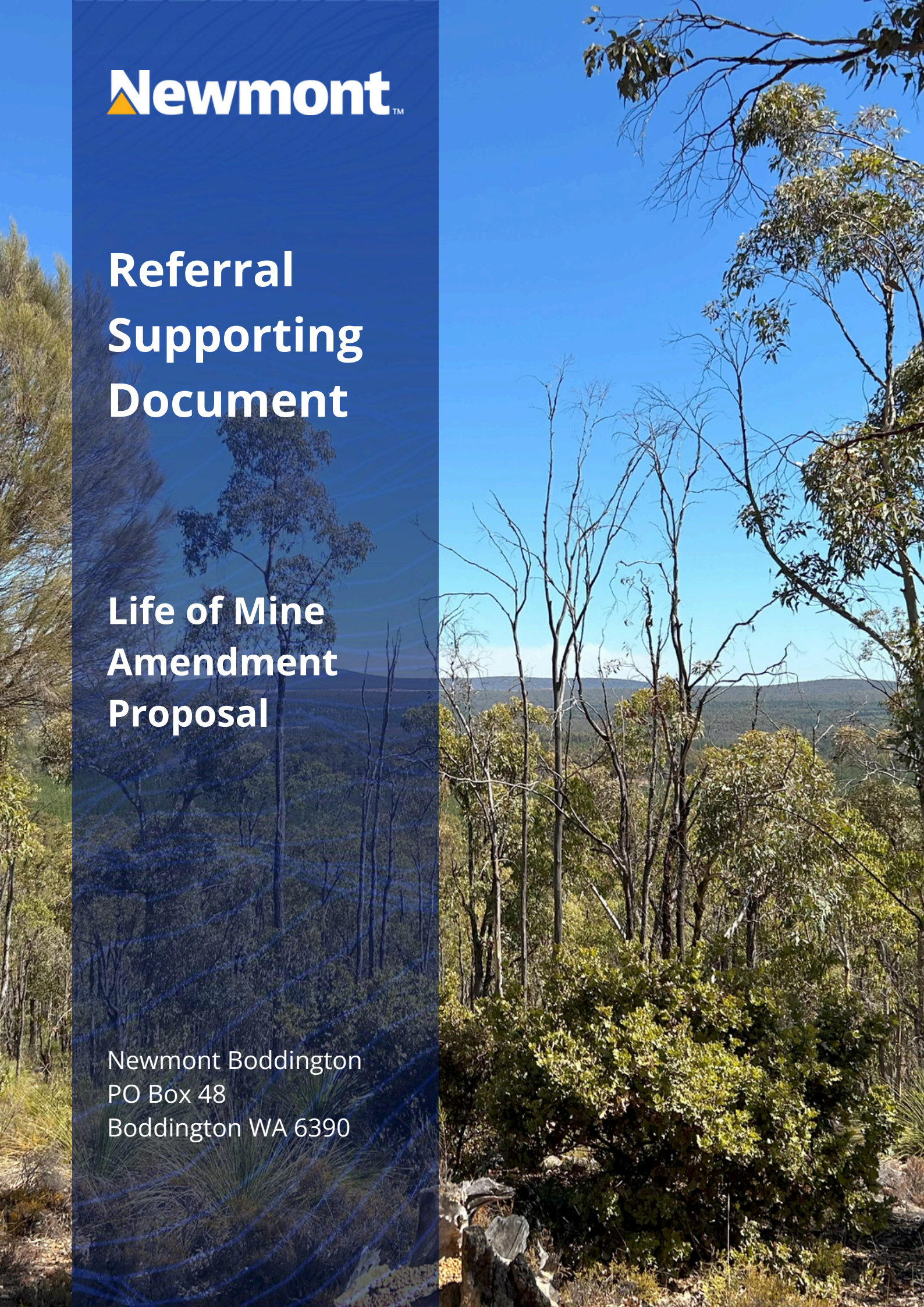
Newmont™

Referral Supporting Document

Life of Mine Amendment Proposal



Newmont Boddington
PO Box 48
Boddington WA 6390

Executive Summary

The Newmont Boddington Gold Pty Ltd (**Newmont Boddington** or **Proponent**) operates the Newmont Boddington Mine located approximately 12 kilometres (**km**) northwest of the town of Boddington and around 130 km to the southeast of Perth, Western Australia (**WA**). Newmont Boddington produces approximately 790,000 ounces of gold and 80 million pounds of copper annually.

Newmont Boddington moves approximately 90 Million tonnes (**Mt**) of rock annually, from the North and South Pits (Figure ES). Approximately 50% of this material is transported to the primary crusher and then transported, via conveyor, to the processing plant. The crushed slurry is treated through a flotation circuit which produces a copper concentrate product. This copper concentrate product is trucked to Bunbury port where it is exported to refineries around the globe. The slurry then passes through a Carbon-in-Leach (CIL) process which utilises cyanide to remove gold and gold doré bars are produced from the CIL circuit.

Rock which does not contain sufficient resources for mining is referred to as 'waste rock' and this is placed on the waste rock dumps (**WRD**) near the open pits. Waste material from the processing operations is termed 'tailings' and this is transported via pipeline to the tailings storage facility known as the F1/F3 Residue Disposal Area (**RDA**).

F1/F3 RDA is the only active facility currently receiving tailings from the processing plant (Figure ES). This facility will reach its current maximum design capacity in early 2030. A new, previously approved storage facility, RDA2, will be required for storage of tailings by 2029 to ensure continued operations at Newmont Boddington Mine.

Overview of the Proposal

The Newmont Boddington Life of Mine Extension Amendment Proposal (**Proposal**), is a significant amendment to the Newmont Boddington Gold Mine approved under Ministerial Statement 971 (**Approved Proposal**). The term '**Revised Proposal**' is used to refer to the Proposal plus the Approved Proposal. Accordingly, a Revised Development Envelope (**RDE**) has been developed to encompass the Revised Proposal.

This Proposal principally comprises additional footprint which will be required to ensure the safe construction and operation of the previously approved RDA2 tailings dam in the Saddleback Treefarm. The RDA2 inundation footprint was approved as part of the Life of Mine Expansion for Newmont Boddington approved in 2014 (**MS971**).

The implementation of this Proposal requires additional footprint to the Approved Proposal and comprises, but is not limited to, the following activities:

- bauxite preservation and stockpiling as required
- expansion of the access road from Albany Highway
- access and perimeter roads
- pipeline and powerline corridors
- surface water management infrastructure
- construction laydowns
- office and workshop areas
- access road from the mine
- rehabilitation material (topsoil and gravel) stockpiles
- footprint for the F1/F3 RDA closure spillway construction
- potential discharge of treated water to the environment, and
- other associated infrastructure for the Revised Proposal.

A Proposal description summary and content elements for the Revised Proposal are provided in Table ES-1 and Table ES-2, respectively. The overall size of the development envelope under the Revised Proposal is 14,182 hectares (**ha**), with the Proposal comprising an additional disturbance of 1,560 ha.

It is important to note the Newmont Boddington Mine is fully operational and the Approved Proposal is, and will continue, being implemented pursuant to Ministerial Statement 971 during assessment of this Proposal. Other than as expressly provided in the description of this Proposal, there is no change proposed to the Approved Proposal. As an outcome of the assessment process, Newmont Boddington seeks a contemporised and consolidated Ministerial Statement for all continuing operations and future mining activities that together comprise the Revised Proposal.

The location and key characteristics of the Revised Proposal are presented in Figure ES.

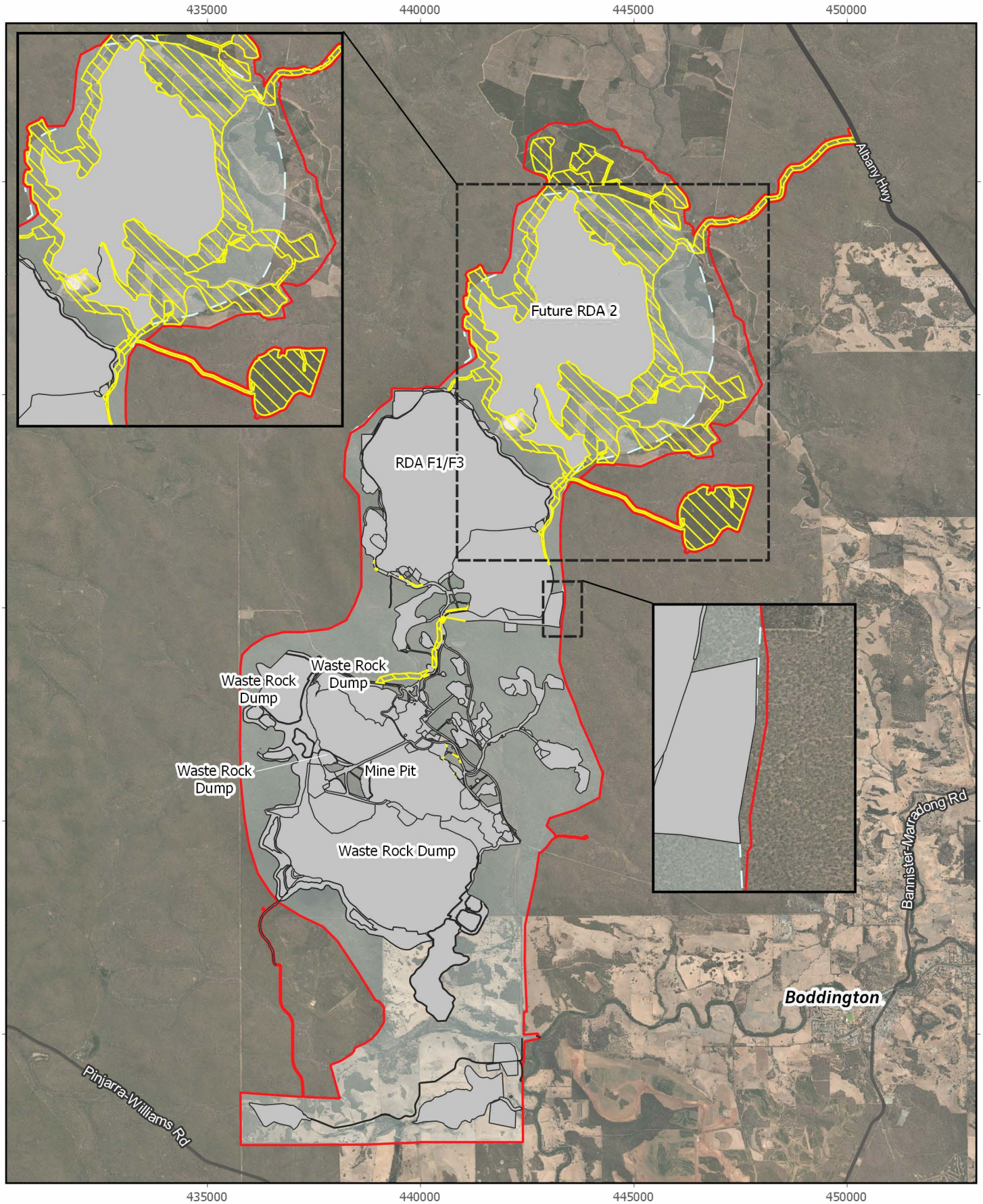


Figure Es1: Current and Proposed Operations

LEGEND

- Main Roads and Highways
- Proposal Footprint
- Approved Disturbance Footprint
- Revised Development Envelope
- Approved Development Envelope

0 1.5 3 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), CDM Smith Australia (2024)
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: mcdonaldlr Date: 13 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Master_250424 - LM-figures_A.qgz

Environmental Impact Assessment

The following key environmental factors are relevant to the assessment of the Proposal:

- Flora and Vegetation
- Terrestrial Fauna
- Inland Waters, and
- Social Surroundings.

