



Yandi Biodiversity Environmental Management Plan



**April 2025
Version 2.0**

Version Control

Version	Section/page	Version description	Key changes	Date
0.1	All	Amendment of approved BEMP to incorporate Significant Amendment to Yandi Life of Mine project	Updates to include the E8 proposal and additional studies, to align with the EPA’s revised <i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA 2024)	April 2024
0.2	All	Amendment following SME review	Updates on management measures	June 2024
1.0	All	Version for review by BNTAC	Change of proposal name	June 2024
2.0	All	Version to support referral of significant amendment	Updates following BNTAC feedback. Updated figures. Updated studies	April 2025

Abbreviations and Definitions

Term	Meaning
BC Act	<i>Biodiversity Conservation Act 2016 (WA)</i>
BHP	BHP Iron Ore Pty Ltd, as manager and agent for and on behalf of the participants from time to time in the Yandi Joint Venture.
BEMP	Biodiversity Environmental Management Plan
CAR	Compliance Assessment Report
CEO	Chief Executive Officer
CID	Channel Iron Deposit
Clearing	As defined in section 51A of the <i>Environmental Protection Act 1986</i>
DBCA	Department of Biodiversity Conservation and Attractions
DPAW	Department of Parks and Wildlife
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
GIS	Geographic Information System
FMP	Fauna Management Plan
MCP	Mine Closure Plan
MS	Ministerial Statement
PEAHR	Project Environmental Aboriginal Heritage Review
PEC	Priority Ecological Community
PPE	Personal Protective Equipment
SSMP	Significant Species Management Plan
TEC	Threatened Ecological Community
WA	Western Australia
WAIO	Western Australia Iron Ore
WC Act	<i>Wildlife Conservation Act 1950 (WA)</i>
WMP	Weed Management Procedure

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Summary

Yandi Biodiversity Environmental Management Plan	
Proposal name	Marillana Creek (Yandi) Life of Mine Proposal
Proponent name	BHP Iron Ore Pty Ltd
Previous Ministerial Statements	679 and 1039
Purpose of the EMP	To provide management and monitoring actions to ensure the implementation of the Proposal meets the EPA's objectives for Flora and Vegetation and Terrestrial Fauna.
Key environmental factors and EMP objectives	<p>Flora and Vegetation</p> <ul style="list-style-type: none"> • 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 • Minimise the spread of weed species <p>Terrestrial Fauna</p> <ul style="list-style-type: none"> • Maintain the abundance, diversity, geographic distribution, conservation status and productivity of fauna at the species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge
Key components of the plan	See Table 4 and Table 5
Proposed construction date	N/A – project commenced in 1991 and is in the operational phase
EMP required pre-construction?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Project commenced in 1991 and is in the operational phase

1 Context, scope and rationale

BHP Iron Ore Pty Ltd (BHP) has prepared this Yandi Biodiversity Environmental Management Plan (BEMP) to support the assessment, approval and implementation of the Significant Amendment (the Proposal) to the Marillana Creek (Yandi) Life of Mine Proposal (the Approved Proposal). The BEMP details the application of the mitigation hierarchy including measures to avoid, where possible, and otherwise minimise direct and indirect impacts to significant flora, vegetation and fauna species.

The BEMP has been prepared in accordance with the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (hereafter, the Instructions) (EPA 2024) as far as practical.

This BEMP specifically relates to the Flora and Vegetation and Terrestrial Fauna factor guidelines, and the EPA Statement of Environmental Principles, Factors and Objectives (EPA 2023a) which provides the objectives:

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.

BHP has been managing the impacts to Flora and Vegetation and Terrestrial Fauna from the implementation of the Approved Proposal through the implementation of the *Marillana Creek (Yandi) Significant Species Management Programme* (SSMP) (Revision 2, BHP Billiton 2011), *Weed Management Procedure* (WMP) (Revision 4, BHP 2023) and *Surface Water and Groundwater Management Plan* (SWGMP) (Revision 3, BHP Billiton Iron Ore 2014).

1.1 The Approved Proposal

Mining operations originally commenced at Yandi in 1991. Since that time, the Approved Proposal has undergone several amendments including increased rates of production and mining of additional pits. The Approved Proposal is authorised under Part IV of the *Environmental Protection Act 1986* (EP Act) Ministerial Statement (MS) 679 (issued 06 July 2005), as amended by MS 1039 (issued 4 October 2016). The Approved Proposal is currently in the operational phase.

The above Ministerial Statements grant BHP approval to mine the entire orebody within the Development Envelope of the Approved Proposal, subject to conditions.

The activities and elements of the Approved Proposal as set out in MS 679 and 1039 are summarised below:

- open cut mining of overburden and ore from the channel iron deposit, above and below water table.
- dewatering of the orebody during mining operations
- permanent diversion of sections of Marillana Creek
- placement of overburden in mine voids and out-of-pit overburden storage areas
- processing, loading and transportation of ore
- possible mining of the lower channel iron deposit

- supply and distribution of power and raw materials
- provision of existing service infrastructure (e.g. main access roads, workshops, administration areas, accommodation village and airstrip).

The Approved Proposal is located approximately 90 km north-west of Newman, in the Pilbara region of Western Australia (Figure 1). The Development Envelope and elements of the Approved Proposal are shown on Figure 2.

The Yandi ore body is a near surface Channel 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).

As the Approved Proposal progresses towards closure, BHP has identified the need to maintain production of iron ore to maintain supply until potential further new deposits become available.

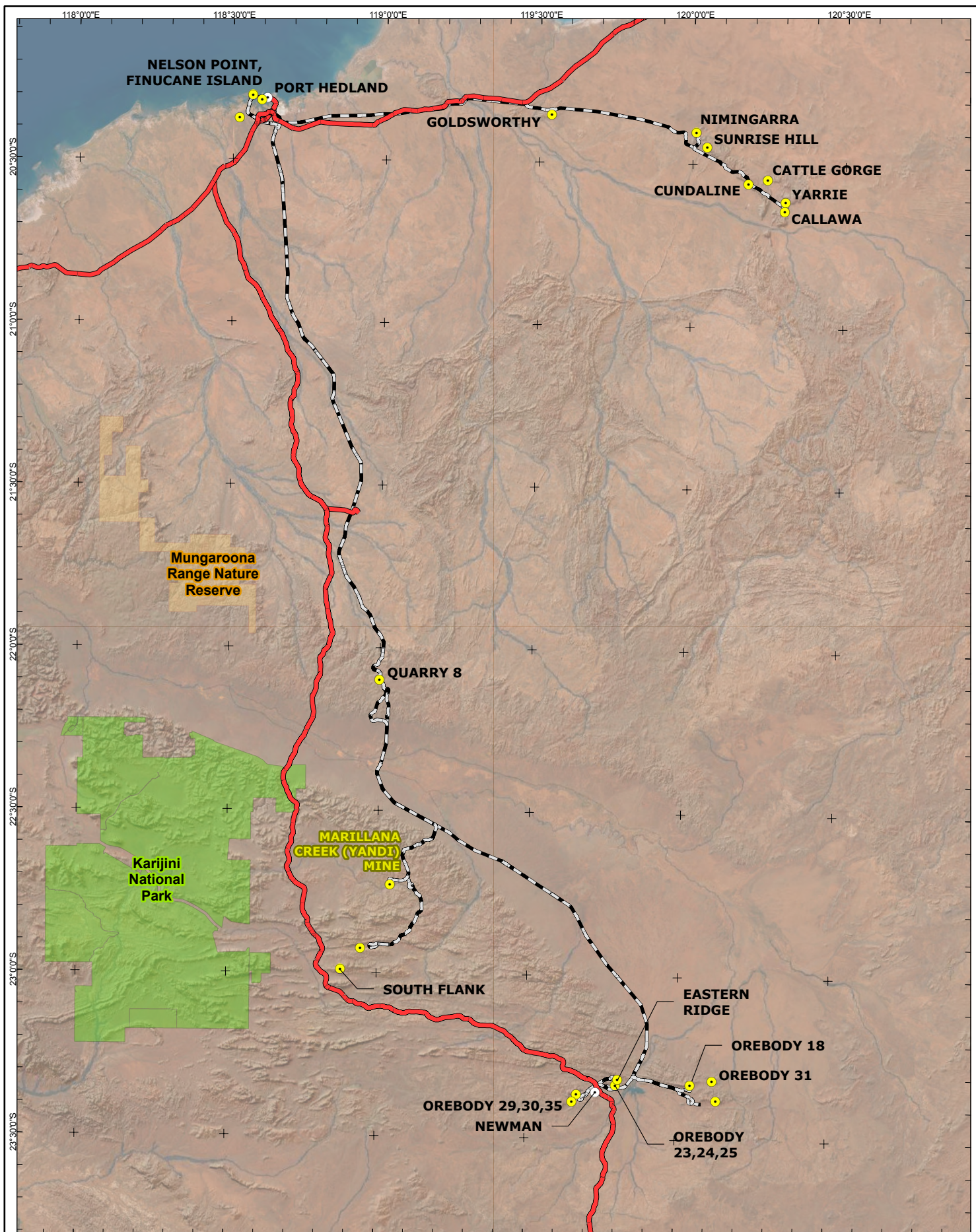
1.2 The Proposal

The Proposal is a Significant Amendment to the Approved Proposal mine project and includes the following key activities and elements:

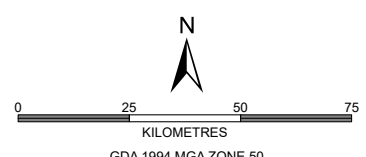
- additional clearing of approximately 95 ha of native vegetation for the construction of the E8 West and East pits, haul roads, access tracks and associated infrastructure
- mining of approximately 5 Mt per annum of iron ore from above and below water table over approximately 5 years
- Marillana Creek crossings for haul roads and light vehicle access
- dewatering of up to approximately 4.6 GL/a
- discharge of up to approximately 10 GL/a to Marillana Creek.

The Proposal will utilise the existing Ore Processing Facility 3 (OPF 3) for the processing of ore. The ore will be transported to Port Hedland on the existing rail network.

BHP has requested that one new MS is issued for the Combined Proposal (Approved Proposal as amended by the Significant Amendment). Therefore, this BEMP addresses the management of significant flora and vegetation and fauna for the Combined Proposal (Figure 3).



