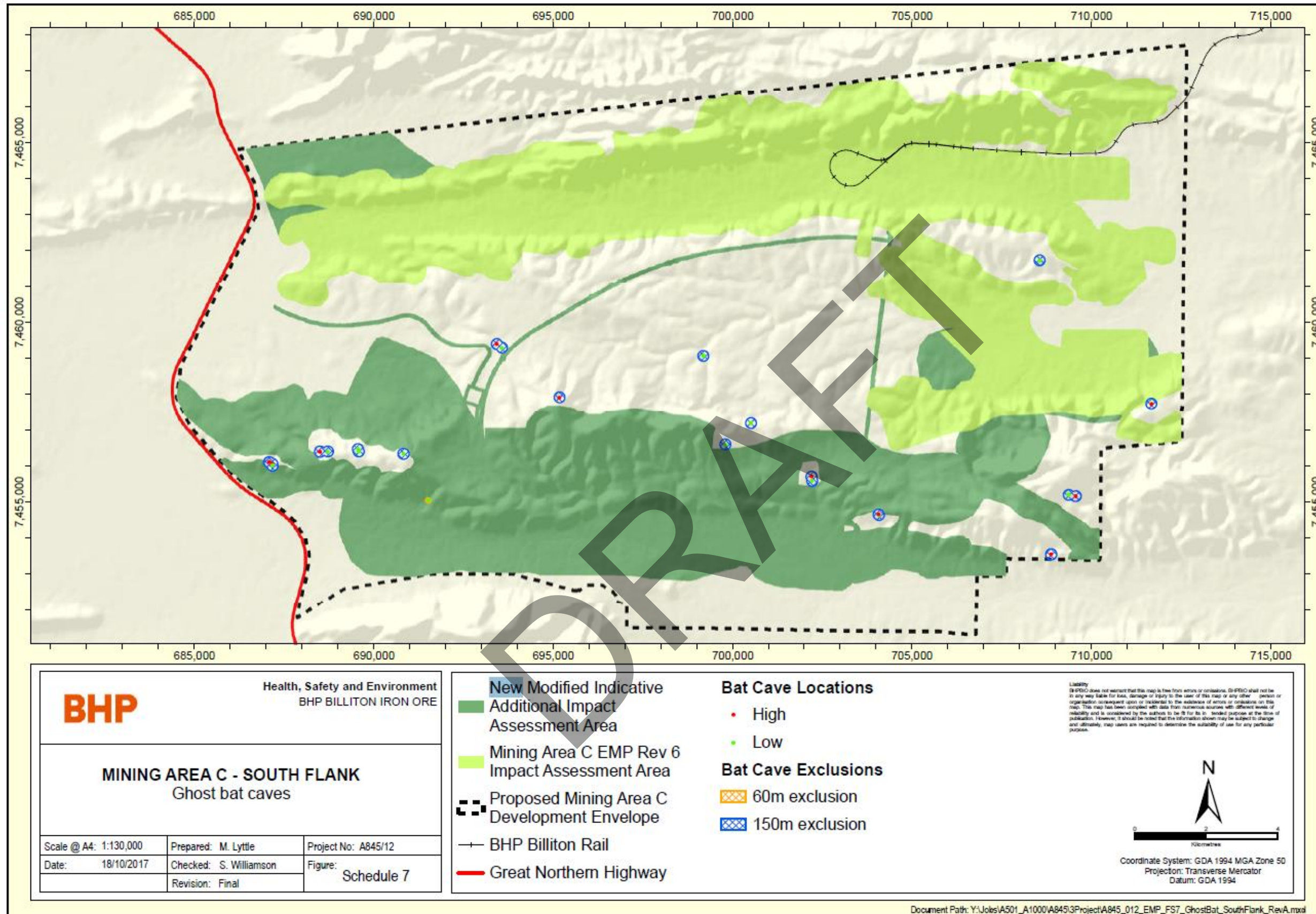


Figure Schedule 7(1) – Local context and location of Ghost bat (*Macroderma gigas*) habitat and associated buffer zones.

Biodiversity Environmental Management Plan

Schedule 8 – Short Range Endemic species

To meet the requirements of Condition(s) X Ministerial Statement X.

EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Values:	Habitats for short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007'
Objective:	X: minimise impacts as far as practicable to the habitats of short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007'
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007' due to direct loss of habitat.

Management-based provisions

Management Actions	Management Targets	Monitoring	Reporting
<p>X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>X specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>The Compliance Assessment Report shall:</p> <ol style="list-style-type: none"> (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition X <p>X provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to:</p> <ol style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition X. The report shall include:</p> <ol style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions X; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities <p>X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification;</p>
<p>Minimise</p> <ul style="list-style-type: none"> • Minimise impacts to <i>Antichiropus</i> 'DIP007' habitat (<i>Corymbia hamersleyana</i>), by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. Captive breeding and reintroduction where appropriate and approved by DBCA following rehabilitation. • Minimise impacts to <i>Antichiropus</i> 'DIP006' inferred habitat, by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. <p>Rehabilitation</p> <ul style="list-style-type: none"> • Progressive rehabilitation as described in the Mine Closure Plan will be implemented using local top soil, and include the use of <i>Corymbia hamersleyana</i> material in habitat suitable to support <i>Antichiropus</i> 'DIP007'. 	<p>No unauthorised disturbance beyond the Development Envelope.</p> <p>Re-establishment of <i>Corymbia hamersleyana</i> mallee in rehabilitation of infrastructure areas (ROM pads, haul roads, conveyors, processing plants) to a density similar to pre-mining communities.</p>	<p>Annual land disturbance reconciliation (hectares and spatial footprint).</p> <p>Rehabilitation monitoring undertaken in accordance with the Mine Closure Plan and BHP Rehabilitation monitoring standard.</p>	<p>Notification of potential non-compliance will be provided to the DWER within 7 days of that potential non-compliance being known.</p> <p>In the event that monitoring, tests, surveys or investigations indicate exceedance of management target(s):</p> <ol style="list-style-type: none"> 1. the potential exceedance will be reported in writing to the DWER within 21 days of the potential exceedance being identified 2. a report will be provided to the DWER within 90 days of the exceedance being reported, and shall include: <ol style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of potential exceedance investigation; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target(s); and (d) relevant changes to proposal activities

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EPA Factor and objective:	Terrestrial fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.		
Values:	Habitats for short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007'		
Objective:	X: minimise impacts as far as practicable to the habitats of short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007'		
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007' due to direct loss of habitat.		
Management-based provisions			
Management Actions	Management Targets	Monitoring	Reporting
<p>X specify risk-based management actions that will be implemented to demonstrate compliance with the environmental objectives specified in condition(s) X. Failure to implement one or more of the management actions represents non-compliance with these conditions</p>	<p>X specify measurable management targets to determine the effectiveness of the risk-based management actions;</p>	<p>X specify monitoring to measure the effectiveness of management actions against management targets, including but not limited to, parameters to be measured, baseline data, monitoring locations, and frequency and timing of monitoring;</p>	<p>X The proponent shall advise the CEO of any potential non-compliance within seven (7) days of a potential non-compliance being known;</p> <p>X The proponent shall submit to the CEO the first Compliance Assessment Report on 1 October following the date of issue of this Statement and then subsequent Compliance Assessment Reports on 1 October thereafter or as otherwise agreed in writing by the CEO.</p> <p>The Compliance Assessment Report shall:</p> <ul style="list-style-type: none"> (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf; (2) include a statement as to whether the proponent has complied with the conditions; (3) identify all potential non-compliances and describe corrective and preventative actions taken; (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and (5) indicate any proposed changes to the Compliance Assessment Plan required by condition X <p>X provide the format and timing to demonstrate that condition X has been met for the reporting period in the Compliance Assessment Report required by condition X including, but not limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s; <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall report the exceedance in writing to the CEO within 21 days of the exceedance being identified;</p> <p>X In the event that monitoring, tests, surveys or investigations indicate exceedance of management target/s specified in the Condition Environmental Management Plan/s, the proponent shall provide a report to the CEO within 90 days of the exceedance being reported as required by condition X. The report shall include:</p> <ul style="list-style-type: none"> (a) cause of management targets being exceeded; (b) the findings of the investigation required by conditions X; (c) details of revised and/or additional management actions to be implemented to prevent exceedance of the management target/s; and (d) relevant changes to proposal activities <p>X In the event that monitoring, tests, surveys or investigations indicate that one or more management actions specified in the Condition Environmental Management Plan have not been implemented, the proponent shall report the failure to implement management action/s in writing to the CEO within 7 days of identification;</p>
			<p>In the event that monitoring, tests, surveys or investigations indicate that one or more management actions have not been implemented:</p> <ol style="list-style-type: none"> 1. the potential failure to implement will be reported in writing to the DWER within 7 days of the potential failure to implement being identified 2. provide a report to the DWER within 21 days of the potential failure to implement being reported, and shall include: <ul style="list-style-type: none"> (a) cause for failure to implement management actions; (b) the findings of potential non-compliance investigation; (c) relevant changes to proposal activities; and (d) measures to prevent, control or abate the environmental harm which may have occurred <p>An annual compliance assessment report will be submitted as part of the Annual Environment Report, which will be submitted to the DWER by 1 October each year. The compliance assessment report will include, but not be limited to:</p> <ul style="list-style-type: none"> (a) verification of the implementation of management actions; and (b) reporting on the effectiveness of management actions against management target/s

Note that the process for revision of management actions (required by **MSX condition X**), will be to submit a revised schedule to the DWER for endorsement. The process for revision of changes to proposal activities required by **MSX condition X**, will be as per the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2016) (or subsequent version), e.g. via a Section 45C.