Other environmental factors such as greenhouse gas (**GHG**) emissions are discussed in Section 12.

Table ES-3 summarises the potential impacts to these environmental factors as a result of the Proposal activities, together with the proposed mitigation and the predicted residual environmental outcome.

The key environmental values within and surrounding this Proposal are native vegetation and the Gringer Creek Catchment. These features provide shelter and foraging opportunities for fauna (including matters of national environmental significance (**MNES**) fauna) and include areas with Aboriginal heritage and visual amenity values. Native vegetation within this disturbance footprint required for this Proposal will be impacted directly from clearing for mining infrastructure requirements as described in this referral.

A significant impact has been identified as the loss of habitat for conservation significant species including the three black cockatoos (Forest Red-tailed, Carnaby's and Baudin's), Woylie and Chuditch. Direct offsets have been proposed and have been outlined in the Biodiversity Offset Strategy.

Newmont Boddington will submit a separate referral under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) for potential impacts on species listed as MNES.

Continued operations associated with this Proposal will also result in a change in social surroundings and amenity values in some locations, including incremental contribution of dust and noise, and changes in visual amenity, relative to the current operations. However, in the context of the pre-existing land use of the ongoing mining area and surroundings over the previous 35 years, preliminary assessment indicates the incremental contribution will not represent a significant cumulative impact. Overall, the preliminary potential impacts identified through the assessment of the Revised Proposal will be managed effectively through avoidance, management and mitigation measures. Many of these mitigation measures are well-established and considered effective in managing existing operations.

GHG emissions associated with the continuation of the Newmont Boddington Mine operations are currently, and will continue to be, regulated under the *National Greenhouse and Energy Reporting Act 2007* (**NGER Act**) and the Safeguard Mechanism.

After the mitigation hierarchy has been applied, which includes avoidance, minimisation and rehabilitation of impacts to key environmental factors and the proposed offsets, Newmont Boddington considers that this Proposal is in accordance with the *Environmental Protection Act 1986* (**EP Act**) Environmental Principles and can be managed to meet the WA Environmental Protection Authority's (**EPA's**) objective for all environmental factors through a revised and consolidated set of Ministerial Conditions for the Revised Proposal.

Current activities will continue to operate in accordance with existing approvals throughout the EPA and Commonwealth assessment process for this Proposal. Subject to the approval of this Proposal, continuation of the existing activities will occur during implementation of the Revised Proposal.

Table ES-1 General proposal content description

Proposal Title	Newmont Boddington Mine Life of Mine Extension Amendment
Proponent Name	Newmont Boddington Gold Pty Ltd
Short Description	The proposal is for the continuation of the existing operations and for an expansion of the existing operations at Newmont Boddington Mine and includes, but is not limited to: ▪ bauxite preservation and stockpiling as required ▪ expansion of the access road from Albany Highway ▪ access and perimeter roads ▪ pipeline and powerline corridors ▪ surface water management infrastructure ▪ construction laydowns ▪ office and workshop areas ▪ access road from the mine ▪ rehabilitation material (topsoil and gravel) stockpiles ▪ footprint for the F1/F3 RDA closure spillway construction ▪ potential discharge of treated water to the environment ▪ other associated infrastructure for the Proposal and Approved Proposal.

Table ES-2 Proposal Content Elements

Proposal element	Location and description	Existing proposal extent, capacity or range (Approved Proposal)	Proposed amendment (Proposal)	Maximum extent, capacity or range (Revised Proposal)
Physical element				
Development Envelope	Figure ES	12,856 ha	Increase development envelope by 1,326 ha	14,182 ha
Disturbance Footprint	Figure ES	Clearing of no more than 6,923 ha of vegetation within the 12,856 ha development envelope	Additional clearing of up to 1,560 ha of vegetation	Clearing of no more than 8,483 ha of vegetation within the 14,182 ha development envelope
Clearing of Native Vegetation	Figure ES	Clearing of no more than 5,435 ha of native vegetation within the 12,856 ha development envelope	Additional clearing of up to 528 ha of native vegetation	Clearing of no more than 5,963 ha of native vegetation within the 14,182 ha development envelope
Waste Rock Dumps	Figure ES	1500 Mt over life of proposal.	No change	1500 Mt over life of proposal.

Proposal element	Location and description	Existing proposal extent, capacity or range (Approved Proposal)	Proposed amendment (Proposal)	Maximum extent, capacity or range (Revised Proposal)
Mine Activities	Figure ES	Open cut basement mining to approximately 252 annual height datum (**AHD)** for the north pit and -432 AHD south pit.	No change	Open cut basement mining to approximately 252 AHD for the north pit and -432 AHD south pit.
Operational element				
Mine life		Continued operations until 2041	Operations continued until approximately 2046	Continued operations until approximately 2046
Water use		47 megalitres per day (**ML/day)**	No change	47 ML/day
Rehabilitation				
Progressive rehabilitation will be undertaken throughout the life of mine where practicable. The key closure outcome of this Proposal will be a safe, stable and non-polluting landscape consistent with the post-mining land use and will consider environmental and cultural heritage values.				
Commissioning				
Commissioning will be undertaken in accordance with the requirements of approvals under the EP Act.				
Decommissioning				
The Mine Closure Plan (**MCP**) will outline the plan for decommissioning of the mine and post-mining land use				
Other elements which affect extent of effects on the environment				
Proposal time	Continued Operations	2041	2046	20 years

Table ES-3 Summary of potential impacts, proposed mitigation and proposed environmental outcomes of this Proposal

Factor	
Flora and Vegetation	
Potential Impacts	**Direct Impacts:** Loss of vegetation and flora from clearing **Indirect impacts:** Changes to vegetation or impacts to flora species from dieback, weeds and dust. Changes to vegetation from changes to surface water regimes
Mitigation hierarchy	**Avoid** ▪ The Proposal has been designed to avoid impacts to PEC and riparian vegetation **Minimise** ▪ Limit additional clearing for the Proposal to 528 ha of native vegetation. ▪ location has been selected to prioritise the use of pine plantation and existing cleared land where possible. **Rehabilitate** ▪ Continue to manage rehabilitation and closure according to the measures in the Mine Closure Plan.
Residual impacts, including assessment of significance	Residual impacts on Flora and Vegetation following application of the mitigation hierarchy: ▪ Loss of 528 ha of native vegetation ▪ Loss of Priority Flora taxa.
Proposed environmental outcomes	Environmental outcomes for the residual impacts on Flora and Vegetation: ▪ Contributes to the cumulative clearing of Very Good to Excellent condition vegetation in the Northern Jarrah Forest IBRA Region. ▪ No impacts to regionally significant vegetation (PECs); and locally significant vegetation will be maintained in the local area to an extent that ecological integrity is not threatened ▪ The representation of each vegetation complex in the Northern Jarrah Forest IBRA Region will be maintained ▪ The representation of vegetation types in the Northern Jarrah Forest IBRA region will be maintained.
Terrestrial Fauna	
Potential Impacts	**Direct Impacts:** Loss of fauna habitat and/or fauna individuals/species records from clearing Fragmentation of fauna habitat Increased risk of mortality or injury from vehicle strike/interactions with machinery **Indirect Impacts** Changes to fauna habitats from altered surface water regimes (indirect)

	Habitat degradation or species disturbance due to increased dust, noise, vibration or light Changes to fauna habitat from weeds and dieback Increased competition or predation by non-native species.
Mitigation hierarchy	**Avoid** ▪ High value habitat features for confirmed SRE including granite outcrops. ▪ Riparian vegetation and fauna habitat on Gringer Creek **Minimise** ▪ Limit additional clearing for the Proposal to 528 ha of native vegetation ▪ Continue to implement the Newmont Boddington Terrestrial Fauna Management Plan which includes: o Fauna trapping and translocation program prior to commencement of clearing in native vegetation o Use suitably qualified fauna spotters for clearing of native vegetation o Impose appropriate speed limits on access roads and construction areas o Annual feral animal management program will be implemented ▪ Design and construct infrastructure using management practices in order to minimise indirect impacts to terrestrial fauna habitats (i.e. sediment control, dust suppression measures, utilsing existing cleared areas etc) ▪ Continue to implement the Newmont Boddington Terrestrial Fauna Management Plan which includes: ▪ Inspection of trees with hollows for Black Cockatoo breeding prior to clearing. If fledglings is identified, clearing will not occur until after the hollow has been vacated. **Rehabilitate** ▪ Rehabilitate areas with the aim of providing Black Cockatoo foraging habitat ▪ Rehabilitation to include provision of fauna habitat such as hollow logs and tree stumps.
Residual impacts, including assessment of significance	Residual impacts on Terrestrial Fauna following application of the mitigation hierarchy Clearing of the following habitat for conservation significant fauna: ▪ 475 ha of foraging habitat for BBC ▪ 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat. ▪ 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC ▪ 472 ha for Woylie ▪ 500 ha for Numbat ▪ 517 ha for Chuditch
Proposed environmental outcomes	Environmental outcomes for the residual impacts on Terrestrial Fauna: ▪ The viability of significant fauna populations known from the RDE will be maintained ▪ Clearing of foraging, breeding and dispersal habitat for conservation significant fauna in the Northern Jarrah Forest IBRA region. ▪ Minimise direct impacts to conservation significant fauna related to vehicle/machinery strike.

Assessment of offsets	Newmont Boddington proposes to offset the following significant residual impacts to counterbalance the impacts to ensure the EPA's objective for Terrestrial Fauna can be met: Clearing of the following habitat for conservation significant fauna: ▪ 475 ha of foraging habitat for BBC ▪ 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat. ▪ 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC ▪ 472 ha for Woylie ▪ 500 ha for Numbat ▪ 517 ha for Chuditch Newmont Boddington is exploring preliminary direct biodiversity offset options to counterbalance the residual impact of the Proposal including: ▪ Habitat Preservation Offset – Safeguarding and enhancing 1,324 hectares of native vegetation in very good or better condition, with management actions to improve habitat value for conservation-significant species. ▪ Restoration Offset – Rehabilitation of 150 hectares of Hotham Farm to establish a habitat corridor linking forest areas.
Inland Waters	
Potential Impacts	**Direct Impact** Alteration to surface water catchment flow and quality Alteration of hydrological regimes of surface water systems should discharge of treated water be required Alteration to local groundwater aquifers from implementation of the Revised Proposal.
Mitigation hierarchy	**Avoid** ▪ Minimise clearing footprint in native vegetation to critical infrastructure ▪ Maintain a buffer of vegetation between disturbance footprint and Gringer Creek ▪ Discharge to Hotham River in accordance with future licence conditions. Discharge during low flows to be avoided. **Mitigate** ▪ Perimeter drainage and water management structures constructed to control water movement to the environment to minimise potential discharge of sediment-laden water downstream of the Proposal and, to divert catchment upstream of the Proposal to minimise reduced flows to Gringer Creek ▪ Installation of seepage interception and management infrastructure as per design of RDA2 under the Approved Proposal ▪ Obtain and comply with Works Approval and Licence issued under Part V of the EP Act including implementation of monitoring programs ▪ Chemical and hydrocarbon storage to be managed in accordance with Newmont Standards, the project Environmental Management Plan during construction (under development) and operational Management Plans during operation inclusive of spill response