- BHP WAIO operation
- Town
- Rail
- National highway
- National park
- Nature reserve



BHP

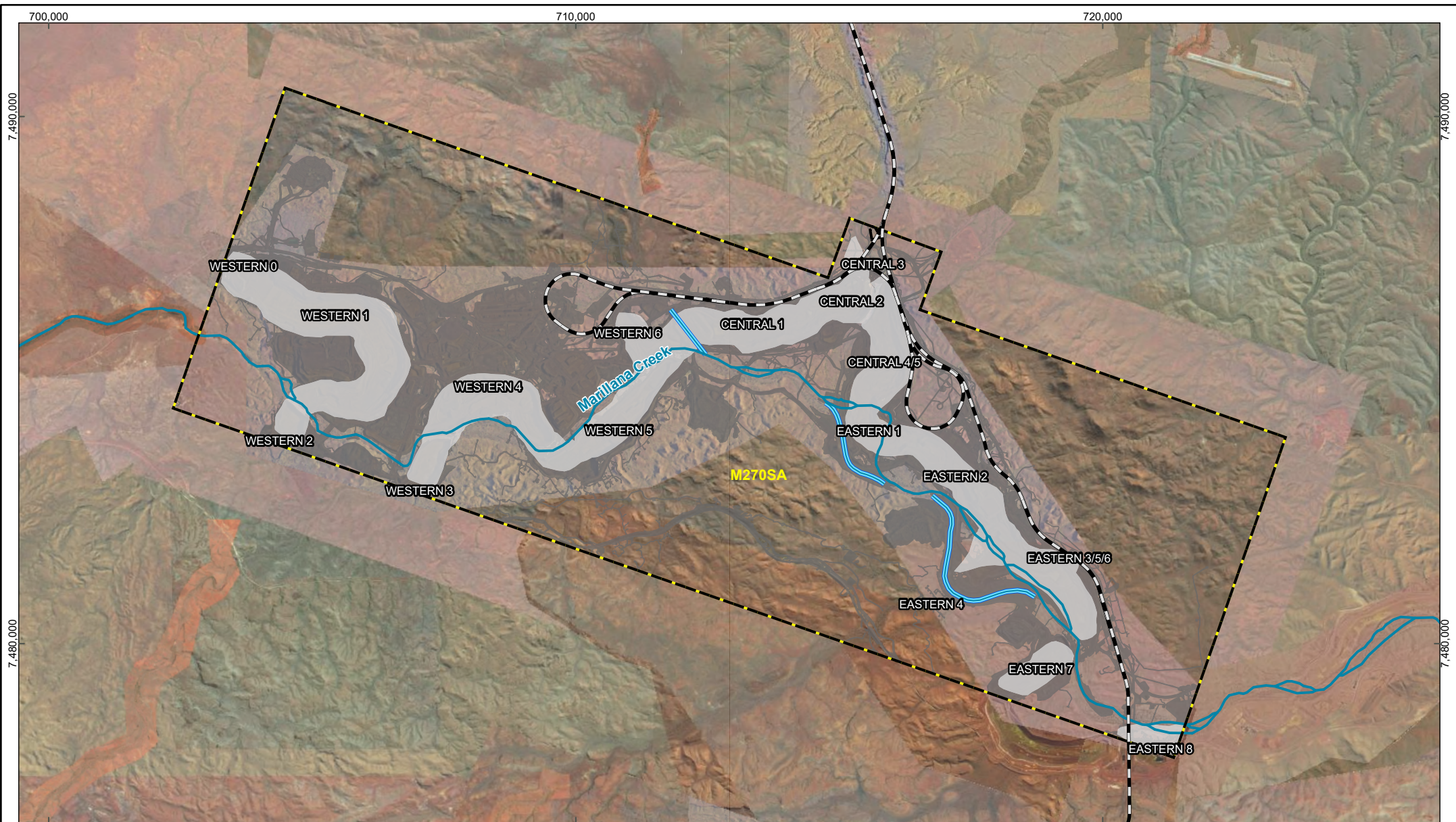
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MARILLANA CREEK (YANDI) BEMP REGIONAL LOCATION

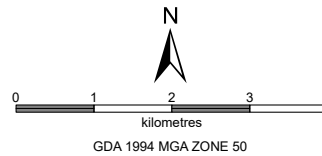
WAIO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4:	1:1,700,000	PREPARED:	GEOMATICS	FIGURE:	1
DATE:	6/04/2025	REQUESTOR:	ENV APPROVALS	NO:	

A1205-083-RevC



-  BHP rail
-  Constructed Creek Diversion
-  Marillana Creek
-  BHP Tenement
-  Development Envelope
-  Indicative Location of Deposits
-  Existing Disturbance



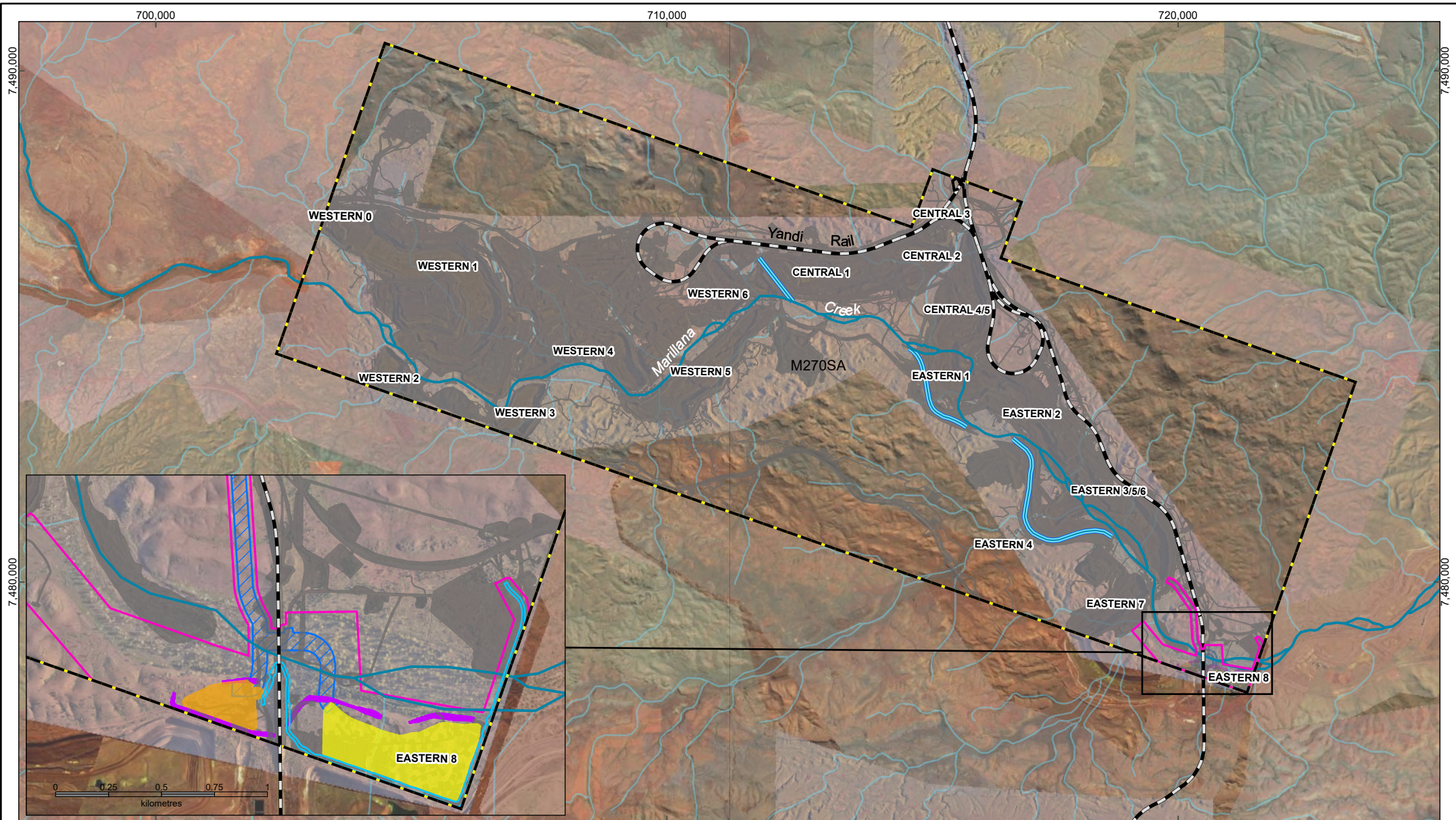
BHP **PUBLIC**

MARILLANA CREEK (YANDI) BEMP
OVERVIEW OF APPROVED
PROPOSAL

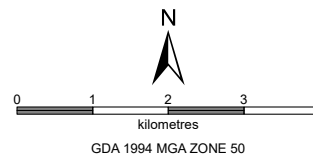
WAO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4: 1:97,000	PREPARED: GEOMATICS	FIGURE: 2
DATE: 29/04/2025	REQUESTOR: ENV APPROVALS	

A1205-084-RevB



- BHP rail
- Flood bunds
- Constructed Creek Diversion
- Indicative Footprint
- Development Envelope
- Existing Disturbance
- Haul Road
- LV road
- BHP Tenement
- Eastern Pit
- Western Pit



BHP **PUBLIC**

MARILLANA CREEK (YANDI) BEMP
DEVELOPMENT ENVELOPE AND
INDICATIVE FOOTPRINT OF THE
COMBINED PROPOSAL

WAO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4: 1:100,000 PREPARED: GEOMATICS FIGURE: **3**
 DATE: 26/04/2025 REQUESTOR: ENV APPROVALS

A1205-085-RevC

1.3 Key environmental factors

The key environmental factors relevant to this BEMP are Flora and Vegetation and Terrestrial Fauna. These factors were identified in the assessment of the Approved Proposal. Table 1 describes the activities, values and actual or potential impacts on Flora and Vegetation and Terrestrial Fauna addressed by this BEMP.

Table 1: Key environmental factors, values and activities

Key environmental factor	Environmental values ¹	Proposal activities	Actual/Potential impacts
Flora and Vegetation	Significant flora	Direct clearing of native vegetation for mining and associated activities	Direct impacts Loss of significant flora from clearing
	Vegetation condition		Indirect impacts Decline in vegetation condition from the introduction or spread of weeds (introduced species) and/or altered fire regimes
Terrestrial Fauna	Significant fauna and habitat		Direct impacts Loss of significant fauna and/or fauna habitat from clearing
			Indirect impacts Degradation or modification of fauna habitats from altered surface water regimes, increase or spread of introduced species (i.e. weeds or feral fauna), and altered fire regimes. Disturbance to fauna as a result of increased light, noise, vibrations and/or dust emissions.

¹ Riparian vegetation and GDV values are managed under the SWGWMP.

1.4 Condition requirements

A Ministerial Statement for the Combined Proposal and associated conditions is yet to be issued.

1.5 Rationale and approach

As required by the Instructions, this section provides a concise description of the rationale and approach for the components in this BEMP.

1.5.1 Management approach

BHP applied a risk-based approach to identify and prioritise the components of this BEMP. The purpose of the components is to protect the environmental values identified in Table 1. In developing the components, BHP has used available scientific information from recent investigations and studies and has applied learnings from the management of Terrestrial Fauna and Flora and Vegetation at other mine sites in the Pilbara.

As described in the Instructions, the term 'Environmental Management Plan' is used generically to refer to documents that set out management information required as an implementation condition (EPA 2021). BHP initially drafted this BEMP to meet the requirements of the Significant Species Management Programme, as originally required by MS679 Condition 11-1 and the Weed Management Plan required by Condition 12-1 of MS679. As outlined in Section 1.2, this BEMP addresses the management of flora and vegetation and fauna for the Combined Proposal. It is considered that this revised BEMP will provide sufficient management measures to minimise impacts to significant flora and vegetation and terrestrial fauna for the remaining duration of mining in the Development Envelope.

This BEMP relates to the following EMPs that also address Flora and Vegetation and/or Terrestrial Fauna, and have been updated for the Significant Amendment to the Approved Proposal:

- *Marillana Creek Diversion Management Plan*, Rev 0 (BHP Billiton 2016)
- *Marillana Creek Water Resource Management Plan* Rev 2.0 (BHP 2025a)
- *Yandi Closure Plan* (MCP), Revision 6 (BHP 2025b).

These plans have been updated to address the management of impacts to significant flora, vegetation and fauna from implementation of the Approved Proposal and the clearing of 95 ha of native vegetation and impacts from the Proposal.

At the site level and prior to any disturbance activities, BHP applies the internal Project Environmental Aboriginal Heritage Review (PEAHR) approval process to ensure any obligations associated with environment, Aboriginal heritage and land tenure are implemented. All ground disturbance activities will be required to meet the requirements and outcomes of the PEAHR process. All applicable legislative and regulatory requirements and BHP's 'Our Requirements' policies flow through to PEAHR approvals. The PEAHR process also provides a final verification mechanism whereby technical and professional advice can be sought to ensure any authorised disturbance is managed effectively on the ground. The PEAHR system consists of an electronic workflow process linked to a geographical information system (GIS).