Under Development (see Figure 29 of PER for Antichiropus DIP 007 habitat)

Figure Schedule 8(1) – Local context and location of *Antichiropus* 'DIP007' habitat (*Corymbia hamersleyana*) and *Antichiropus* 'DIP006' inferred habitat.

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Appendices

Appendix 1 – Proposal/Operation Summaries

Ministerial Statement	Operation	Operation/Proposal Description
No. 1021	Orebody 31	<p>Orebody 31 is located approximately 40 km east of Newman Township and approximately 8 km east of the existing Orebody 18 Mine Hub in the Pilbara region of WA.</p> <p>Orebody 31 was identified as the preferred option to replace ore sources from the Orebody 18 deposit which are expected to be depleted by 2019 and involves conventional open pit iron ore mining of the mineralised Brockman Iron Formation.</p> <p>The approval includes the construction of an overland heavy vehicle haul road (short term) and an overland conveyor (long term) from Orebody 31 to existing operations at the Orebody 18 Mine Hub or the Wheelarra Hill (Jimblebar) Mine Hub as well as the construction of associated mine infrastructure (overburden storage areas, offices, workshops, roads, dewatering infrastructure, ore and topsoil stockpiles and associated facilities). The operation will utilise existing ore handling facilities, including primary crusher, stockpiles and train load out facilities.</p> <p>For the base scenario (15 Mtpa), ore will be transported via road or an overland conveyor to existing ore handling facilities at the Orebody 18 Mine Hub, then railed to the Mount Whaleback Mine, where it will be blended with the ore produced by the Newman Joint Venture. Under the growth scenario (30 Mtpa), some of the additional 15 Mt of ore will be transported to the existing ore handling facilities at the Orebody 18 Mine Hub and some may be transported to the Wheelarra Hill (Jimblebar) Mine Hub, either via road or an overland conveyor in future. Ore from either or both the Orebody 18 Mine Hub and Jimblebar Mine Hub will be railed to the Mount Whaleback Mine Hub and blended with ore produced by the Newman Joint Venture prior to being transported via rail to Port Hedland.</p> <p>The bulk of this orebody lies below the water table (estimated 70%) and will require in-pit and ex-pit mine dewatering in advance to facilitate dry mining conditions.</p>
No. 1037	Eastern Ridge	<p>The Eastern Ridge Revised Proposal comprises previously existing approved mining operations at Orebody 24 (previously administered under Ministerial Statement 834), Orebody 25 (previously administered under Ministerial Statement 712) and Orebody 32 (previously administered under Ministerial Statement 1018) and a new satellite iron ore deposit at Orebody 25 West.</p> <p>The operation is located approximately three kilometres (km) north-east of Newman within Mineral Lease 244SA.</p> <p>Mining will be undertaken above the water table at Orebody 32 and below the water table at Orebody 24, Orebody 25 and Orebody 25 West. Additional areas of disturbance to those previously approved include minor areas of the Development Envelope, a new satellite Orebody 25 (West), additional parts of Orebody 24 and Orebody 32 open pits and additional overburden storage areas. The construction of associated mine infrastructure will be located anywhere within the Development Envelope. Mining operations will utilise conventional drill and blast techniques for open pit mining. Extracted ore will be crushed at ore handling plants and transported via rail to either Newman Hub or directly to Port Hedland, based on business requirements.</p>
No. 679	Yandi	<p>Yandi (Marillana Creek) is located approximately 90 kilometres (km) north-west of Newman Township in the Pilbara region of Western Australia (WA).</p> <p>The Yandi Mine ore body is a near surface Chanel Iron Deposit (CID) which, for mine planning purposes, has been sub-divided into a series of mine areas. These mine areas are known as the C1 to C5, E1 to E8 and W1 to W6 areas (Figure 2-1). Open pit mining at Yandi Mine commenced in 1991. Ore is mined using conventional mining methods before being transported by rail to Port Hedland for export.</p> <p>Mining is approved below water table and requires the diversion of the Marillana Creek from a number of deposits. Diversion activities operate under a separate Diversion Management Plan.</p>
No. X	Mining Area C (Southern Flank)	<p>The Proposal area is located in the Pilbara region of Western Australia and is located approximately 100 km northwest of the Newman township in the Pilbara region of Western Australia. The Southern Flank ore body is positioned approximately 8 km south of BHP's Mining Area C Development Envelope.</p> <p>The Proposal area is located primarily on Mineral Lease ML281SA and therefore also subject to the same State Agreement legislation as the current mining operations at Mining Area C.</p> <p>BHP proposes to extract approximately 80 million tonnes per annum (Mtpa) of iron ore from the Southern Flank orebody, or a total of approximately 150 Mtpa from the Mining Area C operation. The Proposal predominately comprises above water table mining through conventional open-cut mining methods, however will involve extraction of groundwater in advance of mining to allow campaign mining of iron ore and overburden below the groundwater table.</p>

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Appendix 2 – Stakeholder Consultation

Version	Stakeholder	Date of Consultation	Description of Consultation	Topics / Issues Raised	BHP Response
1.0	DPaW (now DBCA)	29 November 2016	Biodiversity Environmental Management Plan was submitted to the former DPaW for endorsement (Sandra Thomas and Murray Baker)	<p>On 19 December 2016, the former DPaW requested additional information regarding specific aspects of the plan (trigger criteria, photographic monitoring, management actions, adaptive management and review).</p> <p>On 9 January 2017, the former DPaW confirmed that the plan has been developed in consultation with Parks and Wildlife and that the information and approach is adequate for monitoring and managing potential impacts on the Priority 1 <i>Acacia</i> sp. East Fortescue</p>	On 29 December 2016, BHP responded providing the requested additional information.
1.0 2.0	OEPA (now DWER)	23 March 2017 and 26 May 2017	Meeting with officers of the former OEPA (Anthony Sutton, Sally Bowman, Tanya Liaghati, Chris Stanley)	<p>Alignment of the Biodiversity Environmental Management Plan to the recently released EPA <i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA, 2016) template.</p> <p>The former OEPA also suggested an asset-based approach to Schedules, rather than a Ministerial Statement based approach.</p>	BHP revised the Biodiversity Environmental Management Plan in consideration of the former OEPA comments.
5.0	DBCA	4 October 2017	Meeting with Stephen Van Leeuwen (Assistant Director, Science & Conservation Division)	Meeting was held with DBCA and BHP's fauna consultants to discuss proposed research work to be undertaken between 2017 and 2018. The purpose of this research work is to further understand the population genetics of ghost bats at Southern Flank and surrounds and to determine key areas of foraging habitat. The DBCA confirmed that the approach is suitable for the key aims. DBCA is providing the genetics services for the project.	BHP is developing a research proposal for ghost bats for review and endorsement by DBCA.

Note that the above stakeholder consultation is in addition to that conducted as part of the Environmental Referral process, which is described in relevant submission documentation.