	▪ Routinely inspect condition and performance of pipelines, containment systems and internal drainage structures, to ensure they are in acceptable condition and / or operating appropriately ▪ Where stockpiles of rehabilitation materials are to remain in place for some time, implement bunding and surface stabilisation protocols to reduce sediment in stormwater runoff from the stockpiles ▪ Management of stormwater runoff from disturbed areas via a system of bunds and sumps ▪ Complete investigation into potential acid sulphate soils (ASS) to support development of construction environmental management plan ▪ Continue investigations including Hotham River mixing model and ecotoxicology assessment ▪ Assessment of potential discharge water treatment via a pilot plant ▪ Expansion of baseline monitoring program in accordance with recommendations from subject matter expert. **Rehabilitate** ▪ Action progressive rehabilitation opportunities as they arise ▪ The Proponent will prepare and implement a Mine Closure Plan in accordance with the DEMIRS Statutory Guidelines for Mine Closure Plans (DEMIRS 2020b) for the Proposal.
Residual impacts, including assessment of significance	Based on planned mitigations and predicted outcomes of ongoing studies, it is currently predicted that impacts to inland waters can be managed to avoid significant residual impact on inland waters.
Proposed environmental outcomes	The preliminary assessment predicts no significant changes to surface water and groundwater quality and quantity, including that of the adjacent Public Drinking Water Source Area and Hotham River are anticipated as a result of implementation of the Proposal or the Revised Proposal. The EPA objective for Inland Waters will be met through implementation of appropriate mitigation and monitoring programs.
Social Surroundings	
Potential Impacts	**Direct Impacts** ▪ Impacts to sites of Aboriginal cultural heritage value ▪ Impact to local air quality from the generation of PM from cleared areas, burning of waste vegetation, vehicle and equipment exhaust, use of unsealed roads and creation of stockpiles ▪ Noise emissions from construction and operational activities impacting sensitive receptors ▪ Reduced visual amenity experience for recreational users of the Bibbulmun Track from vegetation clearing. **Indirect Impacts** ▪ Physical or biological change to the environment, including hydrology, which may impact values associated with sites of significant cultural heritage.
Mitigation hierarchy	**Avoid** ▪ Application of buffer zones to all registered sites as per DPLH requirements and, to other identified sites of cultural significance (inclusive of scattered artefacts

	and/or identified habitat trees) as far as practicable and in consultation with the Gnaala Karla Booja Aboriginal Corporation (**GKBAC**) Cultural Advice Committee (**CAC**) and heritage Subject Matter Experts (**SME**) ▪ Reassessment of the footprint for this Proposal following heritage survey and amendment of footprint wherever possible (noting this has already been completed in one section of Plantation Road) ▪ Cultural heritage monitoring in place during clearing and/ or excavation works when in proximity to culturally significant sites and values ▪ Minimise clearing footprint in native vegetation to critical infrastructure. **Minimise** ▪ Where required, obtain and comply with approvals under the AH Act for any disturbance to Aboriginal Heritage sites (or other heritage places that are likely to be sites) for disturbance where required ▪ Development of a construction specific Cultural Heritage Management Plan in consultation with the GKBAC CAC ▪ Extension of existing mitigation measures into the construction EMP which will include implementation of dust suppression activities and mitigation for reducing noise emissions as far as practicable ▪ Where possible, coverage of rehabilitation stockpiles with vegetated material such as mulch to encourage plant growth to minimise dust generation ▪ Adherence to speed limits by all personnel ▪ Implementation of work area inspections to account for visual assessment of dust ▪ Establishment of additional dust and noise monitoring at key locations near sensitive premises to measure dust and noise emissions ▪ Obtain and comply with regulatory instruments such as works approvals and licences ▪ Procedures in place to respond to complaints, conduct investigations and implementation of further controls. **Rehabilitate** ▪ Where agreement can be reached through consultation with GKBAC CAC, implementation of improvement program for local Aboriginal sites outside of Proposal footprint. Works to be implemented under the guidance of GKBAC and include works for indigenous peoples such as GKB Rangers ▪ Progressive rehabilitation will be undertaken for areas no longer required for operational purposes.
Residual impacts, including assessment of significance	It is acknowledged additional heritage surveys and revised modelling studies are planned to be completed for the Proposal and Revised Proposal to enable further discussion of potential impacts on social surroundings. However, implementation of planned mitigation measures are predicted to ensure this Proposal and the Revised Proposal meets the EPA's objective for social surroundings. Based on preliminary assessment, significant residual impacts on social surroundings are not anticipated as a result of the implementation of the Proposal or the Revised Proposal and this will be further discussed in the ERD.

Proposed environmental outcomes	Noise and dust emissions will be managed within applicable criteria under existing regulations and guidance and in accordance with any approval conditions. Where disturbance to Aboriginal sites cannot be avoided, applications for consent to disturb these sites will be made under the Aboriginal Heritage Act. Preparation of submissions will be undertaken in consultation with the GKBAC. The Saddleback Treefarm is visible from two lookout locations along the Bibbulmun Track and construction and operation of the Proposal and Revised Proposal will be visible from these sites. The footprint of the Proposal will be approximately two kilometres from the Bibbulmun Track at its closest point. Following closure and rehabilitation, the Proposal will blend into the surrounding landscape.

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Acronyms

Acronym	Definition
ABS	Australian Bureau of Statistics
AHD	Annual Height Datum
ALS	Aboriginal Land Services
ASS	Acid Sulphate Soils
BBC	Baudin's Black Cockatoo
BC (Act)	Biodiversity Conservation Act
BCMP	Black Cockatoo Management Plan
BGMEMLG	Boddington Gold Mine Environmental Management Liaison Group
BTF	Bibbulmun Track Foundation
BWMP	Boddington Water Management Plan
CAC	Cultural Advice Committee
CHMP	Cultural Heritage Management Plan
CBC	Carnaby's Black Cockatoo
CIL	Carbon-in-leach
CPA	Community Partnership Agreement
CRG	Community Reference Group
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEMIRS	Department of Energy, Mines, Industry, Regulation and Safety
DFBGS	Deep Fractured Bedrock Groundwater System
DFES	Department of Fire and Emergency Services
DGV	Default guideline value
DMAs	Decision Making Authorities
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EP (Act)	Environmental Protection Act
EPA	Environmental Protection Authority
EPBC (Act)	Environmental Protection and Biodiversity Conservation Act
EWR	ecological water requirement
ESY	Ecologically Sustainable Yield
FRTBC	Forest Red-Tailed Black Cockatoo
GDV	Groundwater Dependent Vegetation
GHG	Greenhouse Gas
GISTM	Global Industry Standard on Tailings Management
GKB	Gnaala Karla Booja
GL/yr	gigalitres per year
GKBAC	Gnaala Karla Booja Aboriginal Corporation
HAI	Heritage Area of Influence
HDPE	High Density Polyethylene
IBRA	Interim Biogeographic Regionalisation for Australia
ILUA	Indigenous land Use Agreement
kL/h	kilolitres per hour
LEMC	Local Emergency Management Committee
LGAs	Local Government Areas
LoA	Level of Assessment
LOM	Life of Mine
mAHD	Australian Height Datum
mBGL	metres below ground level
ML/day	Megalitres per day
MNES	Matters of National Environmental Significance
MP	Mining Proposal
MCP	Mine Closure Plan
NEPM	National Environmental Protection Measures

Acronym	Definition
NGERS	National Greenhouse Energy Reporting Scheme
NSHA	Noongar Standard Heritage Agreement
PAA	Primary Assessment Area
PDWSA	Public Drinking Water Source Areas
PAHA	Preservation of Aboriginal Heritage Agree
PCD	Plant Cell Density
PHCC	Peel-Harvey Catchment Council
PEC	Priority Ecological Community
PER	Public Environmental Review
PM	Particulate Matter
PMST	Protected Matters Search Tool
RDA	Residue Disposal Area
RDE	Revised Development Envelope
RO	Reverse Osmosis
SEIA	Social and Economic Impact Assessment
SGB	Saddleback Greenstone Belt
SIA	Social Impact Assessment
SME	Subject matter expert
SRE	Short Range Endemic
SSGS	Seasonal Shallow Groundwater System
SSGVs	Site Specific Guideline Values
SWALSC	South West Aboriginal Land and Sea Council
SWSP	South West Sustainability Partnership
TEC	Threatened Ecological Community
TFMP	Terrestrial Fauna Management Plan
TSP	Total suspended particulates
WFBGS	Weathered and Fractured Bedrock Groundwater System
WFMMP	Weed and Forest Disease Monitoring and Management Plan
WMDE	Worsley Mining Development Envelope
WQMF	Water Quality Management Framework
WRD	Waste Rock Dump

1 Introduction

1.1 Background

Newmont Corporation is primarily a gold producer, with significant assets and operations in North America, South America, Australia, Africa and Papua New Guinea and is one of the world's largest gold producers. Newmont Mining Corporation owns Newmont Boddington Mine located approximately 12 kilometres (**km**) northwest of the town of Boddington and around 130 km to the southeast of Perth, Western Australia (**WA**) (Figure 1-1).

Gold mining has occurred in the region since the 1980s. Shallower, open pit oxide mining was undertaken at the site from 1987 to 2001. In 2002, the operations went into a period of care and maintenance until the viability of mining the deeper, hard basement ore was demonstrated. The current mining and processing operation was commissioned in 2009. Based on End of Year 2024 Resources, the Boddington operation has a potential mine life to 2046.

This proposal is a significant amendment to the Newmont Boddington Mine approved under Ministerial Statement 971 (**Approved Proposal**).

The Approved Proposal covers the current operation that consists of two large open pits, a processing plant, tailings storage facilities (active and inactive) and associated infrastructure. An additional tailings storage facility, RDA2, has been approved for construction under MS971 but not yet built. The Approved Proposal footprint represented the immediate inundation area of the tailings storage facility; further work was required to understand the additional infrastructure required for safe construction and operation of RDA2.

This Proposal outlines the footprint required to undertake ancillary works to support safe construction and operation of RDA2. It also includes activities to support future closure activities (e.g. stockpiling of clay and soil materials for closure and closure spillway from F1/F3 RDA). The implementation of this Proposal requires clearing of plantation area and native vegetation surrounding the approved RDA2 footprint (Figure 1-1).

Whilst the majority of the footprint under the Approved Proposal under MS971 resides on Newmont freehold owned land, the western extent sits within the Dwellingup State Forest (Figure 1-1).

1.2 Other Local Mining

The majority of the freehold land on which the Newmont Boddington Mine operations are located, and which is owned by Newmont, is also subject to a State Agreement for bauxite mining under the *Alumina Refinery (Worsley) Agreement Act 1973* (**Worsley State Agreement**) (Figure 1-2). The western extent of Newmont Boddington Mine resides in the Dwellingup State Forest which is also subject to a bauxite state agreement, the *Alumina Refinery (Pinjarra) Agreement Act 1978* which permits bauxite mining by Alcoa within mineral lease 1SA (ML1SA).

The area surrounding Newmont Boddington Mine formed part of the recent environmental impact assessment for the Worsley Mine Expansion – Revised Proposal (Proponent: South32 Worsley Alumina Pty Ltd (**Worsley**)). This proposal was approved by the WA Environmental Protection Authority (**EPA**) on 20 December 2024 (Ministerial Statement 1237) and the Australian Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) on 11 February 2025 (EPBC 2019/8437).

Newmont Boddington acknowledges that Worsley's approvals provide permission to clear additional native vegetation on Newmont Boddington (and other) owned land in accordance with the conditions required under its approvals. In addition to the clearing approved for Worsley's operations, the Worsley Joint Venture hold the bauxite rights over the land covered by the Worsley State Agreement, which includes the area of RDA2. Legal arrangements with Worsley require Newmont Boddington to conserve bauxite through recovering and stockpiling bauxite on behalf of the Worsley Joint Venture when its operations would

otherwise sterilise that bauxite. Hence, under this Proposal, bauxite recovery and stockpiling has been considered.