Staging of mining operations

The Yandi mine has been in operation since 1991 and is preparing for the end of its mine life (i.e. the closure stage). Based on the current mine plan, mining of the E8 orebody, is forecast to be completed in approximately 2033. It is proposed that the existing infrastructure such as OPF3 and haul roads will be utilised beyond 2033 as part of a proposed regional ore processing hub. Therefore, most of the clearing associated with the Approved Proposal has been undertaken (Figure 3). As at 30 June 2024, 4,492 ha of the authorised 4,558 ha has been disturbed. The remaining clearing authorisation of approximately 66 ha will be used for ongoing operations and closure activities adjacent to existing disturbed areas until the Proposal is assessed by the EPA and authorised by the Minister for Environment.

The BEMP components (i.e. management actions) in Section 2 are relevant to managing the current flora and fauna values in the Development Envelope that are required to be managed under the existing Conditions 11-1 and 12-1 of MS679. BHP considers that separate species-specific management plans are not warranted and that the BEMP meets the objective to manage these flora and fauna values, given:

- the current stage of mining (i.e. approaching end of mine life)

- the small amount of authorised clearing remaining under the existing Ministerial Statement 679 (~66 ha)
- the minimal impact to these flora and fauna values since the MS was issued in July 2005 (see Table in Section 1.5.2)
- the Significant Amendment includes limited additional vegetation clearing (95 ha).

BHP will make the latest endorsed version of the BEMP available to stakeholders, including members of the public, upon request unless conditioned to do otherwise.

1.5.2 Rationale

Table 2 provides a concise description of the rationale for the EMP components in Section 2, including:

- management objectives
- survey and study findings
- key assumptions and uncertainties
- rationale for choice of management actions.

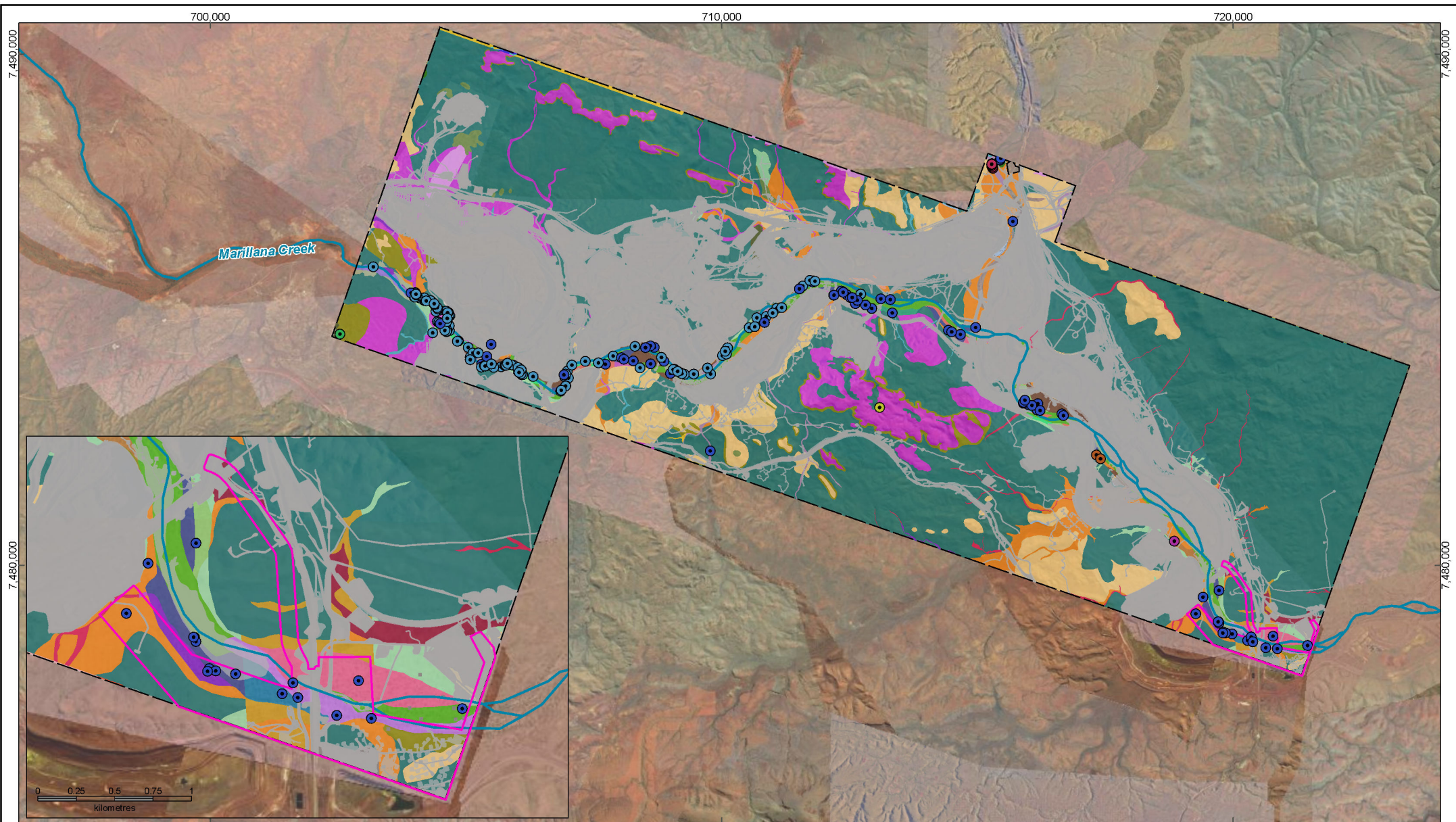
Table 2: Rationale for management actions

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Risk-based approach and rationale for choice of management actions
Environmental value: Significant flora EMP objective: 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>The surveys and studies used to develop the EMP components related to significant flora are listed below. They include surveys conducted prior to ground-disturbing activities.</p> <ul style="list-style-type: none"> Dames and Moore (1991) <i>Yandi Baseline Vegetation Survey Marillana Creek –Part 1, Precommissioning of Yandicoogina Iron Ore Mine</i> AGC Woodward Clyde (1995) <i>Marillana and Weeli Wolli Creeks and Paleochannel Vegetation and Flora Survey</i> Ecologia Environment (1995) <i>Yandi Stage 2 Iron Ore Project Biological Assessment Survey</i> Halpern Glick Maunsell (1996) <i>Yandi Stage 2 Iron Ore Project Survey of Flora of Interest</i> Halpern Glick Maunsell (1997) <i>Marillana Creek Iron Ore Project Survey for Goodenia stellata and Flora of Interest</i> Ecologia Environment (1998) <i>Yandi Vegetation and Soil Survey</i> Halpern Glick Maunsell (1999) <i>Marillana Creek Western Access Corridor Biological Assessment</i> Halpern Glick Maunsell (1999) <i>Marillana Creek Iron Ore Project Review of Biological Reporting</i> BHP Billiton (2000) <i>Yandi Priority Flora Species Survey</i> Ecologia Environment (2003a) <i>Yandi IOWA Conveyor: Rare and Priority Flora Survey</i> Ecologia Environment (2003b) <i>Yandi IOWA Conveyor - Amendment to Rare and Priority Flora Survey</i> Maunsell (2003) <i>Yandi Life of Mine Flora and Fauna</i> Ecologia Environment (2004) <i>Yandi Stockyard and Overland Conveyor Fauna and Flora Assessment</i> Ecologia Environment (2007) <i>Yandi Mine Extension RGP5 EIA Flora Survey Interim Report Post Phase 1 Survey</i> Ecologia Environment (2008) <i>Two Phase Assessment of the Flora and Vegetation of the Proposed Marillana Creek (Yandi) Mine Extension Areas RGP5 – KBR</i> ENV Australia (2009a) <i>Western 6, 7, and 8 Flora and Vegetation Assessment</i> ENV Australia (2009b) <i>Western 2 & Western 1 Waste Dump Flora and Assessment</i> GHD (2010) <i>Report for Yandi W1 and W4 A Targeted Rare and Priority Flora Survey</i> BHP Billiton (2010b) <i>Declared Rare Flora (DRF) and Priority flora search at Yandi - Proposed haul road crossing at Marillana Creek</i> 	<p>Flora</p> <ul style="list-style-type: none"> Six flora species of conservation significance were discussed in EPA Report 1166 for the Yandi Life of Mine Proposal (EPA 2005): <i>Goodenia nuda</i>, <i>Olearia fluvialis</i>, <i>Goodenia stellata</i>, <i>Eriachne tenuiculmis</i>, <i>Rostellularia adscendens</i> var. <i>latifolia</i> and <i>Themeda</i> sp. Mt Barricade. Of these, only <i>Rostellularia adscendens</i> var. <i>latifolia</i> is currently significant. The other four species were previously listed as Priority flora taxa but have been downgraded. Seven species currently listed as Priority flora taxa have been recorded within the Development Envelope (Figure 4): <ol style="list-style-type: none"> <i>Aristida lazaridis</i> – Priority 2 (2 records) <i>Ipomoea racemigera</i> – Priority 2 (180 records) <i>Acacia subtiliformis</i> – Priority 3 (1 record) <i>Amaranthus centralis</i> – Priority 3 (1 record) <i>Rostellularia adscendens</i> var. <i>latifolia</i> – Priority 3 (78 records) <i>Sida</i> sp. Barlee Range (S. <i>van Leeuwen</i> 1642) – Priority 4 (16 records) <i>Lepidium catapycnon</i> – Priority 4 (1 record) No threatened flora or Priority 1 species have been recorded. Prior to the issue of MS679, <i>Rostellularia adscendens</i> var. <i>latifolia</i> was only recorded from one location within the Development Envelope. This species is now known from multiple locations within the Development Envelope, mostly along Marillana Creek, with more than 70% of records of this species located in uncleared areas of the Development Envelope. All priority species identified since MS679 was issued have been recorded along Marillana Creek, except for <i>Acacia subtiliformis</i>, <i>Sida</i> sp. Barlee Range and <i>Lepidium catapycnon</i>. One additional significant species, <i>Isotropis parviflora</i> (Priority 2) was historically recorded in the Development Envelope. According to BHP's records, the area where this species was recorded was cleared during FY2011 (BHP Billiton 2011). There are more than 50 remaining records of <i>Isotropis parviflora</i> on BHP tenure within 50 km of the Development Envelope. <p>Vegetation</p> <ul style="list-style-type: none"> Based on recent vegetation mapping (Onshore 2020) 42 vegetation associations have been identified within the Development Envelope (Figure 4). None of these vegetation associations have any affiliation with Federal or State listed Threatened Ecological Communities (TECs), or State listed Priority Ecological Communities (PECs). 	<p>Assumptions</p> <ul style="list-style-type: none"> 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 more than 30 years, it is considered likely that significant species that are present have been recorded. Flora records in disturbed areas have been cleared and are no longer present. Vegetation associations of conservation significance are not present within the Development Envelope. Remaining clearing is likely to be adjacent to existing disturbed areas as the remaining clearing required is mostly for the mining of pits, infrastructure including spillways, bunds and diversion upgrades and closure and rehabilitation activities. <p>Uncertainties</p> <ul style="list-style-type: none"> The development of vegetation mapping was facilitated by high-resolution aerial photography and on-ground surveys; however, some areas of vegetation mapping have been extrapolated. 	<p>Type of components</p> <p>Objective-based components</p> <p>Risk-based approach</p> <p>BHP has used a risk-based approach to identify the management actions, and has considered the following:</p> <ul style="list-style-type: none"> No Threatened flora or Priority 1 species have been recorded. All Priority species are known to occur within 50 km of the Development Envelope (from BHP and DBCA database). The minimal remaining clearing is likely to be adjacent to existing disturbed areas. <p>Rationale for choice of management actions</p> <p>The key impact to Priority flora species in the Development Envelope is the loss of individuals of significant flora from land clearing. The management actions and targets (Table 3) focus on the tracking of the location of significant flora and the remaining approved clearing allocation and avoiding disturbance to known locations of Priority Flora, where practicable.</p> <p>BHP considers that the PEAHR approval process used throughout BHP operational sites to manage ground disturbance activities has been effective for the Approved Proposal to minimise impacts to Priority Flora and is the appropriate system to manage the remaining clearing in the Development Envelope.</p> <p>The key to the PEAHR approval system being effective, is the maintenance of up to date GIS spatial layers for records of significant flora and internal databases using the most current classification of Priority Flora. Management actions and targets have been included to ensure the PEAHR approval system reflects the most recent floristic data, and the current classification system of significant flora is used.</p> <p>BHP will modify land clearing plans (if required), where practicable, to minimise disturbance to known locations of Priority Flora. BHP uses the electronic demarcation of significant species records through 'exclusion zones' in the GIS spatial data, to prevent unauthorised disturbance, and this data is provided to personnel involved with land clearing. BHP considers that electronic demarcation is appropriate because the application of the PEAHR system has avoided most locations of known Priority Flora (Figure 4). BHP will keep records of impacted priority flora species and consult with DWER if a potential significant impact to a significant flora species is identified.</p>