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Appendix 3 – Rationale and Context

Schedule	Value	Surveys and Studies	Survey and Study Findings	Key assumptions and uncertainties	Rationale for choice of provisions
Schedule 1	<i>Acacia</i> sp. East Fortescue	<p>Onshore Environmental (2014a) <i>OB 31 Second Season Level 2 Flora and Vegetation Assessment</i>.</p> <p>Onshore Environmental (2014b) <i>OB 31 / Wheelarra Hill North Targeted Flora Survey</i>.</p> <p>Onshore Environmental (2015b) <i>Orebody 31 Flora and Vegetation Environmental Impact Assessment</i>.</p> <p>Onshore Environmental (2015c) <i>Targeted Flora Survey Acacia sp. East Fortescue</i>.</p>	<p><i>Acacia</i> sp. East Fortescue is a new taxon recorded as 567 plants from three populations occurring across approximately 8.1 ha situated along the north-west boundary of BHP's Orebody 31 tenement. Populations ranged from 0.6 ha to 5.5 ha in area and supported between 105 plants and 348 plants.</p> <p>Plants were concentrated along breakaway slopes of relatively low undulating hills (518 m and 555 m AHD) where overhangs and small caves were characteristic of the landform. The population typically extended onto lower hill slopes and into minor drainage lines dissecting the low hills.</p> <p>The three known populations of <i>Acacia</i> sp. East Fortescue occur along a fault line at the intersection of two geological formations within the Hamersley Group BIFs; Boolgeeda Iron Formation and Woongarra Rhyolite. Plants were growing in areas where the Boolgeeda Iron Formation had been heavily weathered, exposing the underlying Woongarra Rhyolite at surface.</p>	<p>An intensive targeted survey covering 65 km² surrounding the three known populations of <i>Acacia</i> sp. East Fortescue at Orebody 31 failed to record any additional plants. Geological and landform modelling identified broad regional targets that were difficult to access by vehicle and on foot. Areas that could be accessed as part of targeted searches completed during 2015 did not record any additional populations of <i>Acacia</i> sp. East Fortescue. It is noted that there were significant limitations that restricted access during the regional targeted surveys. There are additional targets situated further east and south-east that are also of interest but cannot be safely accessed.</p>	<p>The key impact to <i>Acacia</i> sp. East Fortescue is clearing and increased levels of airborne dust reducing leaf transpiration. Therefore provisions have been added to:</p> <ul style="list-style-type: none"> Avoid direct impacts to <i>Acacia</i> sp. East Fortescue, through the modification of the Development Envelope and implementation of PEHR process. Response actions to be implemented in the event that trigger/threshold criteria are exceeded include, but are not limited to: <ul style="list-style-type: none"> Implement additional dust control practices during operations in the vicinity of 'impact populations'; Alter waste material disposal practices to reduce dust generation; and Accelerate progressive rehabilitation of northern side of OSA adjacent to 'impact populations'.
Schedule 2	Conservation Significant Flora (Eastern Ridge)	<p>BHP Environment Department (2000) <i>Orebody 25 Priority Flora Species Survey</i>.</p> <p>Biota Environmental Sciences (2001) <i>Baseline Biological and Soil Surveys and Mapping for ML244SA West of the Fortescue River</i>.</p> <p>Ecologia Environment (1995) <i>Orebody 25 Biological Assessment Survey</i>.</p> <p>Ecologia Environment (2004) <i>OB24 Expansion Biological Survey</i>.</p> <p>ENV Australia (2006) <i>OB24 Flora and Fauna Assessment Phase II</i>.</p> <p>ENV Australia (2009) <i>Orebody 25 to Newman Flora and Vegetation Assessment</i>.</p> <p>ENV Australia (2012) <i>Eastern Ridge (OB23/24/25) Flora and Vegetation Report</i>.</p> <p>GHD (2008) <i>Report for Myopic Project Area, Newman Flora and Fauna Assessment</i>.</p> <p>Onshore Environmental (2015a) <i>Eastern Ridge Flora and Vegetation Environmental Impact Assessment</i>.</p> <p>Onshore Environmental (2012) <i>OB25 Targeted Significant Flora Survey and Vegetation Mapping of Homestead Creek</i>.</p> <p>Onshore Environmental (2013) <i>Targeted Flora and Vegetation Survey Orebody 24</i>.</p>	<p>No plant taxon gazetted as Threatened Flora (T) pursuant to subsection (2) of Section 23F of the <i>Wildlife Conservation Act 1950</i> (WC Act) or listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) has been recorded within the Development Envelope.</p> <p>Four Priority flora taxa have been recorded within the Development Envelope:</p> <ul style="list-style-type: none"> <i>Isotropis parviflora</i> – Priority 2; <i>Calotis latiuscula</i> – Priority 3; <i>Eremophila magnifica</i> subsp. <i>velutina</i> – Priority 3; and <i>Goodenia nuda</i> – Priority 4. <p><i>Isotropis parviflora</i> was recorded from a single location in 2004. Further surveys in suitable environmental conditions have failed to relocate this population. As it is a short-lived colonising species, it is considered likely that the population has been replaced by maturing vegetation cover (Onshore, 2015).</p> <p>Locations of the <i>Goodenia nuda</i> were cleared during development of infrastructure during 2007. <i>Calotis latiuscula</i> was recorded from one location in 2011 in disturbed vegetation adjacent to the Eastern Ridge access road.</p>	<p>With the exception of <i>Eremophila magnifica</i> subsp. <i>velutina</i>, which is addressed under Schedule 3, it is considered unlikely that any of the Priority flora previously recorded in the Development Envelope are currently present: <i>Isotropis parviflora</i> has not been recorded in subsequent surveys, despite specific efforts to locate it; <i>Goodenia nuda</i> is documented to have been removed during construction works in 2007; and <i>Calotis latiuscula</i> occurs adjacent to a main access road in an area highly disturbed by weeds.</p> <p>Five weed species (<i>Bidens bipinnata</i>, <i>Cenchrus ciliaris</i>, <i>Echinochloa colona</i>, <i>Malvastrum americanum</i> and <i>Rumex vesicarius</i>) have been recorded within the vicinity of the <i>Calotis latiuscula</i> record. None of these species are Declared Weeds, and buffel grass (<i>Cenchrus ciliaris</i>) presence is promoted by pastoralists in the Pilbara.</p>	<p>The key impact to Priority flora species in the Pilbara are land clearing and degradation of habitats by weeds.</p> <p>Therefore provisions have been added to:</p> <ul style="list-style-type: none"> Minimise impacts to conservation significant flora, by implementing the PEHR process prior to land disturbance. Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. Conduct weed hygiene inspections on ground-engaging equipment prior to arriving at site. Implement weed management controls specific to the target species as required.
	Conservation Significant Flora (Yandi)	<p>Dames and Moore (1991) <i>Yandi Baseline Vegetation Survey Marillana Creek – Part 1, Precommissioning of Yandicoogina Iron Ore Mine</i>;</p>	<p>One plant taxon (<i>Lepidium catapycnon</i>) listed as Vulnerable under the <i>Environment Protection and Biodiversity Conservation Act (1999)</i> was recorded within the Development Envelope (four individuals). This species is currently listed as a Priority 4 taxon.</p>	<p>All areas within the Development Envelope are accessible by vehicle and/or foot, with the exception of an ethnographic exclusion zone within the north-east of the Development Envelope. The development of vegetation mapping was facilitated by high resolution aerial photography; however extrapolation of vegetation mapping was undertaken over the exclusion area.</p>	<p>The key impact to Priority flora species in the Pilbara are land clearing and degradation of habitats by weeds.</p> <p>Therefore provisions have been added to:</p>