Newmont is also aware Alcoa of Australia Limited is currently progressing through an environmental impact assessment with the state and Australian Governments with additional native clearing proposed in the Northern Jarrah Forest.

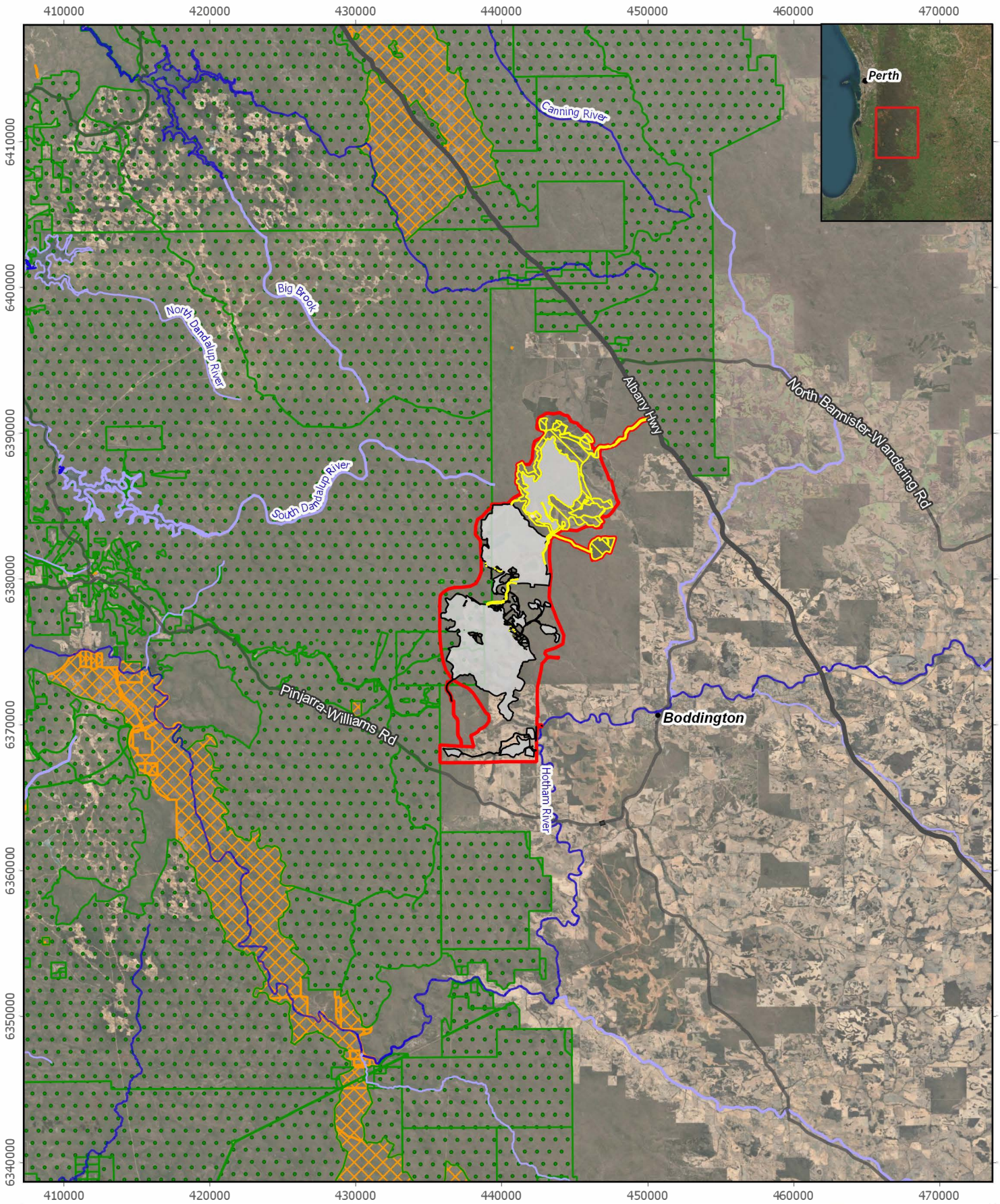


Figure 1-1: Boddington Gold Mine Overview

LEGEND

- Proposal Footprint
- Approved Disturbance Footprint
- Revised Development Envelope
- Reserve
- State Forest

Hydrography

- Mainstream
- Major River
- Minor River
- Infrastructure

Roads

- Main, Sealed
- StateHighway, Sealed

N

0 5 10 km

Scale @A4 1: 350000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2025), Landgate (2018), DWER (2018), DBCA (2017)
Imagery Esri Satellite, Esri Hillshade

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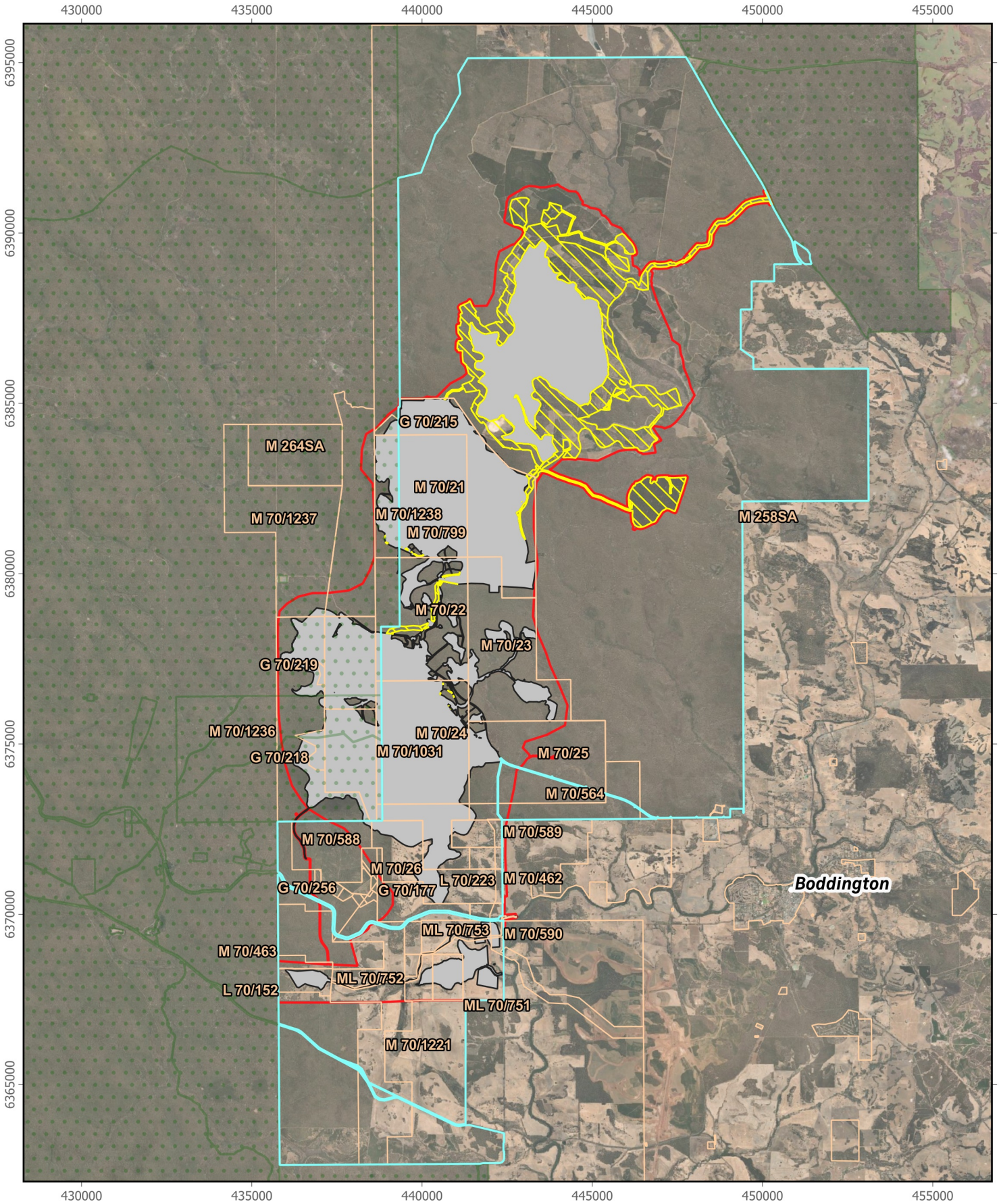


Figure 1-2: Project Tenure

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Newmont Freehold Land Boundary
- Mining Tenements (DMIRS-003)

Legislated Lands and Waters (DBCA-011)

- State Forest

N

0 2 3 km

Scale @A4 1: 150000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Data WA (2024)
Imagery Esri Satellite

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Worsley and Alcoa are separate Proponents and this Proposal is specifically related to Newmont Boddington's gold and copper operation. Newmont Boddington is mindful this Proposal includes additional native vegetation clearing. Discussion of cumulative impacts of the three Proponents and mitigation measures is provided in Section 16.

1.3 Newmont Boddington Mine Approvals History

The development of the current open pit operations at Newmont Boddington commenced in 1985, with the operation being put into care and maintenance in the 1990s once oxide ore mining had been exhausted by the then owners. In 2007, Newmont Boddington commenced construction of the current plant and development of the current pits, to access the basement ore. In 2009 Newmont Corporation purchased AngloGold Ashanti's shares to become the sole owner of Boddington mining operation. Newmont re-commenced its commercial production in 2009, and in March 2011 the operation produced its first million ounces of gold. The project has had a number of approvals and amendments since the first project approval in 1985. These are briefly outlined in Table 1-1.

In April 2013, Newmont Boddington released a Public Environmental Review (**PER**) for the Life of Mine Extension Project, which was primarily developed for the continued mining of low-grade hard rock ore located beneath the existing mining pits. To enable this development the PER included additional WRDs, a new RDA (RDA2) to the north of the existing RDA (F1/F3 RDA), minor modification to the existing RDA, widening and deepening of existing pits, additional stockpiles (for bauxite, topsoil and gravel), new water storage dams and ancillary infrastructure (including roads, power lines and pipelines) (Strategen, 2013). Ministerial approval was granted under the EP Act in June 2014 under Ministerial Statement 971 (**MS 971**). This approval, MS 971, superseded the previous Ministerial Statement, MS 591. As shown in Table 1-1, two Section 45c amendments have been obtained for minor modifications to MS 971 since it was originally granted.

Table 1-1 Approvals history

Approval Date	Type of Approval
December 1985	Boddington Gold Mine project approval
February 1988	Hedges Gold Mine project approval (Ministerial Statement 0020)
February 1988	Boddington Gold Mine stage 1 expansion to 4.5 Mtpa (Ministerial Statement 0019)
December 1988	Boddington Gold Mine stage 2 expansion to 6 Mtpa with an additional water supply reservoir (Ministerial Statement 0049)
November 1989	Boddington Gold Mine mining and processing of basement and supergene ores, expansion to 6.75 Mtpa (Ministerial Statement 0085)
January 1983	Boddington Gold Mine mining of oxide ore from the eastern anomalies (Ministerial Statement 299)
July 1997	Hedges Gold Mine expansion to 4 Mtpa and Section 46 Review (Ministerial Statement 450)
December 1998	Section 46 Review to align existing conditions and commitments (Ministerial Statement 0085)
May 2002	Consolidation of all previous Ministerial Statements from Boddington Gold Mine and Hedges Gold Mine (Ministerial Statement 591)
June 2002	Gas-fired power station and natural gas pipeline approval (now lapsed) (Ministerial Statement 596)
March 2006	Section 45C modifications for increased scale of Boddington expansion (Ministerial Statement 591)
April 2006	First approval for the operation under the Environmental Protection and Biodiversity Conservation (EPBC) Act for expansion activities to facilitate recommencement of mining activities (EPBC 2006/2591)

Approval Date	Type of Approval
August 2012	Newmont Boddington Gold Interim Permit (EPBC 2011/6192)
May 2014	Boddington Gold Mine Extension Project (EPBC 2012/6370)
June 2014	Ministerial Statement 971
May 2019	Section 45C amendment to Ministerial Statement 971 development envelope to incorporate expanded Mine Operations and associated Infrastructure (Ministerial Statement 971)
April 2024	Section 45C amendment to boundaries of disturbance footprint and increase the extent of clearing within disturbance footprint (Ministerial Statement 971)

1.4 Purpose of the Document

The Newmont Boddington Life of Mine Extension Amendment Proposal (**Proposal**), is a significant amendment to the Newmont Boddington Mine approved under Ministerial Statement 971 (**Approved Proposal**). The term '**Revised Proposal**' is used to refer to the Proposal plus the Approved Proposal. Accordingly, a Revised Development Envelope (**RDE**) has been developed to encompass the Revised Proposal.