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Risk-based approach and rationale for choice of management actions
<ul style="list-style-type: none">Onshore (2015) <i>Marillana Creek Riparian Flora and Vegetation Survey</i>Biologic (2020) <i>Ministers North Miscellaneous Licence Area Amendment Surveys and Yandicoogina Creek Detailed Flora and Vegetation Assessment</i>Onshore (2020) <i>Ministers North and Yandi Vegetation Association and Condition Mapping</i>GHD (2022) <i>Targeted Flora Surveys of Pipeline Corridors</i>Biologic (2023) <i>Yandi E8 Targeted Flora Survey</i>Biologic (2024) <i>Central Pilbara Hub Detailed and Targeted Flora Survey</i>			
Environmental value: Vegetation condition (Weeds) EMP objective: Minimise the spread of weed species			
<p>The surveys and studies used to develop the EMP components related to vegetation condition (weeds) are listed below. They include surveys conducted prior to ground-disturbing activities:</p> <ul style="list-style-type: none">Dames and Moore (1991) <i>Yandi Baseline Vegetation Survey Marillana Creek –Part 1, Precommissioning of Yandicoogina Iron Ore Mine</i>AGC Woodward Clyde (1995) <i>Marillana and Weeli Wolli Creeks and Paleochannel Vegetation and Flora Survey</i>Ecologia Environment (1995) <i>Yandi Stage 2 Iron Ore Project Biological Assessment Survey</i>Halpern Glick Maunsell (1996) <i>Yandi Stage 2 Iron Ore Project Survey of Flora of Interest</i>BSD (1997) <i>A survey of Mexican Poppy (Argemone ochroleuca) at Marillana Creek</i>Ecologia Environment (1998) <i>Yandi Vegetation and Soil Survey</i>Halpern Glick Maunsell (1999) <i>Marillana Creek Western Access Corridor Biological Assessment</i>Halpern Glick Maunsell (1999) <i>Marillana Creek Iron Ore Project Review of Biological Reporting</i>Maunsell (2003) <i>Yandi Life of Mine Flora and Fauna</i>Ecologia Environment (2004) <i>Yandi Stockyard and Overland Conveyor Fauna and Flora Assessment</i>Ecologia Environment (2007b) <i>Yandi Mine Extension RGP5 EIA Flora Survey Interim Report Post Phase 1 Survey</i>Ecologia Environment (2008) <i>Two Phase Assessment of the Flora and Vegetation of the Proposed Marillana Creek (Yandi) Mine Extension Areas RGP5 – KBR</i>ENV Australia (2009a) <i>Western 6, 7, and 8 Flora and Vegetation Assessment</i>ENV Australia (2009b) <i>Western 2 & Western 1 Waste Dump Flora and Assessment</i>	<ul style="list-style-type: none">Of the remaining uncleared areas, approximately 96% of the vegetation is rated as ‘Good’ or better (Figure 5).Monitoring along Marillana Creek in 2023 indicated that weed cover is less than 10% (BHP 2023).Twenty-seven (27) weed species have been recorded within the Development Envelope (Figure 6 and Appendix 1). None of these taxa are listed as Declared Weeds under the <i>Biosecurity and Agriculture Management Act (2007)</i>.Since 2010, the most common weeds identified are <i>Aerva javanica</i> (kapok bush), <i>Malvastrum americanum</i> (Spiked Malvastrum), <i>*Bidens bipinnata</i> (Bipinnate Beggartick) and <i>Vachellia farnesiana</i> (Mimosa Bush).The most recent 2024 Yandi Weed Mapping and Control Program undertaken by Astron Environmental Services recorded no new weed species in the Development Envelope.Most weeds have been recorded in disturbed areas, particularly along linear infrastructure including the rail line and roads. In uncleared areas, most weed records are along drainage lines, including Marillana Creek.During weed monitoring, typically 100% of individuals of most weed species are treated and at least 95% of all individuals identified in each visit are treated. However, there are sometimes occurrences where no individuals of a particular species are able to be treated due to safety concerns (e.g. access or the weather being too hot for wearing PPE required to undertake chemical spraying).Treated areas are surveyed in follow up programs to identify resurgence and re-spray where necessary.	<p>Assumptions</p> <ul style="list-style-type: none">All areas within the Development Envelope are accessible by vehicle and/or foot for weed mapping and management, with the exception of an ethnographic exclusion zone within the north-east of the Development Envelope.High risk weed areas are those with values that may be significantly impacted by weed invasion or those particularly exposed to weed invasion; including but not limited to, areas of high biodiversity value, rehabilitation areas or topsoil stockpiles, drainage lines and linear infrastructure. The key high risk weed areas in the Development Envelope are the roads and the discharge location along Marillana Creek which are shown on Figure 6.Weeds currently present in the Development Envelope have been recorded. If other species additional to the 27 weed species recorded to date are identified in future weed mapping, they will be treated as new introductions.	<p>Type of components</p> <p>Objective-based components</p> <p>Risk-based approach</p> <p>BHP has used a risk-based approach to identify the management actions, which has considered the following:</p> <ul style="list-style-type: none">High risk weed areas.The priority for management according to BHP’s <i>Environmental Weed Management in Western Australia Procedure</i> (BHP 2023b).Timing of rainfall and weed growth. <p>Rationale for choice of management actions</p> <p>The key indirect impact to flora and vegetation in the Development Envelope is the potential decline in vegetation condition from the spread of weeds. The management actions and targets (Table 3) focus on the identification and treatment of weeds (particularly in ‘high risk’ areas) to minimise the spread of weeds and review of weed species that have the potential to be introduced in the Development Envelope.</p> <p>BHP proposes to continue weed management according to the <i>WAIO Weed Management Procedure</i>, which includes priority for eradication, and requirements for weed mapping, weed hygiene, frequency of mapping and treatment (annual) and timing of weed treatment (before the end of June).</p> <p>Key to effective weed management is the maintenance of a GIS spatial layer for records of weed locations and intensity, weed treatment areas, ‘high risk’ weed areas and internal databases using the current classification of weed species. Therefore, management actions and targets are based on WAIO standards for weed management and to ensure that the GIS system reflects up-to-date weed information.</p> <p>BHP documents the location, approximate number and type of each weed species recorded during previous vegetation surveys. Since 2011, BHP has documented this information in weed mapping and control reports. BHP then uploads this information to the internal GIS system.</p> <p>BHP undertakes annual weed mapping and control visits of high-risk areas to monitor the occurrence and intensity of weeds and treat identified individuals via chemical and/or manual methods To minimise the potential for weed species which have not been previously recorded in the Development</p>