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Schedule	Value	Surveys and Studies	Survey and Study Findings	Key assumptions and uncertainties	Rationale for choice of provisions
		<p>AGC Woodward Clyde (1995) <i>Marillana and Weeli Wolli Creeks and Paleochannel Vegetation and Flora Survey</i>;</p> <p>Ecologia Environment (1995) <i>Yandi Stage 2 Iron Ore Project Biological Assessment Survey</i>;</p> <p>Halpern Glick Maunsell (1996) <i>Yandi Stage 2 Iron Ore Project Survey of Flora of Interest</i>;</p> <p>Halpern Glick Maunsell (1997) <i>Marillana Creek Iron Ore Project Survey for Goodenia stellata and Flora of Interest</i>;</p> <p>BSD (1997) <i>A survey of Mexican Poppy (Argemone ochroleuca) at Marillana Creek</i>;</p> <p>Ecologia Environment (1998) <i>Yandi Vegetation and Soil Survey</i>;</p> <p>Halpern Glick Maunsell (1999) <i>Marillana Creek Western Access Corridor Biological Assessment</i>;</p> <p>Halpern Glick Maunsell (1999) <i>Marillana Creek Iron Ore Project Review of Biological Reporting</i>;</p> <p>BHPIO (2000) <i>Yandi Priority Flora Species Survey</i>;</p> <p>Ecologia Environment (2003a) <i>Yandi IOWA Conveyor: Rare and Priority Flora Survey</i>;</p> <p>Ecologia Environment (2003b) <i>Yandi IOWA Conveyor - Amendment to Rare and Priority Flora Survey</i>;</p> <p>Maunsell (2003) <i>Yandi Life of Mine Flora and Fauna</i>;</p> <p>Ecologia Environment (2004) <i>Yandi Stockyard and Overland Conveyor Fauna and Flora Assessment</i>;</p> <p>Ecologia Environment (2007b) <i>Yandi Mine Extension RGP5 EIA Flora Survey Interim Report Post Phase 1 Survey</i>;</p> <p>Ecologia Environment (2008) <i>Two Phase Assessment of the Flora and Vegetation of the Proposed Marillana Creek (Yandi) Mine Extension Areas RGP5 – KBR</i>;</p> <p>ENV Australia (2009a) <i>Western 6, 7, and 8 Flora and Vegetation Assessment</i>;</p> <p>ENV Australia (2009b) <i>Western 2 & Western 1 Waste Dump Flora and Assessment</i>;</p> <p>GHD (2010) <i>Report for Yandi W1 and W4 OSthe A Targeted Rare and Priority Flora Survey</i>;</p> <p>BHP Billiton Iron Ore (2010b) <i>Declared Rare Flora (DRF) and Priority flora search at Yandi - Proposed haul road crossing at Marillana Creek</i>.</p> <p>Astron (2011) <i>Marillana Creek (Yandi) Mine Site Weed Survey and Mapping</i></p>	<p>A total of eight species listed as Priority flora taxa were found to occur within the Development Envelope:</p> <ol style="list-style-type: none"> 1. <i>Aristida lazardis</i> – Priority 2 2. <i>Ipomoea racemigera</i> – Priority 2 3. <i>Isotropis parviflora</i> – Priority 2 4. <i>Acacia subtiliformis</i> – Priority 3 5. <i>Amaranthus centralis</i> – Priority 3 6. <i>Rostellularia adscendens</i> var. <i>latifolia</i> – Priority 3 7. <i>Goodenia nuda</i> – Priority 4 8. <i>Lepidium catapycnon</i> – Priority 4 <p>A total of 24 vegetation associations were identified within the Development Envelope and have been further classified into twelve Broad Floristic Formations on the basis of the dominant vegetation stratum. None of these vegetation associations had any affiliation with Federal or State listed Threatened Ecological Communities (TECs), or State listed Priority Ecological Communities (PECs). Vegetation condition ranged from <i>excellent</i> to <i>degraded</i>, with seventy percent of the study area rated as <i>very good</i>.</p> <p>At least 125 weed species have been recorded within the Pilbara region (CSIRO, 2017), 33 of which have been recorded within the Development Envelope. There are a number of additional weed species that occur in the vicinity of the Development Envelope and therefore may spread into the area in the future. These species include; <i>Alternanthera pungens</i> (khaki weed), <i>Digitaria ciliaris</i> (summer grass) and <i>Polypogon monspeliensis</i> (annual beardgrass)..</p> <p>None of these taxa are listed as Declared Weeds under the <i>Biosecurity and Agriculture Management Act (2007)</i></p> <p>Following the 2017 Yandi Weed Control Program conducted by Astron Environmental Services, no new weed species have been observed / recorded at Yandi.</p>	<p>Seasonality of plant species, including growth and flowering times of annuals and short-lived perennials mean that some species were not evident during the surveys. However given the number of surveys undertaken over at least 20 years it is considered likely that most species have been recorded.</p> <p>During the most recent weed survey conducted by Astron (2011) it was noted that limitations associated with the field visit included incomplete surveys of entire survey areas due to time limitations and access constraints associated with blasting schedules and escort requirements.</p>	<ul style="list-style-type: none"> • Minimise impacts to conservation significant flora, by implementing the PEHR process prior to land disturbance. • Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. • Conduct weed hygiene inspections on ground-engaging equipment prior to arriving at site. • Implement weed management controls specific to the target species as required.
Conservation Significant Flora (Mining)	ENV Australia (2008) Southern Flank Exploration Lease Flora and Vegetation Assessment	<p>Eight Priority flora taxa recorded within the Additional Development Envelope at Southern Flank:</p> <ul style="list-style-type: none"> • <i>Aristida lazardis</i> (P2) 	<p>Twenty flora and vegetation surveys have been undertaken wholly or partially within the Proposed Mining Area C Development Envelope between 1997 and 2011. In total, 782</p>	<p>The key impact to Priority flora species in the Pilbara are land clearing and degradation of habitats by weeds.</p>	

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Schedule	Value	Surveys and Studies	Survey and Study Findings	Key assumptions and uncertainties	Rationale for choice of provisions
	Area C Southern Flank))	Pilbara Flora (2008) Field Survey for Priority and Rare Flora Area C Southern Flank ENV Australia (2010) Southern Flank NVCP Extension Flora, Vegetation and Fauna Survey Onshore Environmental (2011) Flora and vegetation survey – Area C and Surrounds Onshore Environmental (2012) Level 2 Flora and Vegetation Survey South Flank	<ul style="list-style-type: none"> <i>Aristida jerichoensis</i> var. <i>subspinulifera</i> (P3) <i>Rhagodia</i> sp. Hamersley (M. Trudgen 17794) (P3) <i>Rostellularia adscendens</i> var. <i>latifolia</i> (P3) <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P3) <i>Triodia</i> sp. Mt Ella (M.E. Trudgen 12739) (P3) <i>Acacia bromilowiana</i> (P4) <i>Eremophila magnifica</i> subsp. <i>magnifica</i> (P4) <p>All species are known to exist outside the Proposed Mining Area C Development Envelope, and impacts are considered to be low.</p> <p>No Threatened flora species listed under the WC Act or the EPBC Act has been recorded in the Additional Development Envelope or Indicative Additional Impact Assessment Area.</p>	<p>quadrats have been surveyed within the Proposed Mining Area C Development Envelope. All areas within the Proposed Mining Area C Development Envelope that have been surveyed post-2004 have had a minimum of two seasons of survey, using a stratified approach such that all landforms and vegetation associations present have been sampled, and there is adequate geographic coverage. It is also noted that all Level 1 and Level 2 surveys undertaken for BHP Iron Ore in the Pilbara include targeted searches for conservation significant species, and surveys undertaken post 2009 have been undertaken in accordance with BHP Billiton Iron Ore's Flora and Vegetation survey guidelines which were developed in conjunction with DPaW (DBCA) to ensure consistency in approach for all surveys undertaken for the Company.</p> <p>Seasonality of plant species, including growth and flowering times of annuals and short-lived perennials mean that some species were not evident during any one survey; however given the number of surveys undertaken over a 15 year period it is considered likely that most species have been recorded.</p>	<p>Therefore provisions have been added to:</p> <ul style="list-style-type: none"> Minimise impacts to conservation significant flora, by implementing the PEHR process prior to land disturbance. Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable. Conduct weed hygiene inspections on ground-engaging equipment prior to arriving at site. Implement weed management controls specific to the target species as required.
Schedule 3	<i>Eremophila magnifica</i> subsp. <i>velutina</i>	<p>BHP Environment Department (2000) <i>Orebody 25 Priority Flora Species Survey</i>.</p> <p>Biota Environmental Sciences (2001) <i>Baseline Biological and Soil Surveys and Mapping for ML244SA West of the Fortescue River</i>.</p> <p>Ecologia Environment (1995) <i>Orebody 25 Biological Assessment Survey</i>.</p> <p>Ecologia Environment (2004) <i>OB24 Expansion Biological Survey</i>.</p> <p>ENV Australia (2006) <i>OB24 Flora and Fauna Assessment Phase II</i>.</p> <p>ENV Australia (2009) <i>Orebody 25 to Newman Flora and Vegetation Assessment</i>.</p> <p>ENV Australia (2012) <i>Eastern Ridge (OB23/24/25) Flora and Vegetation Report</i>.</p> <p>GHD (2008) <i>Report for Myopic Project Area, Newman Flora and Fauna Assessment</i>.</p> <p>Onshore Environmental (2012) <i>OB25 Targeted Significant Flora Survey and Vegetation Mapping of Homestead Creek</i>.</p> <p>Onshore Environmental (2013) <i>Targeted Flora and Vegetation Survey Orebody 24</i>.</p> <p>Onshore Environmental (2015a) <i>Eastern Ridge Flora and Vegetation Environmental Impact Assessment</i>.</p>	<p><i>Eremophila magnifica</i> subsp. <i>velutina</i> occurs in two sub-populations within the Development Envelope, where it occurs on hill crests, ironstone ridges, breakaway slopes, cliff faces, upper hillslopes, rocky ravines, foot slopes and rocky drainage lines.</p> <p>The western sub-population was recorded at variable densities ranging from one to 100 plants per 10 m². This population covers approximately 174.3 ha, with 130.1 ha of this supporting a high density of plants.</p> <p>The eastern sub-population occurs at low density over an area of approximately 32.4 ha.</p>	<p>Ten flora and vegetation surveys have been undertaken within the Development Envelope between 1995 and 2013. <i>Eremophila magnifica</i> subsp. <i>velutina</i> was initially recorded from one location in 2006 (within the western sub-population), with the extent of the two sub-populations determined during a targeted survey in 2012. Targeted conservation significant flora surveys in the northern section of the Development Envelope in 2013 did not record any further populations. It is considered possible, but unlikely, that additional populations occur within the Development Envelope.</p>	<p>The key impact to <i>Eremophila magnifica</i> subsp. <i>velutina</i> is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Avoid direct impacts (i.e. clearing) to known locations of <i>Eremophila magnifica</i> subsp. <i>velutina</i>, where practicable. Progressive rehabilitation as described in the Eastern Ridge Mine Closure Plan will be implemented using local top soil, and including the use of <i>Eremophila magnifica</i> subsp. <i>velutina</i> material. Research and development will be undertaken on the propagation and establishment of <i>Eremophila magnifica</i> subsp. <i>velutina</i> in rehabilitation in the Eastern Pilbara.
Schedule 4	Riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>)	<p>AQ2 (2015a) <i>Assessment of water sources used by riparian vegetation in Upper Homestead Creek</i></p> <p>AQ2 (2015b) <i>Riparian Vegetation Monitoring Program: Marillana Creek, Jimblebar Creek and Homestead Creek</i></p> <p>Biota Environmental Sciences (2001) <i>Baseline Biological and Soil Surveys and Mapping for ML244SA West of the Fortescue River</i>.</p> <p>Ecologia Environment (1995) <i>Orebody 25 Biological Assessment Survey</i>.</p> <p>Ecologia Environment (2004) <i>OB24 Expansion Biological Survey</i>.</p> <p>ENV Australia (2006) <i>OB24 Flora and Fauna Assessment Phase II</i>.</p>	<p>Vegetation associations occurring within the cumulative drawdown areas along Homestead Creek, support one native tree species that is considered to potentially be at moderate risk from groundwater drawdown (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i>), and a second species that is potentially at low risk from groundwater drawdown (<i>Eucalyptus victrix</i>). These tree species are classified as facultative phreatophytes, noting that <i>Eucalyptus victrix</i> may also function in some environments as a vadophyte.</p> <p><i>Eucalyptus camaldulensis</i> is the most widespread of Australian <i>Eucalyptus</i> species and is known to tolerate a wide range of water regimes. It typically occurs along inland rivers and may be dependent on shallow groundwater for survival, although the root</p>	<p>Assumptions Underpinning the Ecohydrological Water Balance:</p> <p>A steady-state water balance for the riparian system has been estimated, taking into account surface water inputs, vadose-zone and groundwater recharge, and water discharge from both the vadose zone (evapotranspiration) and groundwater (as outflow and potentially evapotranspiration). The groundwater-component of the water balance for Homestead Creek has been complemented with a chloride mass balance assessment.</p> <p>Values for most of the parameters in the water balance are subject to uncertainty. An uncertainty analysis was incorporated which results in several water balance scenarios. The water balance has been developed using a "constrained optimisation model". Key points are:</p>	<p>The key impact riparian vegetation (<i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i>) in the lower reaches is groundwater drawdown therefore provisions have been added to:</p> <ul style="list-style-type: none"> Alter surplus water discharge regime; and/or Alter abstraction regime <p>Annual monitoring program to be nominally scheduled for the end of the dry season.</p>