This Proposal principally comprises additional footprint which will be required to ensure the safe construction and operation of the previously approved RDA2 tailings dam in the Saddleback Treefarm . The RDA2 inundation footprint was approved as part of the Life of Mine Expansion for Newmont Boddington approved in 2014 (MS971).

This Proposal is being referred to the EPA for assessment under section 38 of the EP Act. The purpose of this document is to provide supporting information to enable the EPA to determine whether to assess the Proposal under s. 38G of the EP Act, and if assessment is required, to set the appropriate Level of Assessment (**LoA**).

This document has been prepared in consideration of the EPA guideline documents, *Environmental Impact Assessment (Part IV Divisions 1 And 2) Administrative Procedures (*EPA, 2024g*)* , *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA 2024e), and *Instruction: How to Prepare an Environmental Review Document* (EPA, 2024b). The intent of the document is to provide a preliminary assessment of the potential impacts of the Proposal on identified environment factors related to the Proposal's implementation.

In accordance with the requirements of the EPA's *'Instructions on how to prepare an Environmental Review Document*' , the scope of the referral includes:

- A description of the Approved Proposal (Section 2) and this Proposal (Section 3)
- A summary of Newmont Boddington's assessment of legislative requirements (Section 4)
- A summary of stakeholder consultation undertaken in support of the Proposal (Section 5)
- An assessment of potential significant impacts of the Proposal for each of the EPA's key environmental factors (Section 7 to Section 12)
- Identification of offsets proposed for the Proposal (Section 13); and
- A holistic and cumulative impact assessments summarising potential impacts of the Revised Proposal considering other impacts in the region (Section 15 and Section 1616 respectively).

This document includes discussion of Proposal impacts to Matters of National Environmental Significance (**MNES**) under the *Environmental Protection and Biodiversity Conservation Act 1999* (**EPBC Act**) for consideration of an accredited assessment process. A separate referral will be submitted for this Proposal under the EPBC Act.

1.5 Proposal and Proponent Details

Proposal Title

Newmont Boddington Life of Mine (**LoM**) Extension Amendment Proposal.

Proponent Details

Newmont Boddington Gold Pty Ltd is the Proponent for this Proposal. The details of the Proponent and primary contact for this Proposal are provided in Table 1-2.

Table 1-2 Proponent details

Proponent	**Newmont Boddington Gold Pty Ltd**
Australian Company Number (ACN)	101 199 731
Registered Address	Level 5, 500 Hay St, SUBIACO WA 6008
Key Contact Details	
Name	Stephanie Myles
Position	Lead, Permitting
Email	Boddingtonlom@newmont.com

2 Approved Proposal

2.1 Summary

Newmont Boddington produces a copper concentrate product which is trucked to Bunbury Port for shipping to various smelters across the globe, and gold doré. The current Approved Proposal is described in Table 2-1 and Table 2-2 below. In summary, the operations consist of the following infrastructure:

- Two active open pits (Wandoo North and Wandoo South) and several shallow open pits from the historical oxide mining period (most of which have been rehabilitated)
- WRDs
- Processing plant inclusive of crushing, grinding, floatation and carbon-in-leach (**CIL**) circuits
- One active tailings storage facility – F1/F3 RDA
- One inactive tailings storage facility – RDA R4 which ceased operation in 2001
- A future tailings storage facility referred to as RDA2, to be located in the Saddleback Treefarm to the northeast of the current operations, and
- Supporting infrastructure such as conveyors, water holding dams, roads, powerline and pipeline corridors and stockpiles of rehabilitation materials and bauxite.

2.2 Approved Proposal Content

As required by the Proposal Content Instructions (EPA, 2024a), the general proposal content description and proposal content elements from Ministerial Statement 971 are described below in Table 2-1 and Table 2-2.

Table 2-1 General proposal content description (Approved Proposal)

Proposal Title	Newmont Boddington Gold Mine Life of Mine Expansion Ministerial Statement 971 approved 12 June 2014
Proponent Name	Newmont Boddington Gold Pty Ltd
Short Description	The proposal is for the continuation of the existing operations and for an expansion of the existing operations at the Newmont Boddington mine and includes: ▪ pit expansion (widening and deepening) ▪ increased ore production resulting in increased waste quantities ▪ increase to existing stockpiles and development of ancillary infrastructure ▪ expansion of waste rock dumps ▪ construction of a residue disposal area ▪ construction of water storage areas. The regional location is shown in Figure 1-1.

Table 2-2 Approved Proposal content elements

Proposal element	Location and description	Authorised extent
Physical elements		
Development Envelope	Figure 2-1	12,856 ha
Disturbance Footprint	Figure 2-1	Clearing of no more than 6,923 ha of vegetation within the 12,856 ha development envelope.
Clearing of Native Vegetation		Clearing of no more than 5,435 ha of native vegetation within the 12,856 ha development envelope.
Waste Rock Dumps	Figure 2-1	1,500 Mt over life of proposal.
Mine Activities	Figure 2-1	Open cut basement mining to approximately 252 AHD for the north pit and -432 AHD south pit.
Operational elements		
Mine life		Continued operations until 2041.
Water use		47 ML/day

The current management plans in place for key environmental factors as listed in MS 971 are listed in Table 2-3 Current Conditioned Management Plans for key environmental factors (MS971 and/or EPBC 2012/6370). Note the Approved Proposal underwent bilaterial assessment (now referred to as Accredited Process) with the Australian Government under the EPBC Act. Additional conditions were developed under the EPBC Act approval, EPBC2012/6370, and relevant plans are also listed in Table 2-3.

Performance against conditions is reported annually by Newmont Boddington, and these are provided publicly via the Document Library at Newmont.com.

Table 2-3 Current Conditioned Management Plans for key environmental factors (MS971 and/or EPBC 2012/6370)

Key factors as per MS971	Management Plans
Flora and Vegetation	Newmont Boddington Weed and Disease Monitoring and Management Plan March 2021 (MS971 Condition 6)
Terrestrial Fauna	Black Cockatoo Management Plan (EPBC 2012/6370 Condition 10) Terrestrial Fauna Management Plan (EPBC 2012/6370 Condition 12)
Inland Waters	Groundwater Dependent Vegetation Monitoring and Management Plan (MS 971 Condition 7)
Social Surroundings	Bibbulmun Track Management Plan (MS 971 Condition 8)
Offsets	Land Offset Plan (MS 971 Condition 9 and EPBC 2012/6370 condition 14)

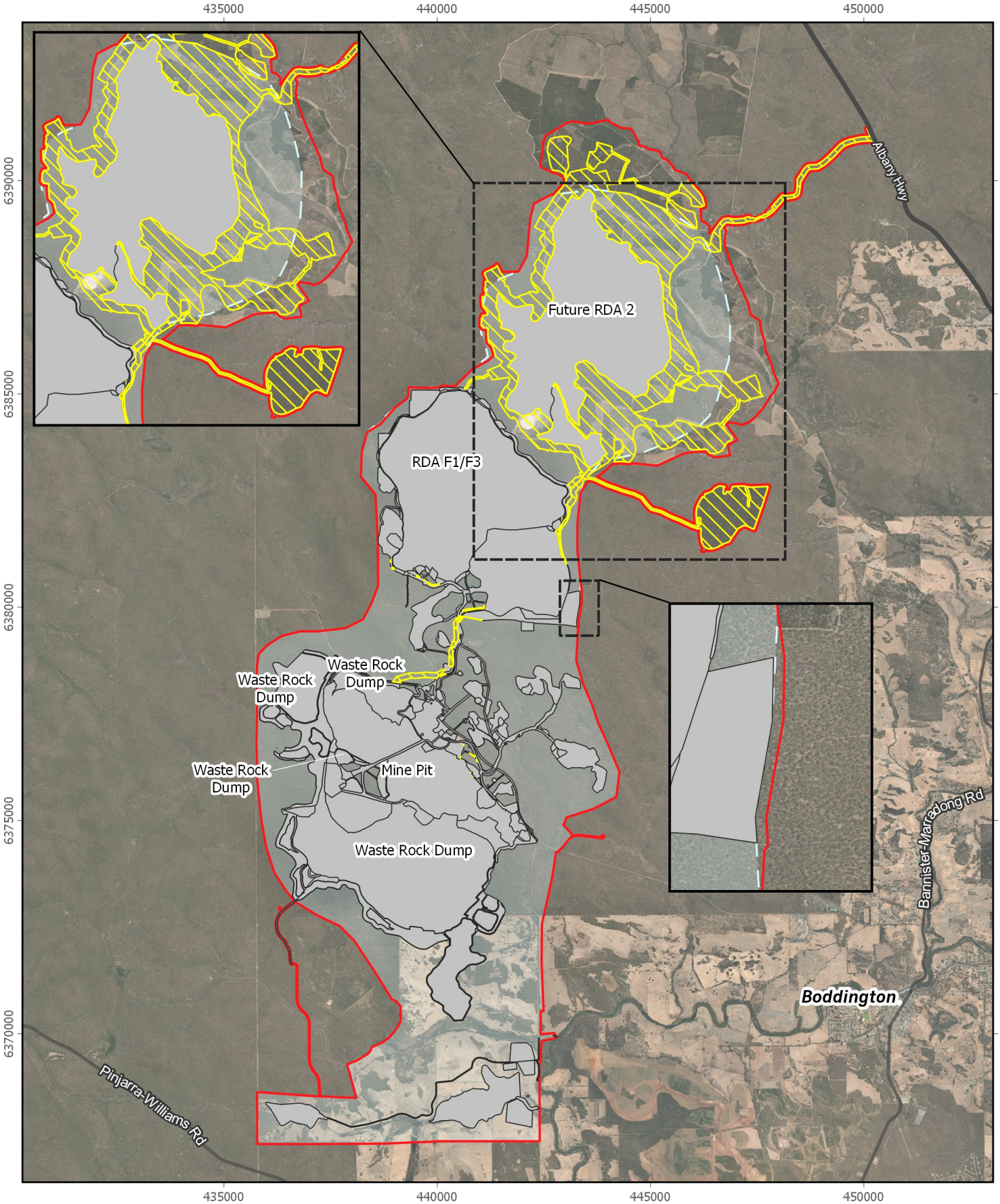


Figure 2-1: Newmont Boddington Development Envelope

LEGEND

- Main Roads and Highways
- Proposal Footprint
- Approved Disturbance Footprint
- Revised Development Envelope
- Approved Development Envelope

N

0 1.5 3 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), CDM Smith Australia (2024)
Imagery Esri Satellite

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2.3 Approved Operations Under Ministerial Statement 971

2.3.1 Open Pits

Newmont Boddington continues to mine in the Wandoo North Pit (**North Pit**) and Wandoo South Pit (**South Pit**). The approved depth of the pits is to approximately -252 metres Relative Level (**mRL**) for the North Pit and -432 mRL for the South Pit. To support the increased depth, the pits have been widened to ensure pit wall stability and safety. With widening of the existing pit, some existing access roads, powerline corridors, setbacks, WRDs, stockpiles and drainage structures were to be relocated outside the expanded pits.