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Risk-based approach and rationale for choice of management actions
<ul style="list-style-type: none"> Astron (2011) Marillana Creek (Yandi) Mine Site Weed Survey and Mapping Astron Mines, Port, Rail & NPI Weed Control – Yandi (June 2014, June 2015, April 2016, April 2017, June 2017, May 2018, June 2018, April 2019, June 2019) 			Envelope from entering, BHP follows the internal Vehicle and Equipment Weed Hygiene Procedure and reviews the potential for new weed species to be introduced within the Development Envelope.
Environmental value: Significant fauna EMP objective: 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>The surveys and studies used to develop the EMP components related to significant fauna and their habitat are listed below. They include surveys conducted prior to ground-disturbing activities):</p> <ul style="list-style-type: none"> Ecologia (1995) <i>Yandi Stage II Iron Ore Project – Biological Assessment Survey</i> Ecologia (1996) <i>Yandi Stage II Iron Ore Project – Pebble-mound Mouse Site Survey</i> Halpern Glick Maunsell (1999) <i>Marillana Creek Western Access Corridor – Biological Assessment</i> Maunsell (2003) <i>Yandi Life of Mine Flora and Fauna Survey</i> Ecologia (2004) <i>BHPBIO Ongoing Works Yandi Overland Conveyor and Stockyard – Fauna and Flora Assessment</i> Ecologia (2004) <i>Yandi Stockyard and Overland Conveyor – Fauna and Flora Assessment</i> Ecologia (2008) <i>Marillana Creek (Yandi) Iron Ore Mine Modification Level 2 Fauna Survey</i> Biologic (2011) <i>Yandi Vertebrate Fauna Review</i> Biologic (2011) <i>Area C to Yandi Fauna Survey</i> Biota Environmental Services (2013) <i>Area C West to Yandi Level 2 Vertebrate Fauna Survey</i> Biologic (2014 and 2018) <i>Consolidated Fauna Habitat Mapping</i> Biologic (2017) <i>Ministers North to Yandi Corridor Single Phase Level 2 Fauna and Detailed Flora/Vegetation Survey</i> Astron (2023) <i>Yandi 45C Targeted Significant Vertebrate Fauna Survey</i> 	<p>Below is a description of the identified fauna species and habitat areas for species of conservation significance:</p> <p>Fauna</p> <ul style="list-style-type: none"> Four species of conservation significance were discussed in EPA Report 1166 for the Yandi Life of Mine Proposal (EPA 2005): <i>Liasis olivaceus</i> subsp. <i>Barroni</i> (Pilbara Olive Python), <i>Falco peregrinus</i> (Peregrine Falcon), <i>Ardeotis australis</i> (Australian Bustard) and <i>Pseudomys chapmani</i> (Western Pebble-mound Mouse). Of these, the Australian Bustard is no longer listed and therefore not considered to be of conservation significance. Three fauna species of current conservation significance have been recorded within the Development Envelope to date (Figure 7): <ol style="list-style-type: none"> <i>Dasyurus hallucatus</i> (Northern Quoll) – Endangered under both the EPBC Act and BC Act (Schedule 2) (2 records) Pilbara Olive Python - Vulnerable under both the EPBC Act and BC Act (Schedule 2) (6 records) Western Pebble-mound Mouse - Priority 4, DBCA (1,039 records) <i>Actitis hypoleucos</i> (Common Sandpiper) - Migratory under both the EPBC Act and BC Act (Schedule 1). Of the current significant fauna recorded since MS679 was issued, two records of Pilbara Olive Python, five records of Common Sandpiper and 924 records of Western Pebble-mound Mouse mounds are in uncleared areas. The areas where two individuals of Northern Quoll were recorded opportunistically by site personnel in 2010 and 2016 have since been disturbed. <p>Fauna habitat</p> <ul style="list-style-type: none"> 14 fauna habitat types have been mapped within the Development Envelope (Figure 7) and all of the habitat types are represented in the remaining uncleared areas: <ul style="list-style-type: none"> Calcrete Plain (100% remaining) Drainage Area/Floodplain (92.65% remaining) Hillcrest/Hillslope (99.70% remaining) Major Drainage Line (95.93% remaining) Minor Drainage Line (99.80% remaining) Medium Drainage Line (97.39% remaining) Mulga Woodland (100% remaining) Sandplain (100% remaining) Wetland (39.93% remaining) 	<p>Assumptions</p> <ul style="list-style-type: none"> Given the number of surveys over approximately 20 years, it is considered likely that significant fauna species likely to occur within the Development Envelope have been recorded and all habitat types that occur have been mapped. All significant fauna species that have been recorded may occur in the Development Envelope as there is sufficient remaining areas of suitable habitat. <p>Uncertainties</p> <ul style="list-style-type: none"> It is considered possible that additional significant species may occasionally occur within the Development Envelope (e.g. there is no core habitat for the Northern Quoll within the Development Envelope, however, the species has been recorded). 	<p>Type of components</p> <p>Objective-based components.</p> <p>Risk-based approach</p> <p>BHP has used a risk-based approach to identify the management actions, which has considered the following:</p> <ul style="list-style-type: none"> Threatened fauna have been recorded (Pilbara Olive Python and Northern Quoll), within the Development Envelope with the Pilbara Olive Python likely being a resident, whereas Northern Quoll is likely an occasional visitor. One Migratory species has been recorded within the Development Envelope (Common Sandpiper), with Drainage Line and Wetland Habitats likely to provide some suitable (but not critical) habitat for this species, and possible other Migratory species on an occasional basis. There are large areas of the Major Drainage Line habitat type remaining which is the key habitat type for the Pilbara Olive Python. The remaining clearing is likely to be adjacent to existing disturbed areas. <p>Rationale for choice of management actions</p> <p>The key impact to significant fauna species in the Development Envelope is the loss of habitat from clearing. The management actions and targets (Table 5) focus on the tracking of the location of significant fauna and the remaining approved clearing allocation and avoiding disturbance to known records of significant fauna, where practicable. BHP considers that the PEAHR approval process used throughout BHP operational sites to manage ground disturbance activities is the appropriate system to manage the remaining clearing for the Approved Proposal, to minimise impacts to significant fauna and their habitat.</p> <p>Key to the PEAHR approval system being effective, is the maintenance of current/up to date GIS spatial layer for records of significant fauna and internal databases using the most current classification of significant fauna. Management actions and targets have been included to ensure the PEAHR approval system reflects the most recent fauna data, and the current classification system of significant fauna is used.</p> <p>BHP will modify land clearing plans (if required), where practicable, to minimise disturbance to known records of significant fauna and key habitat (Major Drainage Line). BHP uses the electronic demarcation of significant species records through 'exclusion zones' in the GIS spatial data, to prevent unauthorised disturbance, and this data is provided to personnel involved with land clearing. BHP considers that electronic demarcation is appropriate because the application of the PEAHR system has avoided most locations of known significant fauna (Figure 7). BHP will keep records of impacted significant fauna species and their habitat and consult with DWER if a potential significant impact to a significant fauna species is identified.</p>

Surveys and studies	Survey and study findings	Key assumptions and uncertainties	Risk-based approach and rationale for choice of management actions
	<ul style="list-style-type: none">- Breakaway/Cliff (100% remaining)- Hardpan Plain (100% remaining)- Sandy/Stony Plain (100% remaining)- Stony Plain (99.23% remaining)- Undulating Low Hills (100% remaining)• As shown in Figure 7, most records of Pilbara Olive Python and all of the Common Sandpiper records were recorded in or adjacent to the Major Drainage Line habitat (of which 95.93% will be remaining), which is key habitat for both species, and which may also provide supporting dispersal habitat for the Northern Quoll. No Gorge/Gully (critical breeding) habitat for the Northern Quoll occurs within the Development Envelope. Hillcrest/Hillslope habitat type (99.70% will be remaining) may provide potential marginal denning habitat for the Northern Quoll. Most of the records of Western Pebble-mound Mouse are located in the Hillcrest/Hillslope habitat type, of which 99.70% will be remaining within the Development Envelope.		BHP will engage fauna spotters where clearing is to be undertaken in critical fauna habitat where recent records of species of significant fauna have been identified.



Marillana Creek

Indicative Footprint

Existing Disturbance

Development Envelope

Significant Flora Species

- Acacia subtiliformis (Priority 3)
- Amaranthus centralis (Priority 3)
- Aristida lazaridis (Priority 3)
- Ipomoea racemigera (Priority 3)
- Lepidium catapycnon (Priority 4)
- Rostellularia adscendens var. latifolia (Priority 3)
- Sida sp. Barlee Range (S. van Leeuwen 1642) (Priority 4)

Vegetation Code

A4/A5	FS Ts CdHc AancAIGrwh
B6	FS TsTpTw Ell AbApaAanc
C2	GG TlErmuThmb EllChCf AlpGoroPl
C6	HC TbTw Erfr AbAk
CP TwTa Ese AbPIApyp	HC Tv El(+/-)Cd AhiGooAad
Cleared	HC TwAiAb InrSeao
D1	HC TwTbTr EllCh AmaGrwhAb
D10	HS TsTwTp EllCh AhiAaa
D13	HS Tw(+/-)Tbr El Ai
D2	HS TwTbTr EllExCh PtcPtasAhi
FP AcaoAaEx Erff Tp	HS TwTpTs Ell AprAaAanc
FP Tp ChApr GrwhApypAb	MAAaAciApr CcTlChf EvEcr
FP Tp ChHalEv TefApy	MAAciAcpAthe Tp EteEnl
FP TIEuaAri EvCa GoroEfoAtthe	MA CcCs Aci EorEv

MA CocrTerc EcrEv EteCcEpd	ME TIEuaEte ApypAtpPI EvCh
MA EcrEv AciAcp Mg	MI AbAdAma Tp TlPamuEua
MA EcrEv AcpAtheEv TpTl	MI AlpPIAm TpTs ChEll
MA EcrEv AcpAtheEv TpTlo	No Survey Data
MA EcrEvEx ApypAlpGoro TIEuaCyp	SA Aa TpTwTb CcChf
MA EcrEvMa AcpAamAthe TydCyv	SP AaApr TmTwTp TlChfAri
MA Ev TefCocrApy TISoplCya	SP DyrTrhPta
MA EvAciEcr TercCocrApy CcEuaTt	SP TbTp HallAancAi Ch
MA MaEcrEv MgAcpAtr Cyv	SP TbTp HIAancAi Ch
MA Pt Ecr TdSesuCyv	
ME AtGrwAI Ch TpErmuTlCya	
ME TpTlo ExAciCh PlApypGoro	
ME TlChEua ExEvCh PlApyp	
ME TIEuaEte ApypAtpPI EvCh	

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MARILLANA CREEK (YANDI) BEMP

SIGNIFICANT FLORA SPECIES

AND VEGETATION ASSOCIATIONS

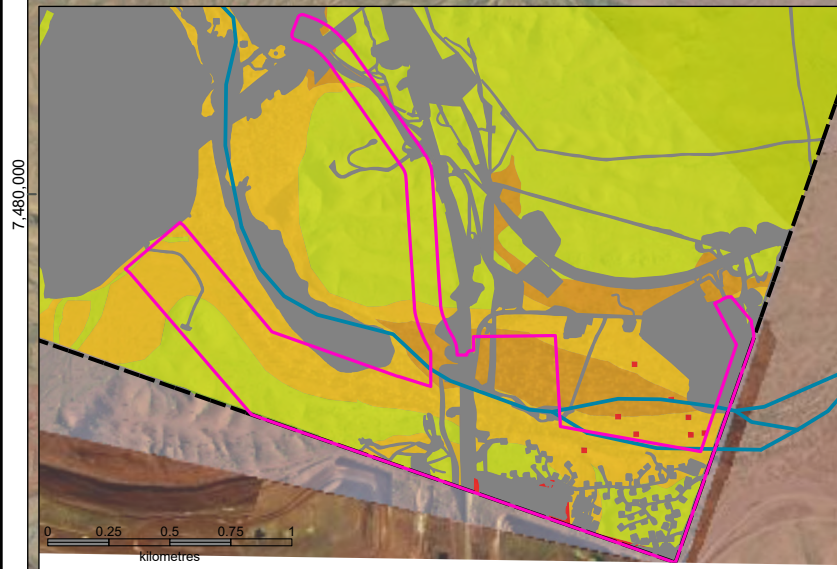
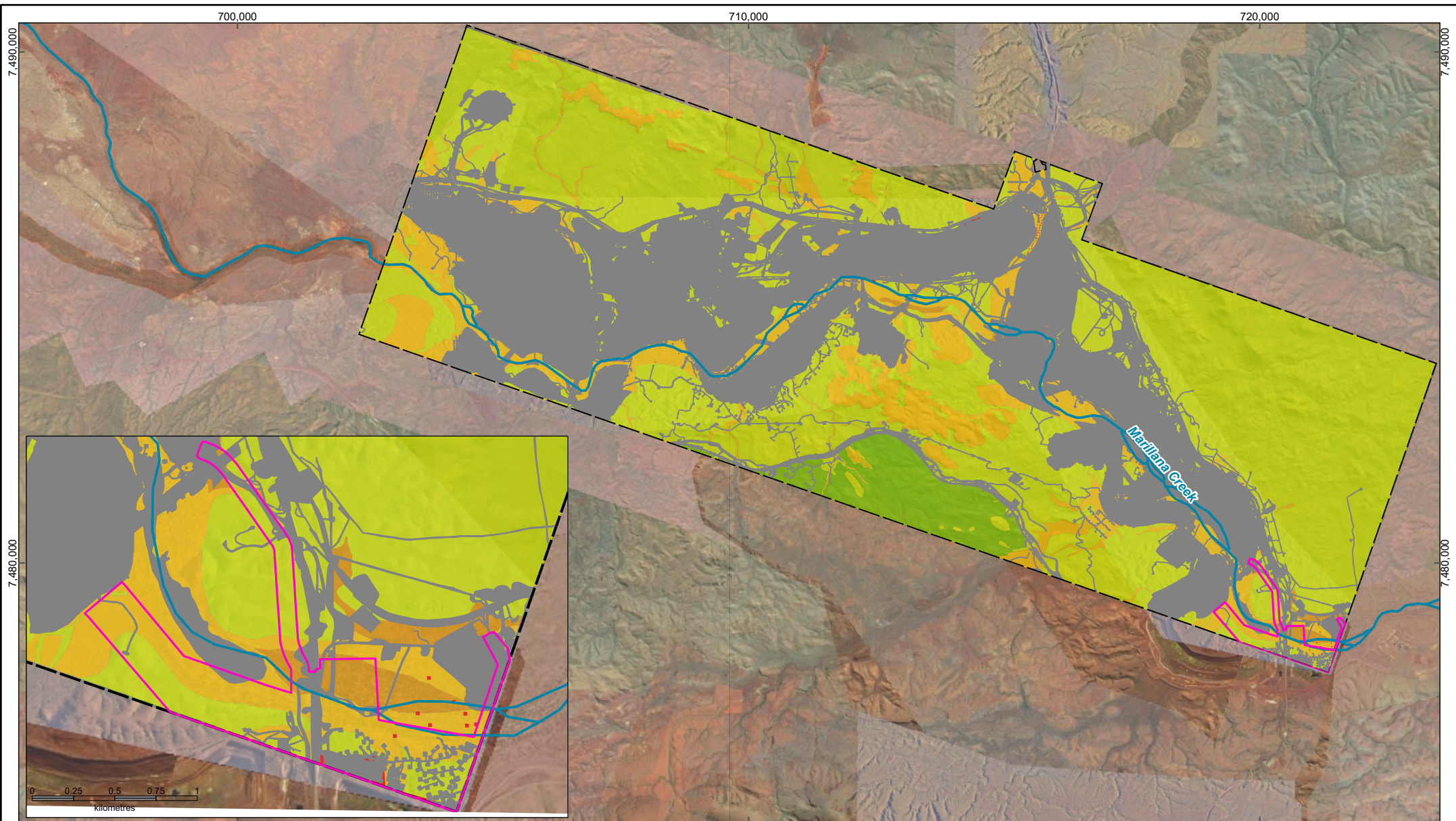
WAIO PLANNING, TECHNICAL & ENVIRONMENT