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		<p>ENV Australia (2009) <i>Orebody 25 to Newman Flora and Vegetation Assessment</i>.</p> <p>ENV Australia (2012) <i>Eastern Ridge (OB23/24/25) Flora and Vegetation Report</i>.</p> <p>GHD (2008) <i>Report for Myopic Project Area, Newman Flora and Fauna Assessment</i>.</p> <p>Onshore Environmental (2012) <i>OB25 Targeted Significant Flora Survey and Vegetation Mapping of Homestead Creek</i>.</p> <p>Onshore Environmental (2015a) <i>Eastern Ridge Flora and Vegetation Environmental Impact Assessment</i>.</p>	<p>system may penetrate up to 21 m below the surface. <i>Eucalyptus victrix</i> is relatively drought tolerant but may be susceptible to decline where groundwater is limited during extended dry periods (Muir Environmental 1995, cited in Onshore Environmental, 2015a).</p> <p>A review of baseline groundwater depth at 2012 confirms <i>in situ</i> groundwater levels are within 25°mbgl at two major receptors surrounding the Eastern Ridge Development Envelope; Homestead Creek (as well as adjacent floodplains and major tributaries), and a section of the Fortescue River (Onshore, 2015a).</p> <p>Studies have occurred over many years and relate to the development of the Ophthalmia Borefield, Ophthalmia Dam and dewatering at OB23 and OB25. Additionally, much operational monitoring has been collected and the resulting monitoring record is substantial, with some bores having long periods of continuous record extending as far back as 1970. The feasibility study for Ophthalmia Dam (Tahal 1980, Dames and Moore 1980, cited in AQ2, 2015b) was a particularly detailed investigation covering both the regional groundwater system and also aspects of the vadose-zone (such as the effect of particle size distribution on infiltration in riparian sediments).</p> <p>An eco-hydrological model has been developed for Homestead Creek, as per below Figure 3 and Figure 4, which divides the creek in to two distinct zones (AQ2, 2015b).</p> <p>Based on the ecohydrological conceptualisation described in this report (AQ2, 2015b), including high level consideration of the water balance, it was concluded that total e in the Upper Homestead Creek study area (Zone 2) is likely to be in equilibrium with surface water inputs. The soil profile consists of a deep unsaturated zone overlying the water table at a depth of 10 to 20 m. The low density of riparian trees is consistent with a water constrained ecosystem, and annual replenishment of vadose-zone storage is likely to be sufficient to provide for annual vegetation water use requirements. Time series measurements of leaf water potential from riparian trees in the Homestead Creek system collected by BHP since 2009 support the conclusion that <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> and <i>E. victrix</i> trees in the Upper Homestead Creek study area (Zone 2) likely to rely on vadosezone water, and are unlikely to have any groundwater dependence (AQ2, 2015b).</p> <p>However, in Zone 1 – lower reaches (Figure 3), it could not be ruled out that changes to the groundwater regime may have some effect on riparian vegetation in the most down-stream part of Homestead Creek (AQ2, 2015b) – hence the establishment of two impact riparian monitoring sites within Zone 1.</p>	<ul style="list-style-type: none"> Relationships between the key fluxes and elements were defined such that the water balance was internally consistent (i.e. water in = water out). For key parameters (surface water input, tree water use, groundwater recharge, understorey evapotranspiration and total water flux), maximum and minimum values were defined reflecting the operating or potential range for each parameter. Scenarios were run to minimise, maximise, or maintain a defined central value for a specific input parameter; while the model determined the resulting optimum value for all other parameters that maintained integrity of the water balance and kept all parameter estimates within their minimum-maximum ranges. For example, one scenario (“GW Max”) was used to simulate as much groundwater recharge as possible (up to the recharge limit) while allowing all other parameters to be determined by the model, varying freely between their minimum and maximum ranges and constrained only by the requirement to maintain the overall balance. This approach allowed identification of the minimum and maximum values for key parameters that maintained overall water-balance integrity. It also allowed identification of the modal value for each parameter (i.e. the value which was most commonly simulated for a particular parameter across multiple scenarios). The statistical distribution and quantified error range of the key parameters are not known. Thus, the scenario assessment simply defines the most commonly occurring value along with a minimum and maximum range. No quantified likelihood of occurrence has been determined. A water balance comprising the modal values for each key parameter has been adopted as the ‘base-case’ (AQ2, 2015b). <p>Tree water use estimation:</p> <p>The findings of several studies (Pfautsch et al. (2011), Pfautsch et al. (2014), RTIO (2011) and Astron (2014), cited in AQ2, 2015b) provided a basis for developing estimates of the annual water use of stands of trees using measurements of stand basal area and sapwood area (m²/hectare). Where this has not been measured, higher level estimates can still be made based on tree density (tree/hectare) and estimations of mean tree size. This approach was used to estimate the plausible range of annual tree water use in riparian vegetation communities in the Eastern Ridge project area.</p> <p>Eastern Ridge project area (approximately 1,800 to 3,300 mature trees in riparian system):</p> <ul style="list-style-type: none"> Base case = 100 mm/year Minimum = 40 mm/year Maximum = 150 mm/year (AQ2, 2015b) <p>Tree Water Sources and Leaf Water Potential - Method of Interpretation</p> <p>Data on leaf water potential collected by Astron (2014a,b,c) have been used to determine likely sources of water used by riparian vegetation in the Eastern Ridge project area.</p> <p>Comparing pre-dawn leaf water potential (ΨPD) with midday leaf water potential (ΨMD), was used to provide an index of rehydration (Ecological Rehydration Index – ERI). Development of the ERI then allowed correlation of water status with other factors such as days since a significant rainfall event or groundwater level change:</p>	