To ensure ore can be accessed safely, the pits are progressively dewatered. All water from the dewatering process is captured and used within the operation. There is no water discharge to the environment from dewatering activities.

2.3.2 Ore Processing

The Approved Proposal continues to use existing ore processing facilities. The current processing rate is approximately 40 Mtpa +/- 15% efficiency gains. Processing stages includes crushing, grinding, floatation (which produces a copper concentrate) and Carbon in Leach circuit (which produces a gold doré bar).

The processing waste material is referred to as tailings or residue. Following the CIL process, the tailings undergo a water recovery process (this water is reused in ore processing) and the thickened tailings is pumped to the F1/F3 RDA. Prior to discharge into F1/F3 RDA, the tailings are treated with Caro's Acid (a mixture of hydrogen peroxide and sulfuric acid) to reduce cyanide levels in the tailings to levels below what is deemed safe for wildlife and livestock under the International Cyanide Management Code. Cyanide continues to breakdown in the tailings following discharge due to exposure to sunlight.

2.3.3 Waste Rock Dumps

Waste rock is managed using a series of surface WRDs located to the west and south of the open pits. The WRDs will have a combined approved capacity of 1,500 Mt.

2.3.4 Tailings Management

The F1/F3 RDA is the only active facility which receives tailings under current approvals. There is also the R4 RDA which contains tailings from the oxide mining period, but which has not been used for tailings storage under the current mining period. MS 971 allows for footprint for another tailings storage facility in the Saddleback Treefarm, to the north-east of F1/F3 RDA. This facility is referred to as RDA2 and construction within the approved disturbance footprint of MS971 is due to commence in 2026.

Water which pools on the F1/F3 RDA resulting from tailings discharge, seepage collection and stormwater runoff is captured against the western embankment of the facility (in the decant pond) and pumped back to the processing plant for re-use. This section of the western embankment, and the area below the decant pond, is lined with high-density polyethylene (**HDPE**) with seepage collection infrastructure installed above and below this liner in accordance with the design.

The inactive R4 RDA receives rainfall from storm events and some seepage streams from the F1/F3 RDA as well as small volumes of treated effluent water. This water reports back through the processing plant.

2.3.5 Water Supply and Management

Water supply requirements are met through use of water from mine dewatering, intercepted rainfall and the abstraction of water from the Hotham River during periods of flow above levels specified in licence SWL60668(7) under the *Rights in Water and Irrigation Act 1918* (**RIWI Act**). In addition to the water captured in the open pits and water from the decant pond on the F1/F3 RDA is reused through the processing plant.

2.3.6 Mine Closure

In accordance with the requirements of tenement conditions, Newmont Boddington is required to submit a Mine Closure Plan (**MCP**) every three years. The current approved MCP was submitted to the Department of Energy, Mines, Industry Regulation and Safety (**DEMIRS**) in 2019. A 2023 MCP is currently under review by DEMIRS. Review period has been protracted due to progression of a new general purpose lease application which was granted in May 2025. MCP approval is expected by the end of June 2025.

The MCP objective is to ensure all operational areas are rehabilitated and closed in a manner to make them physically safe to humans and animals, geotechnically stable, geo-chemically non-polluting/ non-contaminating and capable of sustaining agreed post-mining land use.

3 Proposal

This Proposal seeks changes to the disturbance footprint that has been approved under MS 971. Newmont Boddington is seeking approval under the Section 38 of the EP Act to allow for safe construction and operation of RDA2, which will also result in an increase to the approved development envelope.

3.1 Scope of the Proposal

The Newmont Boddington Life of Mine Extension Amendment Proposal (**Proposal**), is a significant amendment to the Newmont Boddington Mine approved under Ministerial Statement 971 (**Approved Proposal**). The term '**Revised Proposal**' is used to refer to the Proposal plus the Approved Proposal. Accordingly, a Revised Development Envelope (**RDE**) has been developed to encompass the Revised Proposal.

This Proposal principally comprises additional footprint which will be required to ensure the safe construction and operation of the previously approved RDA2 tailings dam in the Saddleback Treefarm . The RDA2 inundation footprint was approved as part of the Life of Mine Expansion for Newmont Boddington approved in 2014 (**MS971**). The Proposal also includes an extension of the Newmont Boddington Mine's life to 2046 to ensure continued mining of known reserves and resources.

The implementation of this Proposal requires additional footprint to the Approved Proposal and comprises, but is not limited to, the following activities:

- bauxite preservation and stockpiling as required
- expansion of the access road from Albany Highway
- access and perimeter roads
- pipeline and powerline corridors
- surface water management infrastructure
- construction laydowns
- office and workshop areas
- access road from the mine
- rehabilitation material (topsoil and gravel) stockpiles and construction material stockpiles
- footprint for the F1/F3 RDA closure spillway construction
- potential discharge of treated water to the environment; and
- other associated infrastructure for the Proposal and Approved Proposal.

The Revised Proposal lies within the RDE (Figure 2-1).

Expansion of Plantation Road (which connects the construction site to the Albany Highway) will be required to allow safe delivery of construction materials and equipment. Some minor changes to the perimeter boundary of RDA2 from the Approved Proposal are also included in the scope of the Proposal.

Newmont Boddington currently deposits tailings into the F1/F3 RDA (Figure 2-1). This facility will reach its current maximum design capacity in early 2030. RDA2 will be required by this time for deposition of tailings and to ensure continued operations. At the time that RDA2 was approved under the Approved Proposal, there was limited understanding of the bauxite resources in the vicinity and no detailed design of supporting infrastructure. Understanding this has been the focus of a pre-feasibility study, resulting in this Proposal.

3.2 Proposal Content Description

This Proposal is considered a significant amendment to the Approved Proposal, and therefore the Proposal Content Description describes and tabulates the existing Approved Proposal, the Proposal and the Revised Proposal, which is the combined maximum extent, capacity or range (Table 3-1, Table 3-2 and Appendix A).

Table 3-1 Content Description

Proposal Title	Newmont Boddington Mine Life of Mine Extension Amendment
Proponent Name	Newmont Boddington Gold Pty Ltd
Short Description	The Proposal is for the continuation of the existing operations and for an expansion of the existing operations at the Newmont Boddington Mine and includes, but is not limited to: ▪ bauxite preservation and stockpiling as required ▪ expansion of the access road from Albany Highway ▪ access and perimeter roads ▪ pipeline and powerline corridors ▪ surface water management infrastructure ▪ construction laydowns ▪ office and workshop areas ▪ access road from the mine ▪ rehabilitation material (topsoil and gravel) stockpiles and construction material stockpiles ▪ footprint for the F1/F3 RDA closure spillway construction ▪ potential discharge of treated water to the environment; and ▪ other associated infrastructure for the Proposal and Approved Proposal. The Proposal includes potential discharge of treated water to the Hotham River.

Table 3-2 Proposal Content Elements

Proposal element	Location and description	Existing proposal extent, capacity or range (Approved Proposal)	Proposed amendment (Proposal)	Maximum extent, capacity or range (Revised Proposal)
Physical element				
Development Envelope	Figure 2-1	12,856 ha	Increase development envelope by 1,326 ha	14,182 ha
Disturbance Footprint	Figure 2-1	Clearing of no more than 6,923 ha of vegetation within the 12,856 ha development envelope.	Additional clearing of up to 1,560 ha of vegetation	Clearing of no more than 8,483 ha of vegetation within the 14,182 ha development envelope.

Proposal element	Location and description	Existing proposal extent, capacity or range (Approved Proposal)	Proposed amendment (Proposal)	Maximum extent, capacity or range (Revised Proposal)
Clearing of Native Vegetation	Figure 2-1	Clearing of no more than 5,435 ha of native vegetation within the 12,856 ha development envelope.	Additional clearing of up to 528 ha of native vegetation	Clearing of no more than 5,963 ha of native vegetation within the 14,182 ha development envelope.
Waste Rock Dumps	Figure 2-1	1500 Mt over life of proposal.	No change	1500 Mt over life of proposal.
Mine Activities	Figure 2-1	Open cut basement mining to approximately -252 AHD for the north pit and -432 AHD south pit.	No change	Open cut basement mining to approximately 252 AHD for the north pit and -432 AHD south pit.
Operational element				
Mine life		Continued operations until 2041	Extend continued operations to approximately 2046	Continued operations until 2046
Water use		47 ML/day	No change	47 ML/day
Rehabilitation				
Progressive rehabilitation will be undertaken throughout the life of mine where practicable. The key closure outcome of this Proposal will be a safe, stable and non-polluting landscape consistent with the post-mining land use and will consider environmental and cultural heritage values.				
Commissioning				
Commissioning will be undertaken in accordance with the requirements of approvals under the EP Act.				
Decommissioning				
The MCP will outline the plan for decommissioning of the mine and post-mining land use.				

3.2.1 Exclusions from the Proposal

This Proposal does not include any amendments to the Approved Proposal, other than those expressly referred to in Section 3. For the avoidance of doubt, there will be no changes to:

- the pit profile
- the volume of ore produced per annum, and
- the volume of daily water requirements.

Activities that are part of or required for continuation of the existing mining operations are excluded from the scope of the Proposal. These activities will continue to be undertaken in implementing the Approved Proposal pursuant to MS971.

3.2.2 Revised Proposal Draft Ministerial Statement Conditions

Pursuant to Section 40AA of the EP Act, the EPA must assess the Proposal in the context of the Approved Proposal and have regard to the combined effect that the implementation of the Approved Proposal and the Proposal (Revised Proposal) might have on the environment. Under Section 40AA the EPA may also enquire into and report on the implementation of conditions relating to the Approved Proposal.

Activities associated with the Approved Proposal will continue to adhere to the conditions outlined under MS971 until such time as implementation of the Proposal is approved. MS971 will then be superseded by a new Ministerial Statement for the Revised Proposal.

3.2.3 Residue Disposal Area

The processing of ore will remain the same as current operations for the Approved Proposal and there is no proposed change to the method of deposition of tailings at the existing F1/F3 RDA or RDA2. The geochemical characteristics of the residue are well understood and the residue is classified as non-acid-forming. Tailings will continue to be pumped to the F1/F3 RDA until this reaches its approved maximum storage capacity, with the RDA2 being commissioned in 2030 to provide additional storage.

RDA2 has been designed to minimize environmental impact to surface and groundwater. The current design includes a dual-liner inclusive of a 300mm compacted clay base with an overlying HDPE liner. Seepage interceptions will be installed above and below the HDPE liner. Design opportunities to optimise the seepage management system whist minimizing environmental impact will continue to be reviewed as the design progresses in maturity.

3.2.4 Ancillary Works – Bauxite Conservation

Newmont Boddington and the Boddington Gold Mine Joint Venturers have formal agreements with the Worsley Joint Venture and its manager, Worsley that outline the working arrangements between the two companies in relation to the extraction of minerals in areas of overlapping interest, including within the RDE. Such agreements extend to the conservation of bauxite, where such bauxite could be sterilised through the activities of Newmont Boddington Mine.