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DATE: 1/05/2025

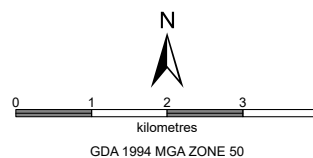
PREPARED: GEOMATICS
REQUESTOR: ENV APPROVALS

FIGURE: **4**

A1205-086-RevD



- Marillana Creek
 - Indicative Footprint
 - Development Envelope
 - Existing Disturbance
- Vegetation Condition**
- Completely Degraded
 - Degraded
 - Poor
 - Good
 - Very Good
 - Excellent
 - Pristine



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MARILLANA CREEK (YANDI) BEMP VEGETATION CONDITION

WAIO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4: 1:100,000

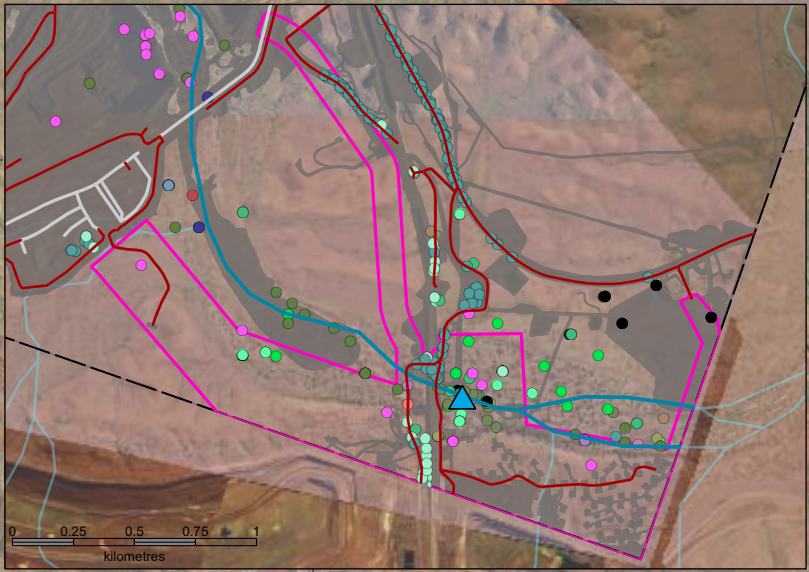
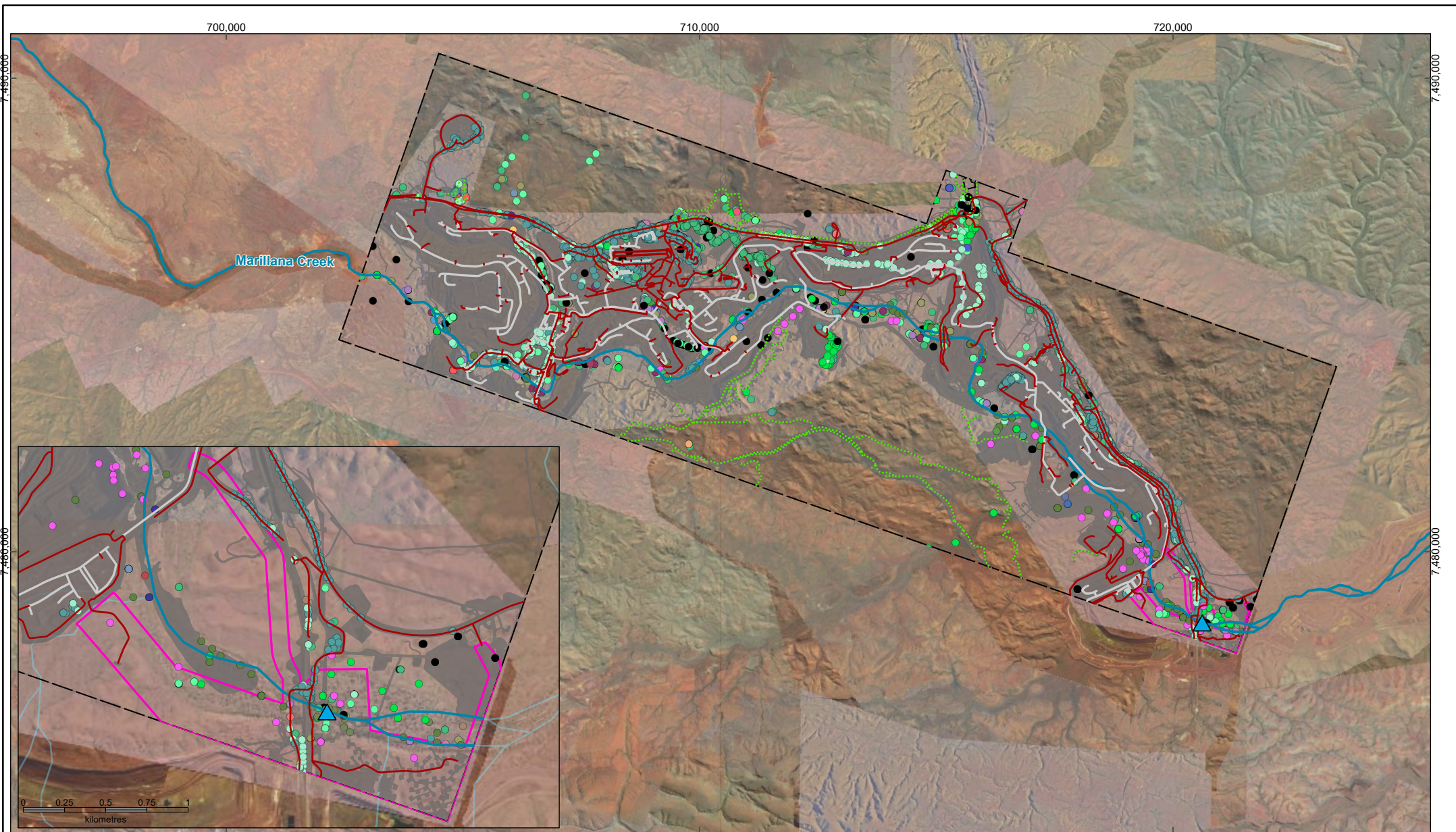
PREPARED: GEOMATICS

FIGURE: 5

DATE: 28/04/2025

REQUESTOR: ENV APPROVALS

A1205-087-RevB

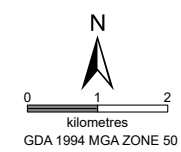


- Indicative Footprint
- Development Envelope
- Existing Disturbance
- High Risk Weed Areas**
- Tracks
- Haul Roads
- Minor Roads
- Marillana Creek
- ▲ Surplus Water Discharge Point

- *Aerva javanica*
- *Argemone ochroleuca*
- *Argemone ochroleuca subsp. ochroleuca*
- *Bidens bipinnata*
- *Cenchrus ciliaris*
- *Cenchrus setiger*
- *Centaurea melitensis*
- *Chloris barbata*
- *Chloris virgata*
- *Citrullus amarus*
- *Citrullus colocynthis*
- *Cynodon dactylon*

- *Datura leichhardtii*
- *Datura leichhardtii subsp. leichhardtii*
- *Digitaria ciliaris*
- *Distimake dissectus var. dissectus*
- *Echinochloa colona*
- *Erigeron bonariensis*
- *Euphorbia hirta*
- *Flaveria trinervia*
- *Lactuca serriola*
- *Lactuca serriola forma serriola*
- *Malvastrum americanum*
- *Rostraria cristata*

- *Rumex vesicarius*
- *Setaria verticillata*
- *Sigesbeckia orientalis*
- *Sisymbrium orientale*
- *Solanum nigrum*
- *Sonchus asper*
- *Sonchus oleraceus*
- *Tribulus terrestris*
- *Tridax procumbens*
- *Vachellia farnesiana*



PUBLIC

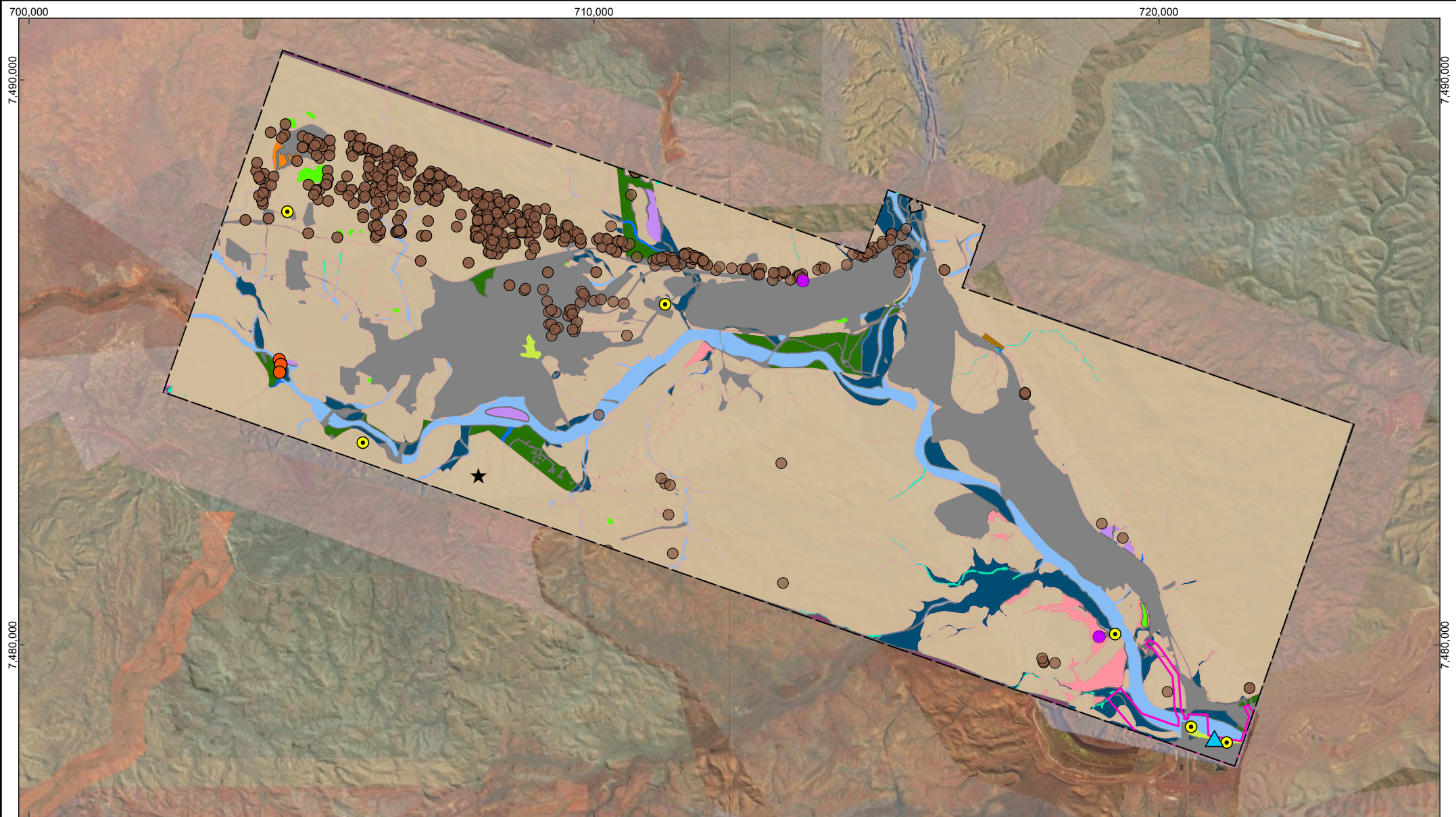
MARILLANA CREEK (YANDI) BEMP

INTRODUCED FLORA (WEEDS)