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Schedule	Value	Surveys and Studies	Survey and Study Findings	Key assumptions and uncertainties	Rationale for choice of provisions
				<ul style="list-style-type: none"> Riparian communities that are dependent on groundwater would be expected to show little correlation with rainfall patterns; Riparian communities that are dependent on vadose-zone water would be expected to show less rehydration as the period since rainfall increases (and the vadose-zone dries out). <p>This interpretation is preliminary and based on empirical, time series patterns observed in Pilbara riparian vegetation monitored by BHP in historical riparian vegetation monitoring programs (Astron 2014, cited in AQ2, 2015b). Nevertheless, when combined with time series analysis of rainfall, drought patterns and groundwater levels the interpretation can be used to glean an understanding of likely water sources used by riparian trees (AQ2, 2015b).</p>	
Schedule 5	Conservation Significant Fauna (Eastern Ridge)	<p>Biologic (2013a) <i>Orebody 25 Targeted Vertebrate Fauna Survey</i>.</p> <p>Biologic (2013b) <i>OB 24 Targeted Vertebrate Fauna Survey</i>.</p> <p>Biota Environmental Sciences (2001) <i>Baseline Biological & Soil Surveys and Mapping for ML244SA West of the Fortescue River</i>.</p> <p>Eco Logical (2012) <i>OB 37 Level 1 Vertebrate Fauna Assessment</i>.</p> <p>Ecologia Environment (1996) <i>Jimblebar Rail Spur Biological Assessment Survey</i>.</p> <p>Ecologia Environment (2004) <i>OB 24 Expansion Biological Survey</i>.</p> <p>ENV Australia (2006) <i>OB 24 Flora And Fauna Assessment Phase II</i>.</p> <p>ENV Australia (2011) <i>Eastern Ridge (OB 23/24/25) Fauna Assessment</i>.</p> <p>GHD (2008) <i>Report for Myopic Project Area, Newman Flora and Fauna Assessment</i>.</p> <p>Onshore and Biologic (2009) <i>Biological Survey Myopic Exploration Leases</i>.</p> <p>Outback Ecology (2009) <i>Jimblebar Linear Development Terrestrial Vertebrate Fauna Assessment</i>.</p>	<p>Five conservation significant fauna species have been recorded within the Development Envelope:</p> <ul style="list-style-type: none"> Ghost bat (<i>Macroderma gigas</i>) – WC Act Schedule 3 (Vulnerable); Pilbara olive python (<i>Liasis olivaceus barroni</i>) – WC Act Schedule 3 (Vulnerable); Rainbow bee-eater (<i>Merops ornatus</i>) – WC Act Schedule 5; Peregrine falcon (<i>Falco peregrinus</i>) – WC Act Schedule 7; and Western pebble-mound mouse (<i>Pseudomys chapmani</i>) – Priority 4. <p>High use foraging habitat for the ghost bat species is considered to be waterholes, Gorge/Gully, Major Drainage Line and Minor Drainage Line habitats. One cave recorded in the Development Envelope that is considered to be a feeding roost.</p> <p>The rainbow bee-eater is commonly recorded in the Pilbara. It is a highly mobile species and is not restricted to any particular habitat.</p> <p>The Peregrine falcon has been recorded once in the Development Envelope. All habitats are considered suitable for foraging, with potential nesting habitats occurring in the Gorge/Gully and Major Drainage Line habitats. There are no breeding records within the Development Envelope.</p> <p>The western pebble-mound mouse is commonly recorded in suitable habitats within the Pilbara, which comprise gentle slopes of rocky ranges where the ground is covered with a stony mantle and covered by spinifex (Start, 2008). Within the Development Envelope, suitable habitat occurs within the Hill Crest/Slope and Stony Plain habitats. It has been recorded from at least 16 locations within the Development Envelope.</p> <p>The Pilbara olive python is discussed under Schedule 6.</p>	<p>A number of conservation significant species in the Pilbara are considered to be 'boom or bust' species, or occur only when seasonal conditions are suitable. It is considered possible, therefore, that additional conservation significant species may occur occasionally within the Development Envelope. As there have been 11 vertebrate fauna survey undertaken wholly or partially within the Development Envelope between 1996 and 2013, it is considered very likely that most conservation significant species or their habitats have been recorded, and it is considered very unlikely that there are significant populations of any species that have not yet been recorded within the Development Envelope.</p>	<p>The key impact to conservation significant fauna is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Minimise impacts to habitat of conservation significant fauna by implementing the PEHR process prior to land disturbance. Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable.
	Conservation significant fauna (Yandi)	<p>Ecologia (1995) <i>Yandi Stage II Iron Ore Project – Biological Assessment Survey</i></p> <p>Ecologia (1996) <i>Yandi Stage II Iron Ore Project - Pebble-mound Mouse Site Survey</i></p> <p>Halpern Glick Maunsell (1999) <i>Marillana Creek Western Access Corridor – Biological Assessment</i></p>	<p>Previous studies within the Development Envelope recorded a total of 175 (71) vertebrate species. Eighteen species of conservation significance have been recorded, or may occur within the Development Envelope.</p> <ul style="list-style-type: none"> Northern Quoll (<i>Dasyurus hallucatus</i>) – Endangered (EPBC Act), Schedule 2 (WC Act) 	<p>A number of conservation significant species in the Pilbara are considered to be 'boom or bust' species, or occur only when seasonal conditions are suitable. It is considered possible, therefore, that additional conservation significant species may occur occasionally within the Development Envelope (e.g. the northern quoll is not considered likely to occur, however two individuals have been recorded opportunistically by site personnel in 2010 and 2016). As there have been 11 vertebrate fauna surveys undertaken wholly or partially within</p>	<p>The key impact to conservation significant fauna is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Minimise impacts to habitat of conservation significant fauna by implementing the PEHR process prior to land disturbance.

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		<p>Maunsell (2003) <i>Yandi Life of Mine Flora and Fauna Survey</i></p> <p>Ecologia (2004) <i>BHPBIO Ongoing Works Yandi Overland Conveyor and Stockyard – Fauna and Flora Assessment</i></p> <p>Ecologia (2004) <i>Yandi Stockyard and Overland Conveyor – Fauna and Flora Assessment</i></p> <p>Ecologia (2008) <i>Marillana Creek (Yandi) Iron Ore Mine Modification Level 2 Fauna Survey</i></p> <p>Subterranean Ecology (2010) <i>Regional Subterranean Fauna Study Yandi – Stygofauna Monitoring Review</i></p> <p>Biologic (2011) <i>Yandi Vertebrate Fauna Review</i></p> <p>Biologic (2013) <i>Yandi Mine Short-range Endemic Invertebrate Survey and Impact Assessment</i></p> <p>Biota Environmental Services (2013) <i>Area C West to Yandi Level 2 Vertebrate Fauna Survey</i></p> <p>Biologic (2015) <i>Yandi Tenement Short-range Endemic Invertebrate Survey</i></p> <p>WRM (2015) <i>Yandi Aquatic Fauna Survey – Wet & Dry Season Sampling</i></p>	<ul style="list-style-type: none"> Western Pebble-mound mouse (<i>Pseudomys chapmani</i>) – Priority 4 (DEC); Peregrine Falcon (<i>Falco peregrinus</i>) – Schedule 7 (WC Act) Pilbara Olive Python (<i>Liasis olivaceus</i> subsp. <i>barroni</i>) – Vulnerable (EPBC Act), Schedule 3 (WC Act); Common Sandpiper (<i>Tringa hypoleucos</i>) – Schedule 5 (WC Act); Fork-tailed Swift (<i>Apus pacificus</i>)- Schedule 5 (WC Act); Eastern Great Egret (<i>Ardea modesta</i>) – Schedule 5 (WC Act); Rainbow Bee-eater (<i>Merops ornatus</i>) - Schedule 5 (WC Act). <p>Five major fauna habitats have been identified within the Development Envelope:</p> <ul style="list-style-type: none"> Mulga Woodland; Major Drainage Line Hill Crest and Slope; Boulder Piles; and Sandplain. 	<p>the Development Envelope between 1996 and 2013, BHP considers that it has an excellent understanding of conservation significant species and their habitats that occur or are likely to occur within the Development Envelope.</p>	<ul style="list-style-type: none"> Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable.
Schedule 6	Pilbara Olive Python	<p>Biologic (2013) <i>Orebody 25 Targeted Vertebrate Fauna Survey.</i></p> <p>Biologic (2013) <i>OB 24 Targeted Vertebrate Fauna Survey.</i></p> <p>Eco Logical (2012) <i>OB 37 Level 1 Vertebrate Fauna Assessment.</i></p> <p>ENV Australia (2011) <i>Eastern Ridge (OB 23/24/25) Fauna Assessment.</i></p> <p>Onshore and Biologic (2009) <i>Biological Survey Myopic Exploration Leases.</i></p> <p>Outback Ecology (2009) <i>Jimblebar Linear Development Terrestrial Vertebrate Fauna Assessment.</i></p> <p>GHD (2008) <i>Report for Myopic Project Area, Newman Flora and Fauna Assessment.</i></p> <p>ENV (2006) <i>OB 24 Flora And Fauna Assessment Phase II.</i></p> <p>Ecologia Environment (2004) <i>OB 24 Expansion Biological Survey.</i></p> <p>Biota (2001) <i>Baseline Biological & Soil Surveys and Mapping for ML244SA West of the Fortescue River.</i></p> <p>Ecologia Environment (1996) <i>Jimblebar Rail Spur Biological Assessment Survey.</i></p> <p>Threatened Species Scientific Committee (2008) <i>Commonwealth Conservation Advice on Liasis olivaceus barroni (Olive Python (Pilbara subspecies))</i></p>	<p>Pilbara Olive Pythons have been recorded from six locations within the Development Envelope. Five of these are records of an alive individual, all of which were observed within a water hole. The sixth record was made from remains within Minor Drainage Line habitat.</p> <p>Eight semi-permanent waterholes have been recorded within the Development Envelope. These are considered key habitat features within the Development Envelope for the Pilbara Olive Python, as they utilise them when hunting. Pilbara Olive Python is also likely to utilise Gorge/Gully, and to a lesser extent Major Drainage Line and Minor Drainage Line habitats.</p>	<p>Estimating population size for this subspecies is difficult due to the cryptic nature of the python, the lack of any reliable trapping or census techniques and the narrow range of reliable surveys. (Threatened Species Scientific Committee, 2008). It is not easily trapped and is active at night.</p>	<p>The key impact to the Pilbara Olive Python is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Avoid direct impacts to the known locations of Pilbara Olive Python habitat (waterholes), through the modification of the Development Envelope, as depicted in Schedule 6 Figure(s). Minimise impacts to Pilbara Olive Python habitat (waterholes), by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. Minimise clearing of native vegetation, by utilising existing infrastructure and facilities, and disposing of waste rock within mine pits, where practicable.