Accordingly, Newmont Boddington will conserve certain bauxite in the area outlined in the Proposal through the recovery of that bauxite and stockpiling it for future collection by Worsley. New bauxite stockpiles have been considered as part of the footprint required for this Proposal and will be created within the RDE.

3.2.5 Stockpiles

Temporary stockpile areas for construction (non-acid forming waste rock from the mine, filter material, general fill and material unsuitable for embankment construction) will be required within the footprint required for this Proposal to assist with the construction of RDA2, internal access and haul roads. Provision has also been made for stockpiling of topsoil, gravel and vegetation for use in later mine closure.

3.2.6 Other Infrastructure

Laydown areas, a materials testing laboratory, workshops and office sites will be required for the duration of construction and operation of RDA2. This infrastructure is in addition to that which was provisioned under MS971 and footprint has been allocated for these in the Proposal.

Borrow material for dam embankment construction will be sourced from the RDA2 footprint and the existing mining operation (non-acid forming waste rock). To safely transport waste rock from the mining area, expansion of existing tracks within the Approved Proposal is required and provision for this has been made in the Proposal.

Plantation Road connects the existing RDA2 area to the Albany Highway and does not form part of the Approved Proposal. The Proposal expands the footprint to include an expansion of Plantation Road to allow

safe transportation of externally sourced materials (such as HDPE liner, filter material, offices and heavy equipment).

Additional infrastructure required for the Proposal includes a perimeter road around the RDA2 which will be inclusive of pipeline and powerline corridors and surface water management infrastructure (e.g. perimeter drains and collection sumps).

3.2.7 Mine Closure

The Proposal does not introduce any new closure domains from the Approved Proposal but will add to closure planning requirements related to RDA2 and additional footprint for infrastructure and stockpiling of bauxite, construction and closure materials (as described above). Whilst closure planning has already commenced at a conceptual level for the Proposal, the new footprint will be incorporated into the MCP for the project, following grant of relevant tenure.

The completion criteria and design principles for closure are currently being reviewed and updated to reflect amendments for the Revised Proposal. No new closure risks have been introduced as a result of the activities outlined in the Proposal.

The Proposal makes provision for construction of a closure spillway from the F1/F3 RDA to ephemeral drainage which directs surface water towards the D1 water holding dam (previously the 34 Mile Brook). Whilst this closure spillway has been previously included as part of the MCP for this facility, provision had not been made for the spillway in the disturbance footprint. Spillway construction is not anticipated to be completed until at least 2035, following closure and cover placement on F1/F3 RDA. It is acknowledged the F1/F3 closure spillway will be located within State Forest on existing mining tenure.

In accordance with current process, Newmont Boddington will prepare an updated MCP and submit to DEMIRS for approval to incorporate additional footprint provisioned for in the Proposal, and will continue to review and revise the MCP over the life of the mine.

3.3 Proposal Justification and Alternative

Newmont Boddington makes a significant contribution to the Southwest of WA, WA more generally and the nation in taxes and royalties, highly skilled local jobs and community investment.

Newmont Boddington made an economic contribution of A$268 million in 2023 including corporate income tax, royalties and payroll tax. Boddington supports around 1900 local jobs, with around one-quarter of employees living locally.

Newmont Boddington is also a major supporter of small businesses, with a local procurement spend in 2024 of A$363 million.

3.3.1 No Action

No action will result in Newmont Boddington Mine ceasing operations in 2030 due to having no available tailings storage capacity.

3.3.2 Amendment to Disturbance Footprint

The optimal footprint for design of the ancillary infrastructure for RDA2 which minimised both haulage distances for material and cost, resulted in a disturbance footprint of over 900 ha of native vegetation. This footprint resulted in considerable expansion of footprint into the forested western boundary of RDA2 for stockpiling of bauxite and topsoil and gravels.

The RDA2 study team applied additional restrictions to the construction and footprint design including:

- the design was to maximise the use of disturbed or non-native plantation areas before disturbance of native vegetation

- disturbance of native vegetation should only apply to critical infrastructure such as a perimeter road, which includes power and pipeline corridors and surface water management infrastructure
- no PEC is to be disturbed as a result of the Proposal, and
- the disturbance footprint for the Proposal was not permitted to encroach into the drinking water catchment boundaries to the west of the facility.

It should be noted the original approved footprint for RDA2 under MS971 resulted in direct impact of Gringer Creek, with a two kilometre planned diversion for this creek to the east. This was amended in MS971 in 2019, with the facility being moved further west. This original footprint is still represented in EPBC 2012/6370. The feasibility design for RDA2 sits within the EPBC 2012/6370 approved footprint and is aligned with the MS971 footprint. The referred footprints under the EP Act and EPBC Acts will be slightly different.

3.4 Local and Regional Context

The Proposal, situated in the southwest of WA, experiences a Mediterranean climate characterised by predominantly winter rainfall (Mattiske, 2021). The region experiences four distinct seasons and is characterised by warm to hot, dry summers, and cool, wet winters. Seasonal patterns show average temperatures ranging from 12°C to 32°C in summer and 4°C to 17°C in winter (Mattiske, 2021). The majority of rainfall occurs over winter, with on average half the total rainfall received between June and August. Climate data has been collected from the site meteorological station on Communications Hill since 1984. Historical rainfall data for the region suggest a drying climate is experienced.

Newmont Boddington Mine is located on the Darling Plateau within the Yilgarn Craton. The Newmont Boddington gold-copper deposit is situated in the Saddleback Greenstone Belt (**SGB**), a fault-bounded sliver of greenstones approximately 50 km long and 8 km wide, surrounded by granite and gneiss terrain. The SGB mine area is divided into three formations, from oldest to youngest: the Marradong Formation with metabasaltic lavas and gabbroic intrusions in the northern SGB, the Wells Formation with felsic to intermediate volcanics and related intrusions, which is the main host to the Newmont Boddington gold-copper mineralisation, and the Hotham Formation with metasedimentary rocks in the southern SGB.

Current operations are located within the catchment of Thirty Four Mile Brook, a tributary of the Hotham River. The Hotham River flows in a south-westerly direction into the Murray River (Strategen, 2013). The surrounding land use is a mixture of agricultural, forestry, and other mining and extractive activities. The majority of the Revised Proposal covers area of plantation and native vegetation. The neighbouring mining operators are Alcoa and Worsley who are mining for bauxite under State Agreements.

The majority of the western boundary of Newmont Boddington Mine's operations abuts the Dwellingup State Forest. The Bibbulmun track runs in a north-south direction along the western side of the project operations, with the Mount Wells campsite approximately 1.5 km west of F1/F3 RDA. The Dwellingup State Forest provides for many recreational activities by locals and tourists, such as bushwalking, mountain biking, camping, wildlife watching and water-based activities like kayaking, canoeing and fishing.

Newmont Boddington Mine is located in the Jarrah Forest Biogeographic Region and Northern Jarrah Forrest Subregion as per the Interim Biogeographic Regionalisation for Australia (**IBRA**). The biological setting has been characterised through a range of biological surveys conducted in and around Newmont Boddington Mine. These surveys have focused on recording species present as well as identifying species and communities of conservation significance.

The south-west of WA is a well-known biodiversity hotspot. There are over 5,570 species of vascular plants, with half of these having restricted distribution to this region. The most distinctive plant is said to be the *Banksias*, which range from small ground coverings to trees, making them an important food source for animals in the area. The region's iconic tree species include jarrah (*Eucalyptus marginata*), marri (*E. calophylla*) and wandoo (*E. wandoo*) (Mattiske, 2021).

The region is home to the conservation significant Carnaby's Black Cockatoo (*Zanda latirostris*), The Forest red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), and the Baudin's Black Cockatoo (*Zanda baundinii*). Other known occurrences of conservation species include the Chuditch (*Dasyurus geofroii*), Woylie, (*Bettongia*

penicillata), Quenda (*Isoodon fusciventer*), Numbat (*Myrmecobius fasciatus*), and the Western Brush Wallaby (*Notamacropus irma*) (Phoenix, 2025).

There are no recorded Threatened Ecological Communities (**TEC**) surrounding the Proposal, however, there are known locations of PEC in the RDE (Figure 8-5).

The Proposal lies wholly within the Shire of Boddington, and tenure of the land underlying Newmont Boddington's operations is a mix of state-owned land, mining tenure and Newmont-owned freehold. The Shire of Boddington, with its municipal centre located approximately 130 km southeast of Perth, had a population of 1,844 according to the 2016 Australian Bureau of Statistics (**ABS**) census. At that time, the main industries of employment were gold mining (33.8%), bauxite mining (7.6%), secondary education (3.6%), and local government administration (2.7%). The Shire's social infrastructure includes education, health, and transport services (ABS, 2017).

4 Legislative Requirements

4.1 Environmental Impact Assessment Process

4.1.1 Part IV of the Environmental Protection Act 1986

The Newmont Boddington Life of Mine Extension Amendment Proposal (**Proposal**), is a significant amendment to the Newmont Boddington Mine approved under Ministerial Statement 971 (**Approved Proposal**). The term '**Revised Proposal**' is used to refer to the Proposal plus the Approved Proposal. Accordingly, a Revised Development Envelope (**RDE**) has been developed to encompass the Revised Proposal.

This Proposal principally comprises additional footprint which will be required to ensure the safe construction and operation of the previously approved RDA2 tailings dam in the Saddleback Treefarm . The RDA2 inundation footprint was approved as part of the Life of Mine Expansion for Newmont Boddington approved in 2014 (MS971)

This Proposal is being referred to the Western Australian Environmental Protection Authority (**EPA**) for assessment under section 38 of the *Environmental Protection Act 1986* (EP Act) (WA). The purpose of this document is to provide supporting information to enable the EPA to determine whether to assess the Proposal under s. 38G of the EP Act, and if assessment is required, to set the appropriate Level of Assessment (**LoA**).

This document has been prepared in consideration of the EPA guideline documents, *Environmental Impact Assessment (Part IV Divisions 1 And 2) Administrative Procedures* (EPA, 2024g), *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2024e), and *Instruction: How to Prepare an Environmental Review Document* (EPA, 2024b).

4.1.2 Environmental Protection and Biodiversity Conservation Act 1999

The *EPBC Act* is Australia's principle environmental legislation which provides a legal framework designed to protect and manage Australia's MNES. There are nine matters protected under the EPBC Act, these include: world and national heritage areas, wetlands of international importance, listed migratory species, and listed threatened and ecological communities.

The Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) manage the environmental referral and assessment process on behalf of the Australian Government. The Commonwealth Environment minister can make a Bilateral Agreement under Section 45 of the EPBC Act allowing state and Commonwealth governments to assess proposals together. Under this agreement the governments agree to follow processes that reduce duplication whilst assessing environmental impacts.

A Bilateral Agreement is a written agreement between the Commonwealth and a State of Territory. The aim of the agreement is to protect the environment, promote sustainable use of natural resources, ensure an efficient process for environmental assessment and approval of actions. A Bilateral Agreement exists between WA and the Commonwealth.

If the Minister is satisfied with the information provided, they may decide on an Accredited Assessment process by which a State or Territory may conduct a single process assessment of the environmental impacts of a proposed action. Once assessed the State or Territory gives their report to DCCEEW showing likely impacts on protected matters.

4.2 State Agreement

A State Agreement is a legal contract between the WA Government and a proponent of a major project within WA. Under such agreements, proponents take or share responsibility with the State for developing infrastructure specific to the project.

Newmont Boddington does not operate pursuant to a State Agreement but operates on land covered by the Worsley State Agreement. Under agreements with the Worsley Joint Venture, Newmont Boddington is required to conserve bauxite prior to undertaking works that would otherwise prevent later bauxite extraction (e.g. construction of RDAs). This bauxite must then be stockpiled until it is required by Worsley.