WAIO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4: 1:107,891 PREPARED: GEOMATICS FIGURE: **6**

DATE: 30/04/2025 REQUESTOR: ENV APPROVALS **A1205-088-RevC**



- ★ Ghost Bat Cave
- ▲ Artificial discharge point
- ▬ Existing Disturbance
- ▬ Development Envelope
- ▬ Indicative Footprint

Threatened fauna species records

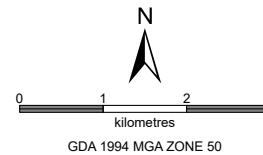
- Northern Quoll (*Dasyurus hallucatus*) - Endangered
- Pilbara Olive Python (*Liasis olivaceus barroni*) - Vulnerable
- Western Pebble-mound Mouse (*Pseudomys chapmani*) - Priority 4

Migratory fauna species records

- Common Sandpiper (*Actitis hypoleucos*) - Migratory

Habitat Type

- Breakaway/ Cliff
- Calcrete Plain
- Cleared/ Disturbed
- Drainage Area/ Floodplain
- Gorge/ Gully
- Hardpan Plain
- Hillcrest/ Hillslope
- Major Drainage Line
- Medium Drainage Line
- Minor Drainage Line
- Mulga Woodland
- No Survey Data
- Sand Plain
- Sandy/Stony Plain
- Stony Plain
- Undulating Low Hills
- Wetland



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MARILLANA CREEK (YANDI) BEMP SIGNIFICANT FAUNA RECORDS AND HABITAT TYPES

WAIO PLANNING, TECHNICAL & ENVIRONMENT

SCALE @ A4: 1:90,480

PREPARED: GEOMATICS

FIGURE: **7**

DATE: 28/04/2025

REQUESTOR: ENV APPROVALS

A1205-089-RevC

2 EMP Components

BHP has provided detail of the BEMP components in tabular format (Table 3 and Table 4), as per the preferred approach outlined in the Instructions. BHP has not used the 'Schedule' approach (which the Instructions state may be used), as this BEMP covers only one operation. BHP may adopt the 'Schedule' approach in future for this BEMP, should additional activities, operations or Ministerial Statements apply.

Table 3: Flora and Vegetation Objective-based components

Purpose: To meet the requirements of Conditions XX for significant flora and XX Weeds of Ministerial Statement XXXX

Rationale: Objective-based components (i.e management actions) have been determined to best meet the EPA’s Objectives as the Approved Proposal has been in operation since 1991, with mining proposed to cease in approximately 2033. (see Section 1.4.1, Table for details)

EPA Factor and objective:	Flora and Vegetation – to protect flora and vegetation so that biological diversity and ecological integrity are maintained.
EMP objectives	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 Minimise the spread of weed species
Key environments values:	Significant flora taxa within the Development Envelope.
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of significant flora, due to direct impacts from clearing of native vegetation Significant impacts to native flora and vegetation from weeds (introduced flora species).

Objective-based components			
Management Targets	Management Actions	Monitoring and timing / frequency of actions	Reporting
Significant Flora and Vegetation 1. Minimise or avoid impacts on identified flora species, vegetation associations and habitat areas for fauna species of conservation significance	(1) ensure clearing remains within approved limits (2) appropriate demarcation of identified populations and/or individuals of significant species (3) records of impacted flora species and vegetation associations of significance and consultation with regulators where potential impacts on significant species are identified (4) weed control and eradication measures and monitoring activities to manage weeds	(1) records of impacted flora and fauna species, vegetation associations and habitat areas of conservation significance and consultation with regulators where potential impacts on significant species are identified (2) weed control and eradication measures and monitoring activities to manage weeds (3) 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 Development Envelope from entering	Exception reporting If a management target has not been achieved: (1) report this to the CEO within seven (7) days of being aware of the potential non-compliance; (2) implement contingency measures; (3) investigate the cause; (4) investigate environmental impacts; (5) advise rectification measures to be implemented; (6) advise any other measures to be implemented to ensure no further impact; and (7) provide a report to the CEO within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures above. Regular reporting Submit an annual Compliance Assessment Report as part of the Annual Environment Report to the DWER by 1 October each year. Each annual Compliance Assessment Report will be endorsed by the proponent’s Chief Executive Officer, or a person approved by proponent’s Chief Executive Officer to be delegated to sign on the Chief Executive Officer’s behalf. Each annual Compliance Assessment Report will: (1) state whether each condition of this Statement has been complied with, including: (a) exceedance of any proposal limits and extents; (b) achievement of environmental outcomes; (c) achievement of environmental objectives; (d) requirements to implement the content of environmental management plans; (e) monitoring requirements; (f) implement contingency measures; (g) requirements to implement adaptive management; and (h) reporting requirements; (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met; (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance; (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance; (5) be provided in a form suitable for publication on the proponent’s website and online by the Department of Water and Environmental Regulation; (6) be prepared and published consistent with the latest version of the Compliance Assessment Plan which the CEO has confirmed by notice in writing satisfies the relevant requirements of the implementation conditions.
Significant flora 1. If new significant flora records are identified within the Development Envelope, update BHP’s internal GIS layer with these records within 60 days of identifying (electronic demarcation).	Significant flora 1. Electronically demarcate all new significant flora locations within the Development Envelope in the GIS system for use in PEHR system.	Significant flora Annual record of the number of remaining Priority Flora records within the Development Envelope (Figure 4) that have been disturbed.	See above

Objective-based components			
Management Targets	Management Actions	Monitoring and timing / frequency of actions	Reporting
<div>2. Update any changes of classification status of significant flora species demarcated within the Development Envelope on internal databases and GIS spatial layers, within 60 days of annual review.</div> <div>3. Undertake all new direct clearing associated with ground disturbance within the Development Envelope in accordance with PEAHR authorisation.</div>	<div>2. Review classification status of significant flora species demarcated within the Development Envelope annually.</div> <div>3. Implement the PEAHR process prior to all new direct clearing associated with ground disturbance.</div> <div>4. Modify land clearing plans (if proposed clearing may disturb known locations of Priority Flora), where practicable, to minimise disturbance to known Priority Flora within the Development Envelope.</div> <div>5. Consult with DWER if a potential significant impact to a significant flora species within the Development Envelope is identified.</div>	<div>Annual land disturbance reconciliation (hectares and spatial footprint).</div>	
<div>Weeds</div> <div>1. No new weeds (introduced flora species) are introduced within the Development Envelope that are attributable to the Proposal.</div>	<div>Weeds</div> <div>1. Document the location, approximate number and type of each weed species recorded within the Development Envelope during vegetation surveys (including weed mapping and control visits).</div> <div>2. Undertake weed control and eradication (treatment by chemical and manual methods) within high priority areas within the Development Envelope.</div> <div>3. Implement weed hygiene measures on vehicles and equipment entering, working within and/or leaving the Development Envelope.</div> <div>4. Review weed species annually, including species identified within the Development Envelope, species which have the potential to be introduced in the Development Envelope and currency of classification.</div>	<div>Weeds</div> <div>Undertake weed mapping annually to monitor the presence/absence and intensity of weeds</div> <div>Undertake control and eradication measures in high priority and/or risk areas at least annually prior to the end of June</div>	

Table 4: Terrestrial Fauna Objective-based components

Purpose: To meet the requirements of Condition xx of MS XXXX for significant fauna

Rationale: Objective-based components (i.e. management actions) have been determined to best meet the EPA's Objectives as the Approved Proposal has been in operation since 1991, with mining proposed to cease in approximately 2033 (see Table for details)

EPA Factor and objective:	Terrestrial Fauna – to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
EMP objective:	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 environments values:	Significant fauna taxa and habitat within the Development Envelope.
Key impacts and risks:	Risk to biological diversity and/or ecological integrity of significant fauna, due to direct loss of habitat.

Objective-based components			
Management Targets	Management Actions	Monitoring and timing/frequency of actions	Reporting
Significant Fauna 1. Minimise or avoid impacts on fauna and habitat areas for species of conservation significance	1. Ensure clearing remains within approved clearing limits. Clearing for the Proposal will be limited to a maximum extent of 95 ha of native vegetation to minimise impacts to fauna habitats. 2. Take records of impacted significant fauna species, and habitat areas of significance and consult with regulators where potential impacts on significant species are identified 3. The use of barbed wire fencing will be avoided as far as practicable to limit the potential impact to bats from entanglement in fencing. 4. If barbed wire fencing is required, reflectors will be installed where appropriate.	1. Take records of impacted significant fauna species and habitat areas of significance and consult with regulators where potential impacts on significant species are identified	Exception reporting If a management target has not been achieved: (1) report this to the CEO within seven (7) days of being aware of the potential non-compliance; (2) implement contingency measures; (3) investigate the cause; (4) investigate environmental impacts; (5) advise rectification measures to be implemented; (6) advise any other measures to be implemented to ensure no further impact; and (7) provide a report to the CEO within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures above. Regular reporting Submit an annual Compliance Assessment Report as part of the Annual Environment Report to the DWER by 1 October each year. Each annual Compliance Assessment Report will be endorsed by the proponent's Chief Executive Officer, or a person approved by proponent's Chief Executive Officer to be delegated to sign on the Chief Executive Officer's behalf. Each annual Compliance Assessment Report will: (1) state whether each condition of this Statement has been complied with, including: (a) exceedance of any proposal limits and extents; (b) achievement of environmental outcomes; (c) achievement of environmental objectives; (d) requirements to implement the content of environmental management plans; (e) monitoring requirements; (f) implement contingency measures; (g) requirements to implement adaptive management; and (h) reporting requirements; (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met; (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance; (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance; (5) be provided in a form suitable for publication on the proponent's website and online by the Department of Water and Environmental Regulation; (6) be prepared and published consistent with the latest version of the Compliance Assessment Plan which the CEO has confirmed by notice in writing satisfies the relevant requirements of the implementation conditions. The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address: (1) the status of implementation of the Proposal as defined in schedule 1 of this statement; (2) evidence of compliance with the conditions; and (3) the performance of the environmental management plans and programmes. Condition 4-2