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Schedule	Value	Surveys and Studies	Survey and Study Findings	Key assumptions and uncertainties	Rationale for choice of provisions
Schedule 7	Ghost Bat (<i>Macroderma gigas</i>)	<p>Biologic Environmental Survey (in prep) <i>Hammersley Range Ghost Bat Population Study 2016/2017</i>. Report for BHP Billiton Iron Ore, Perth, Western Australia.</p> <p>Biologic Environmental Survey (2017). <i>Hammersley Range Ghost Bat Population Study 2015/2016</i>. Report for BHP Billiton Iron Ore, Perth, Western Australia.</p> <p>Biologic Environmental Survey (2015). <i>Central Pilbara Ghost Bat Population and Roost Assessment: 2014</i>. Report for BHP Billiton Iron Ore, Perth, Western Australia.</p> <p>Biologic Environmental Survey and BatCall WA (2014). <i>Pilbara Regional Ghost Bat Review</i>. Report for BHP Billiton Iron Ore, Perth, Western Australia.</p> <p>Biologic Environmental Survey (2011). <i>Southern Flank Vertebrate Fauna Survey</i>. Report for BHP Billiton Pty Ltd.</p> <p>Bat Call WA (2011). <i>South Flank 2010 Bat Survey Report</i>. Unpublished report for BHP Billiton Iron Ore.</p>	<p>Sixty-three caves considered suitable to be used by ghost bats have been recorded within the Development Envelope; 33 caves have been recorded within indicative areas of disturbance at Southern Flank. Following a modification of proposed areas of disturbance, this number was reduced to 29. These caves have been classified as having 'High' or 'Low' conservation value to ghost bats, depending on the type and frequency of use. Caves that have the physical attributes for a day or maternity roost and surveys indicate that there has been a continual use over a period of years are classified as 'High' value caves. A total of five High value caves are proposed to be disturbed by operations at Southern Flank.</p> <p>To date there have been no published studies on ghost bat foraging in the Pilbara. For the purposes of impact assessment, BHP utilised data obtained from a large roost within the Northern Territory, which showed that the bats generally foraged within 2 km of the roost, and each bat had an average foraging area of 61 ha.</p>	<p>Extensive studies have been undertaken on behalf of BHP in the Pilbara to understand key habitat requirements for the ghost bats. Whilst there has been a considerable increase in our understanding of the species, there are still key elements of their ecology that are not well understood. This includes temporal and spatial movement between roosts by males and females and the size and location of foraging habitats.</p> <p>BHP considers it unlikely that this applies in the Pilbara as ghost bats use multiple roosts and the northern tropics are more resource rich. BHP considers it highly likely that ghost bats in the Pilbara utilise a larger area of foraging habitat than those in the northern tropics and is committed to undertaking further research to understand this. The outcomes of this work will be utilised to inform project planning and management.</p>	<p>The key impact to the ghost bat is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Avoid direct impacts to the known locations of ghost bat habitat (caves), through the modification of the Indicative Additional Impact Assessment Area, as depicted in Schedule 7 Figure(s). Minimise impacts to ghost bat roosts and foraging habitat, by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. Undertake progressive rehabilitation within the ghost bat's foraging range (<2 km from ghost bat roosts) using <i>Eucalyptus leucophloia</i> or other large tree species.
Schedule 8	Short Range Endemic Species	<p>Biologic (2015) Mining Area C – Life of Project EMP Rev 6. Environmental Impact Assessment of Short-range Endemic Invertebrates.</p> <p>Biologic (2016) South Flank Baseline and Targeted SRE Fauna Survey.</p> <p>Biota (2011a). Area C and Surrounds Short Range Endemic Survey.</p> <p>Biota (2011b). Short Range Endemic Invertebrate Fauna Survey - South Flank.</p> <p>Biota (2013a) South Flank Targeted Millipede Survey.</p> <p>Biota (2013b) Targeted Survey for Short Range Endemic Fauna in the Mudlark Survey Area.</p> <p>Outback Ecology (2008). Area C Mining Operation Environmental Management Plan (Revision 4) A, D, P1 and P3 Deposits: Terrestrial Invertebrate Short-range Endemic Assessment.</p> <p>Outback Ecology (2009) Area C Mine Short-range Endemic Habitat Assessment.</p>	<p>Thirteen species have been recorded from invertebrate taxonomic groups known to contain short-range endemic (SRE) species within the Proposed Mining Area C Development Envelope. A number of juvenile or female specimens have also been collected from these groups that have not been identified to species level due to lack of morphological characteristics or suitability to undertake genetic studies (classified as 'sp indet.'). The groups recorded were: millipedes (Myriapoda); selenopid spiders (Selenopidae); pseudoscorpions (Pseudoscorpiones); mygal spiders (Mygalomorphae) and slaters (Isopods).</p> <p>Twelve confirmed or potential SRE species have been recorded in the Mining Area C EMP Revision 6 Impact Assessment Area. Four confirmed and one potential SRE invertebrate taxa have been recorded in the Additional Development Envelope with the four confirmed SRE species also being recorded within the Indicative Additional Impact Assessment Area.</p> <p>Two of the SRE species are listed as Priority species by the DBCA:</p> <ul style="list-style-type: none"> <i>Antichiropus</i> 'DIP006' (Priority 1) <i>Antichiropus</i> 'DIP007' (Priority 1) 	<p>Eight short-range endemic (SRE) invertebrate surveys have been undertaken wholly or partially in the Proposed Mining Area C Development Envelope. Two of these surveys have specifically targeted the recording and mapping of species locations and habitats for <i>Antichiropus</i> 'DIP007.'</p> <p>All surveys undertaken post-2009 have been undertaken in accordance with the EPA's (2009) Guidance Statement 20: Sampling of Short Range Endemic Fauna for Environmental Impact Assessment in Western Australia and BHP Billiton Iron Ore's survey guidance for SREs (BHP Billiton Iron Ore, 2015c) which were developed in conjunction with the Department of Parks and Wildlife and the Western Australian Museum to ensure consistency of survey approach across surveys.</p> <p>Overall, the extent of SRE fauna sampling and habitat assessments within the Proposed Mining Area C Development Envelope can be regarded as sufficient for the purposes of mapping SRE habitats and fauna distributions for the impact assessment, and to meet the requirements of current EPA guidance (Biologic, 2016a). All baseline surveys have used a stratified approach to ensure that all landforms and fauna habitats present have been sampled, and that there is adequate geographic coverage.</p>	<p>The key impact to the habitats of short range endemic species <i>Antichiropus</i> 'DIP006' and <i>Antichiropus</i> 'DIP007' is clearing therefore provisions have been added to:</p> <ul style="list-style-type: none"> Minimise impacts to <i>Antichiropus</i> 'DIP007' habitat (<i>Corymbia hamersleyana</i>), by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance. Minimise impacts to <i>Antichiropus</i> 'DIP006' inferred habitat, by avoiding direct impacts where practicable and implementing the PEHR process prior to land disturbance Progressive rehabilitation as described in the Mine Closure Plan will be implemented using local top soil, and include the use of <i>Corymbia hamersleyana</i> material in habitat suitable to support <i>Antichiropus</i> 'DIP007'.