Objective-based components			
Management Targets	Management Actions	Monitoring and timing/frequency of actions	Reporting
<div><div>2.</div><div>If new significant fauna records are identified within the Development Envelope, update BHP's internal GIS layer with these locations within 60 days of finding (electronic demarcation).</div></div> <div><div>3.</div><div>Update any changes of classification status of significant fauna species demarcated within the Development Envelope on internal databases and GIS spatial layers, within 60 days of annual review.</div></div> <div><div>4.</div><div>Undertake all new direct clearing associated with ground disturbance within the Development Envelope in accordance with PEAHR authorisation.</div></div>	<div><div>5.</div><div>Electronically demarcate all new locations of significant fauna within the Development Envelope in the GIS system for use in PEAHR system.</div></div> <div><div>6.</div><div>Review classification status of significant fauna species demarcated within the Development Envelope annually.</div></div> <div><div>7.</div><div>Implement the PEAHR process prior to all new direct clearing associated with ground disturbance.</div></div> <div><div>8.</div><div>Modify land clearing plans (if proposed clearing may disturb known locations of Pilbara Olive Python), where practicable, to minimise disturbance to known significant fauna within the Development Envelope.</div></div> <div><div>9.</div><div>BHP will engage fauna spotters where clearing is to be undertaken in critical fauna habitat where recent records of species of significant fauna have been identified.</div></div> <div><div>10.</div><div>Construction will be mostly undertaken during day-light hours which will minimise impacts to nocturnal fauna species.</div></div> <div><div>11.</div><div>All sightings and events involving significant fauna will be identified and captured in WAIOS Event Management System.</div></div> <div><div>12.</div><div>Appropriate speed limits will be imposed on access roads and construction areas to minimise the risk of vehicle strike or fauna interactions with machinery.</div></div> <div><div>13.</div><div>Excessive dust will be minimised as far as practical to minimise degradation of fauna habitats.</div></div> <div><div>14.</div><div>The Proposal will be operated within the existing groundwater licence limits for surplus water discharge.</div></div> <div><div>15.</div><div>The keeping of domestic pets or animals on site will be prohibited.</div></div> <div><div>16.</div><div>Standard hygiene practices will be implemented to minimise introduction and spread of weeds including annual weed control (if required) and vehicle hygiene measures when entering/leaving construction areas.</div></div>	<div><div>2.</div><div>Annual record of the number of remaining significant fauna records and area of significant fauna habitat within the Development Envelope (Figure 7) that have been disturbed.</div></div> <div><div>3.</div><div>Annual land disturbance reconciliation (hectares and spatial footprint).</div></div>	<div><div>See above</div></div>

3 Adaptive management and review of the EMP

3.1 Adaptive management approach

BHP applies an adaptive management framework for implementing management measures identified in this EMP, which is consistent with the Instructions. Adaptive management is a structured, iterative process to decision making. The framework embeds a cycle of monitoring, reporting and implementing change where required. It allows an evaluation of the management and mitigation measures so that they are progressively improved and refined, or alternative solutions adopted, to ensure that environmental objectives and outcomes in the plan are achieved. The key steps of the adaptive management approach are outlined in Figure 8.

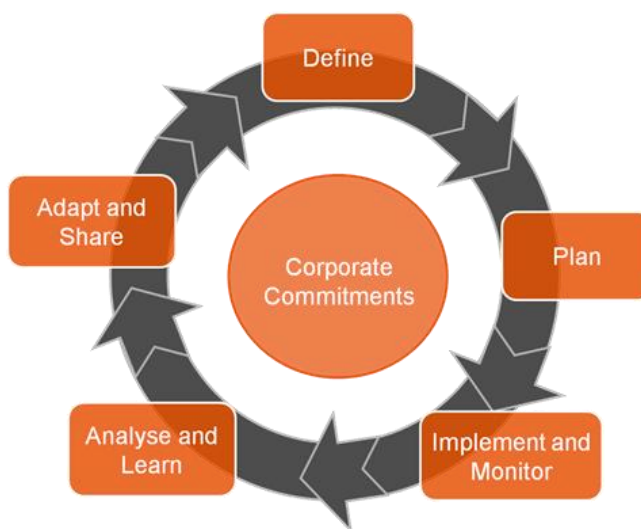


Figure 8: BHP's adaptive management approach

Where the EMP is a requirement of a Ministerial Statement (MS) condition, BHP notes that if it chooses to amend an EMP component in Table or Table 4: based on information gained through adaptive management, it must seek formal approval from the Department of Water and Environmental Regulation (DWER).

3.2 Review and update of this EMP

BHP will review this EMP (and update it if required), to ensure that it achieves the identified environmental objectives and meets MS conditions. A review may arise from the following:

- Where required by a MS condition. As per the requirements of MS679 Conditions 11-2 and 12-2, this BEMP will be reviewed, and revised as required, at intervals not exceeding 5 years.
- If initiated by BHP as part of the adaptive management process.
- If triggered by a MS condition (e.g. for non-achievement of management targets and/or failure to implement management actions).

Changes to the endorsed version of the EMP may arise from the following:

- BHP reviews the EMP if the EPA or relevant government agencies develop new or amend existing guidance or policy.
- BHP adds components when a change to the existing operation is proposed.

- BHP adds or amends components when there is a change to the Combined Proposal and/or MS conditions.
- The CEO of DWER directs BHP to revise the EMP.
- The CEO of DWER confirms by notice in writing that it has been demonstrated that the objective and/or outcome in the relevant condition is being and will continue to be met and therefore implementation of certain condition requirements addressed in the EMP are no longer required.

4 Stakeholder consultation

BHP has considered feedback from consultation on the previous version of this EMP (WAIO level Biodiversity Environmental Management Plan, Version 0 (BHP 2021)) in developing the current Yandi BEMP as summarised within Table .

BHP will consult with regulators where potential impacts on significant species are identified.

BHP will consult with government agencies (including decision-making authorities) and Traditional Owners (through targeted consultation and via administration of Native Title heritage agreements), where relevant, in relation to the revision of this EMP.

Table 5: Stakeholder consultation

Stakeholder	Date	Topics/issues discussed	BHP response and outcome
DWER EPA Services	9 April 2025	Pre-referral meeting to further discuss the Proposal, discuss key factors in more detail, predicted impacts and proposed management measures	BHP intends to submit the BEMP with the Significant Amendment
Banjima Native Title Aboriginal Corporation	30 August 2024	BNTAC consultants provided feedback on the Yandi E8 Environmental Management Plans including the BEMP	BHP amended the BEMP following BNTAC feedback
DWER-EPA Services	20 March 2024	Pre-referral meeting to introduce the Proposal, discuss key factors, predicted impacts and proposed management measures. Marillana Creek (Yandi) Life of Mine Proposal Significant Amendment to be referred. The referral will include this BEMP.	BHP intends to submit the BEMP with the Significant Amendment.
DWER EPA Services	March 2021	A revised Yandi BEMP was submitted to DWER on 18 March 2021.	The Yandi BEMP Version 0 dated March 2021 was approved on 16 April 2021.
DWER-EPA Services	29 Oct 2020	BHP noted that a revised EMP is in preparation to address DWER August 2018 comments. BHP is preparing a standalone Yandi Operation level EMP for MS679 (Yandi BEMP) and updating the EMP to consider the recently revised <i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA 2020). The Yandi BEMP is undergoing internal review.	BHP intended to submit the Yandi BEMP to DWER in November 2020.
DWER-EPA Services (formerly OEPA)	23 Mar 2017	Alignment of the WAIO Asset level <i>Biodiversity Environmental Management Plan</i> (V1.0) to the <i>Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans</i> (EPA 2016) template.	BHP revised the WAIO Asset level <i>Biodiversity Environmental Management Plan</i> .

Stakeholder	Date	Topics/issues discussed	BHP response and outcome
DBCA (formerly DPaW)	19 Dec 2016	DPaW requested additional information regarding specific aspects of the WAIO Asset level <i>Biodiversity Environmental Management Plan</i> (V1.0) (management actions, monitoring, adaptive management and review).	BHP responded (29 December 2016), providing the requested additional information.

5 Changes to an EMP

This BEMP (V2.0) has been developed for the Significant Amendment and replaces the BEMP (V0) which was developed to satisfy conditions 11 (Conservation of Significant Flora and Fauna) and 12 (Weeds) of Ministerial Statement (MS) 679 for the Approved Proposal.

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Appendices

Appendix 1 Species details for selected weeds recorded at Yandi

Scientific Name (Common name)	2010	2011	2014 (a)	2014 (b)	2015 (a)	2015 (b)	2016 (a)	2016 (b)	2017 (a)	2017 (b)	2018	2019 (a)	2019 (b)	2021	2022	2023	2024
* <i>Aerva javanica</i> (kapok bush)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
* <i>Argemone ochroleuca</i> (Mexican poppy)	✓	✓	✓														
* <i>Bidens bipinnata</i> (bipinnate beggartick)	✓	✓	✓		✓									✓	✓		
* <i>Cenchrus ciliaris</i> (buffel grass)	✓	✓	✓		✓									✓			✓
* <i>Chloris virgata</i> (feathertop Rhodes grass)	✓		✓		✓										✓	✓	✓
* <i>Citrullus amarus</i> (pie melon)			✓		✓												
* <i>Citrullus colocynthis</i> (colocynth)		✓							✓		✓			✓	✓	✓	✓
* <i>Cynodon dactylon</i> (couch)		✓			✓									✓		✓	✓
* <i>Digitaria ciliaris</i> (summer grass)			✓		✓				✓								
* <i>Echinochloa colona</i> (awnless barnyard grass)			✓														✓
* <i>Erigeron bonariensis</i> (flaxleaf fleabane)		✓	✓	✓	✓			✓	✓					✓		✓	
* <i>Euphorbia hirta</i> (asthma plant)		✓													✓	✓	
* <i>Flaveria trinervia</i> (speedy weed)									✓			✓	✓	✓	✓	✓	
* <i>Lactuca serriola</i> (prickly lettuce)			✓	✓	✓			✓			✓	✓	✓	✓	✓	✓	
* <i>Malvastrum americanum</i> (spiked malvastrum)	✓		✓		✓			✓	✓	✓		✓	✓	✓	✓	✓	✓
* <i>Rumex vesicarius</i> (ruby dock)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
* <i>Setaria verticillata</i> (whorled pigeon grass)		✓															✓
* <i>Sigesbeckia orientalis</i> (Indian weed)	✓																
* <i>Sisymbrium orientale</i> (Indian hedge mustard)	✓																

Scientific Name (Common name)	2010	2011	2014 (a)	2014 (b)	2015 (a)	2015 (b)	2016 (a)	2016 (b)	2017 (a)	2017 (b)	2018	2019 (a)	2019 (b)	2021	2022	2023	2024
* <i>Solanum nigrum</i> (black berry nightshade)		✓		✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓
* <i>Sonchus asper</i> (rough sowthistle)							✓							✓			
* <i>Sonchus oleraceus</i> (common sowthistle)	✓	✓		✓	✓				✓		✓	✓	✓	✓		✓	
* <i>Stylosanthes hamata</i> (verano stylo)		✓															
* <i>Taraxacum khatoonae</i> (dandelion)		✓															
* <i>Tribulus terrestris</i> (caltrop)		✓															
* <i>Tridax procumbens</i> (tridax)			✓		✓				✓		✓	✓	✓	✓	✓	✓	✓
* <i>Vachellia farnesiana</i> (mimosa bush)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓

(Note – a and b represent two separate weed monitoring events in the one year)