Homestead Creek conceptual ecohydrological model: Zone 1 - lower reaches

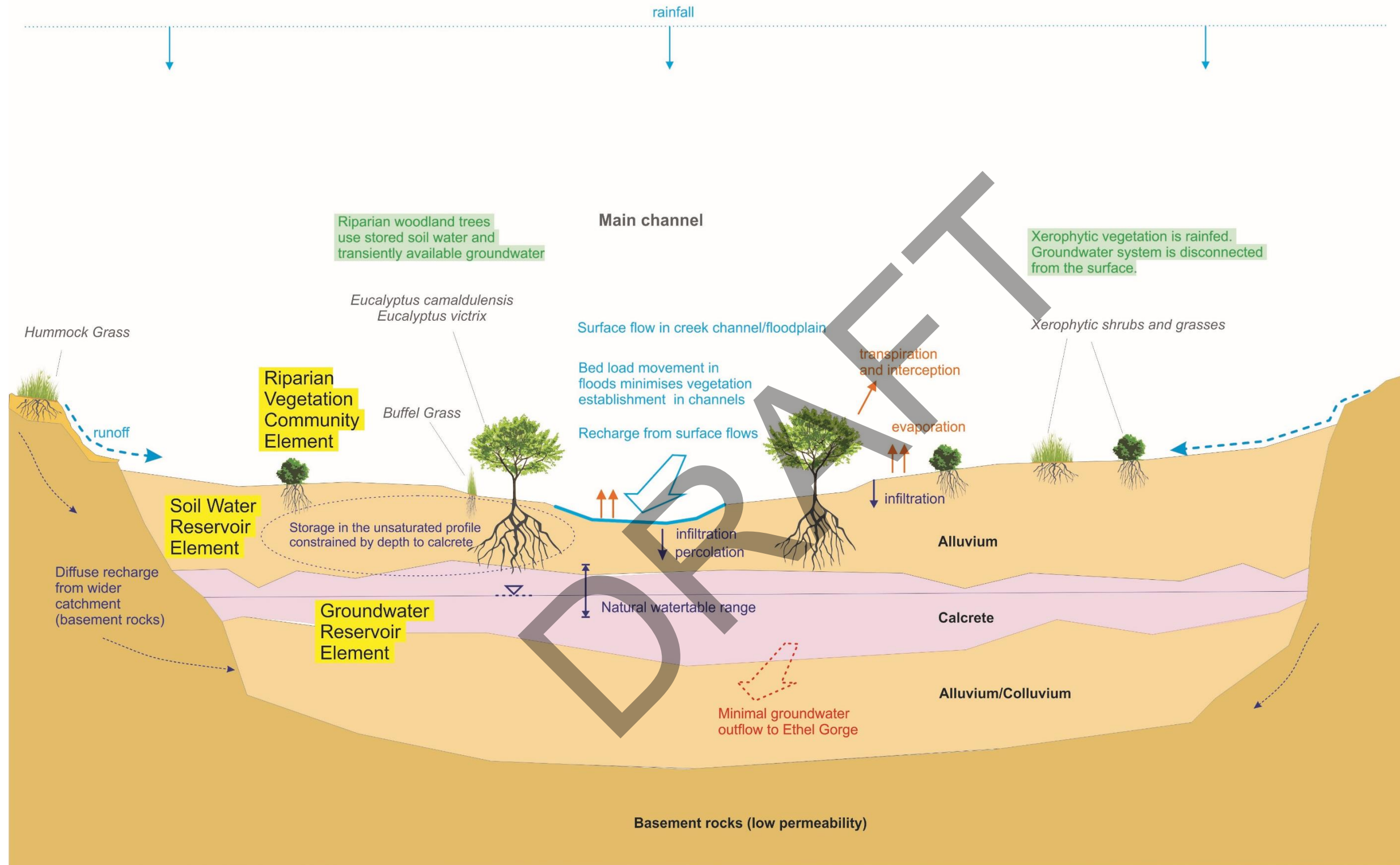


Figure 3: Ecohydrological Conceptual Model for Homestead Creek: Zone 1 – Lower Reaches

Homestead Creek conceptual ecohydrological model: Zone 2 - middle and upper reaches

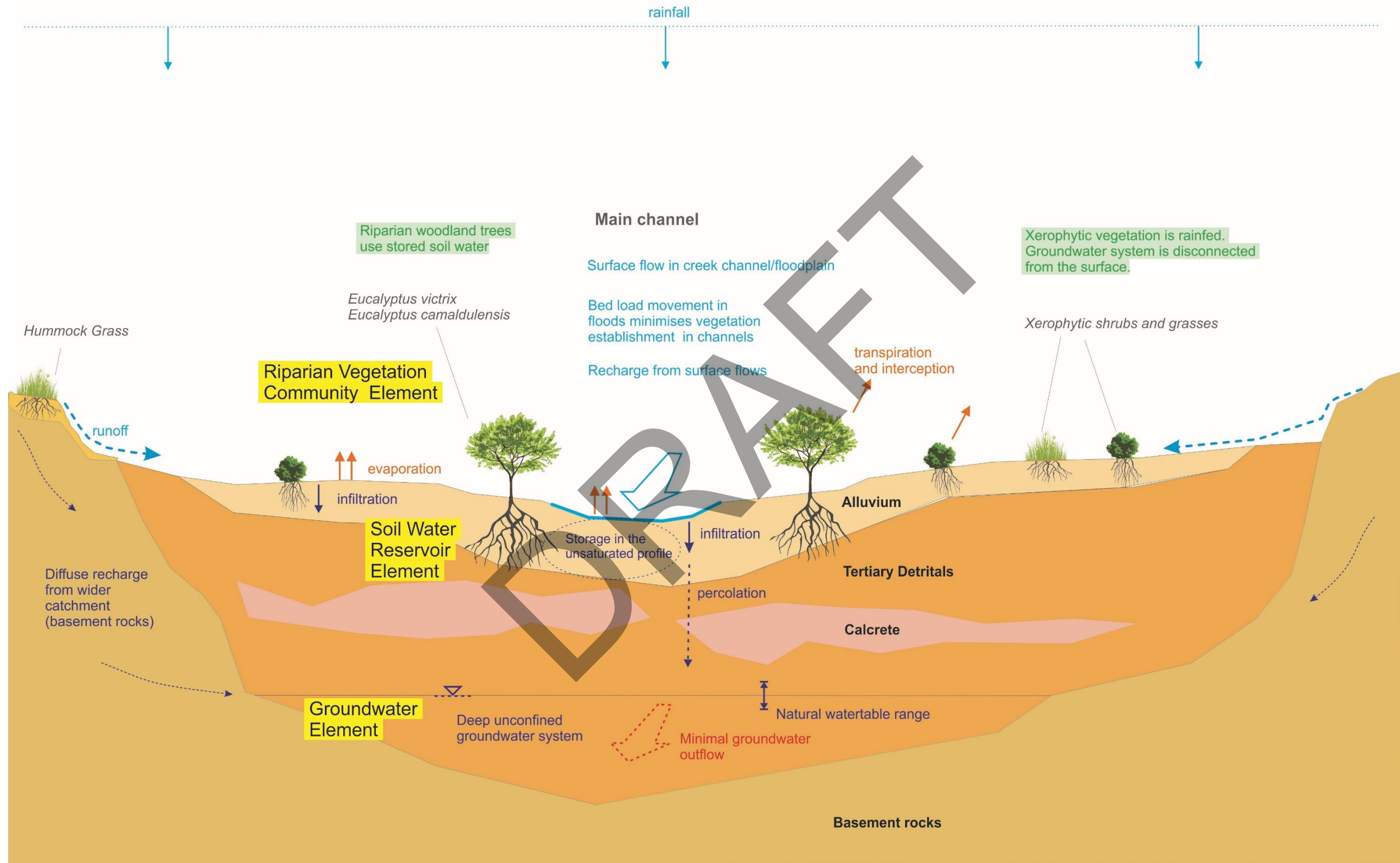


Figure 4: Ecohydrological Conceptual Model for Homestead Creek: Zone 2 – Middle and Upper Reaches