4.3 Decision-making Authorities and Other Approvals

In addition to the EPA assessment of the Revised Proposal under Part IV of the EP Act, other environment-related assessments and authorisations will be required before the Revised Proposal can be implemented. The authorities are listed in Table 4-1 and have been identified as decision-making authorities (**DMAs**) for the Revised Proposal. Newmont Boddington consider potential emissions to groundwater and surface water and noise and air emissions resulting from the Revised Proposal can be comprehensively assessed and regulated via Part V of the EP Act and the Mining Act approval instruments.

Table 4-1 Decision-making authorities and processes

Decision-making authority	Legislation or Agreement regulating the activity	Approval required (and relevant approval element)	Can the statutory decision making process mitigate impacts on the environment?
Chief Executive Officer (**CEO**) Department of Water and Environmental Regulation (**DWER**)	*EP Act* Part V	Works approval and/or licence amendment (surplus water management, operation of processing equipment, tailings pipeline and storage facilities)	Yes. Works approvals and licences regulate industrial emissions and discharges to air, land or water and apply to 'prescribed premises' categories defined in Schedule 1 of the Environmental Protection Regulations (which includes tailings facilities). Assessments consider the risk to the environment, public health and amenity and the controls proposed to mitigate these risks. Compliance monitoring and reporting are included in standard conditions of approval.
DWER	*Rights in Water and Irrigation Act 1914* (**RIWI Act**)	Section 5C Licence to take water (surface water) Section 17 Permit to interfere with bed and banks (creek crossing)	Yes Bed and banks permit applications consider the effect of the alteration to existing surface water catchments, surface water flow paths and sheet flows.

Decision-making authority	Legislation or Agreement regulating the activity	Approval required (and relevant approval element)	Can the statutory decision making process mitigate impacts on the environment?
Minister for Department of Planning Lands and Heritage (**DPLH**)	*Aboriginal Heritage Act 1972* (**AH Act**)	AH Act Section 18 consent to disturb, if previously unidentified sites are recorded and cannot be avoided	Yes Section 18 of the AH Act allows for the approval and conditioning of land uses which may disturb heritage sites Section 16 authorisation is required to enter, excavate, examine or remove anything from an Aboriginal site. Both are undertaken in consultation with the relevant Traditional Owner Group.
Minister for Mines and Petroleum, Department of Energy, Mines, Industry Regulation and Safety (**DEMIRS**)	*Mining Act 1978* *Mines Safety and Inspection Act 1994* *Mine Rehabilitation Fund Act 2012 (MRF Act)*	Approval to commence mining operations.	Yes Activities conducted on Mining Act tenure are required to be assessed and approved through various instruments including Mining Proposals (or Mining Development and Closure Proposals in future) and Mine Closure Plans. Annual contributions are required to be paid under the MRF Act for disturbance activities on Mining Act tenure.
Minister for the Environment Department of Biodiversity, Conservation and Attractions (**DBCA**)	*Biodiversity Conservation Act 2016*	Licence required for fauna translocation and removal of threatened flora (if detected).	Yes Trapping and translocation of conservation significant fauna is a commitment made by Newmont to reduce potential impact to these species. This process is managed under a management plan which is approved by DBCA.

4.4 Land Tenure

Newmont Boddington has access to the Approved Proposal and Proposal areas. The current Newmont Boddington mining operations are covered by mining tenure granted under the *Mining Act* (Table 4-2). The approved RDA2 area and the disturbance area required for the Proposal is freehold land owned by the Boddington Gold Mine Joint Venturers, but it does not yet have mining tenure. The Boddington Gold Mine Joint Venturers have an agreement with the Worsley Joint Venturers regarding the grant of tenements necessary to support the development of a new tailings storage facility in Saddleback Treefarm.

Bauxite resources exist within and around Newmont Boddington Mine as well as in the vicinity of RDA2 and other infrastructure. The bauxite resource typically occurs at shallow depths relative to the gold resources. Large State Agreement tenements conferring rights to the bauxite resource exist across all of Boddington Gold Mine's operational areas.

The Worsley Joint Venturers hold Mining Lease M258SA, granted pursuant to the Worsley State Agreement. The original boundary to this tenement exists across the majority of the Proposal area. Pursuant to

arrangements with the Worsley Joint Venturers, Newmont Boddington Mine's activities in the Proposal area must be conducted in accordance with the terms of agreements governing how the separate joint ventures will operate, as well as requiring bauxite to be conserved.

The Worsley Joint Venturers hold mining leases M70/21 to M70/26, M70/564 and M70/799 and sublease these tenements to the Boddington Gold Mine Joint Venturers, with rights to bauxite retained by Worsley.

The majority of the development envelope of the Revised Proposal is within the approved mining envelopes for the Worsley Alumina project under Ministerial Statement 1237 (which superseded Ministerial Statement 719). RDA2 is entirely within the Hotham North (from the Primary Bauxite Area) and Hotham North Extension (New Mining Area) of the Worsley Alumina project. Ministerial Statement 1237 authorises disturbance for bauxite mining in these areas by Worsley.

As shown in Figure 1-2, there is a portion of the footprint of the Approved Proposal which extends into the State Forest along the western extent of the mining area and current tailings storage facility. There is no further encroachment into State Forest for the Proposal.

Table 4-2 Mining tenements relevant to the current Newmont Boddington operation

Tenement No.	Tenement Holder/Agreement	Expiry
M70/21	South32 Aluminium (RAA) Pty Ltd South32 Aluminium (Worsley) Pty Ltd Japan Alumina Associates (Australia) Pty Ltd Sojitz Alumina Pty Ltd	08/04/2028
M70/22		08/04/2028
M70/23		08/04/2028
M70/24		08/04/2028
M70/25		08/04/2028
M70/26		27/11/2035
M70/462	Newmont Boddington Pty Ltd Saddleback Investments Pty Ltd	11/10/2031
M70/564	South32 Aluminium (RAA) Pty Ltd South32 Aluminium (Worsley) Pty Ltd Japan Alumina Associates (Australia) Pty Ltd Sojitz Alumina Pty Ltd	26/04/2032
M70/588	Newmont Boddington Pty Ltd Saddleback Investments Pty Ltd	06/06/2032
M70/589		06/06/2032
M70/799	South32 Aluminium (RAA) Pty Ltd South32 Aluminium (Worsley) Pty Ltd Japan Alumina Associates (Australia) Pty Ltd Sojitz Alumina Pty Ltd	20/05/2035
M70/976		29/08/2034
M70/1031	Newmont Boddington Pty Ltd Saddleback Investments Pty Ltd	10/10/2041
M70/1236		24/11/2034
M70/1237		24/11/2034

Tenement No.	Tenement Holder/Agreement	Expiry
M70/1238	South32 Aluminium (RAA) Pty Ltd South32 Aluminium (Worsley) Pty Ltd Japan Alumina Associates (Australia) Pty Ltd Sojitz Alumina Pty Ltd	24/11/2034
M70/1239	Newmont Boddington Pty Ltd Saddleback Investments Pty Ltd	24/11/2034
G70/215		15/06/2030
G70/218		15/08/2027
G70/219		12/12/2027
L70/28		03/11/2028
L70/95		04/05/2027
L70/96		09/11/2027
L70/152		13/03/2034
L70/165		21/09/2035

4.5 Native Title

This Proposal occurs within the South West Native Title Settlement Area, which is governed by an overarching Native Title Agreement between the South West Aboriginal Land and Sea Council (**SWALSC**) and the Government of WA and is referred to as the South West Native Title Settlement (the **Settlement**). More specifically, the Revised Proposal is located within the Gnaala Karla Booja (**GKB**) Agreement Area.

Further information on engagement and collaboration with Traditional Owners for this Proposal is provided in Section 5.

4.6 Policy and Guidance

Table 4-3 outlines the relevant policy and guidance for flora and vegetation and summarises how this material has been considered for the Proposal.

Table 4-3 Consideration of policy and guidance

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors and Objectives (EPA, 2023c)	This assessment has been conducted based on the EPA's objective for flora and vegetation. The referral considers the environmental impact assessment (**EIA**) goals, evaluates the significance of impacts, and application of the required mitigation hierarchy.

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Impact Assessment (Part IV Divisions 1 And 2) Administrative Procedures (EPA, 2024g)	Considered in development of the referral and impact assessment.
Instructions on how to prepare an environmental review document (EPA, 2024b)	Will form the basis of the headings and content to be provided in any ERD submission. Management plans proposed as mitigation will be prepared in accordance with the guidance and addresses matters related to flora and vegetation protection and management.
Other State or Commonwealth	
Mine Closure Plan Guidance – How to Prepare in Accordance with Part 1 of the Statutory Guidelines (DMIRS, 2020)	The MCP will be prepared in accordance with the guidance and addresses matters related to flora and vegetation.
WA Environmental Offsets Policy (Government of Western Australia)	Considered in development of the impact assessment and offset approach for Flora and Vegetation.
WA Environmental Offsets Guidelines (Government of Western Australia)	
Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DSEWPaC, 2012)	

5 Stakeholder Engagement

Newmont seeks to build enduring relationships with local stakeholders, that contribute to a positive legacy and respect local customs and cultures. Building and maintaining trust with those impacted by our business is a challenge, to which Newmont applies a methodical approach to stakeholder relationship management to understand and manage our impacts. The expectations of community to be informed and consulted on resources projects reflects an increasing understanding of stakeholder rights, the imperative for community acceptance, and the relevance of these factors for regulatory approvals.

Under Newmont's global standards for social baseline and impact assessment (SIA), sites are required to update SIAs no less than every five years. This is to ensure Newmont's understanding of potential impacts of the operations and concerns or issues of the community are current. Data collection methodologies include both qualitative and quantitative processes and are conducted in a culturally appropriate manner. Newmont's Boddington operation completed SIAs in 2010, 2015 and 2020. The next quinquennial SIA will commence in 2025.

Stakeholders are also engaged through regular forums, publications in local community communications, and publicly available information on Newmont.com.

5.1 Stakeholder Identification

Newmont Boddington is on the traditional land of the Gnaala Karla Booja (**GKB**) native title claimants. The surrounding land uses include State Forest, timber production, agriculture, and mining. Newmont Boddington is located in the local Shire of Boddington, a primarily rural community.

Newmont Boddington defines its Area of Influence (AoI) communities and key stakeholders as:

- Host communities within 50 kilometre radius (i.e., Boddington, Wandering, Williams Local Government Authorities (LGAs) and the town of Dwellingup)
- Employees and business partners within host communities and the broader Southwest Region and greater Perth metropolitan area
- Traditional Owners via the Gnaala Karla Booja Agreement Group represented by the GKB Aboriginal Corporation (GKBAC) with whom Newmont Boddington has a voluntary and multi-year Indigenous Land Use Agreement (**ILUA**), forming the Moorditj Booja Community Partnership Agreement (CPA). A preservation of Aboriginal Heritage Agreement (PAHA) underpins the CPA. GKBAC represents interests across a region including Kwinana; Armadale; Rockingham; Bunbury; Collie; Narrogin; and Mandurah; and
- Regulatory and government agencies, non-government and community stakeholder groups with an interest in the ongoing sustainable operation of the mine.

Stakeholders identified for the operations and this Proposal are grouped into categories. These categories support the stakeholder analysis process, including identification of appropriate engagement levels and engagement methods. The following categories been developed for key stakeholders:

- Newmont
- Industry and commerce
- Indigenous groups
- Landowners
- Local community
- Local services
- Local government
- Regional community
- State agencies and departments
- State government

- Federal agencies and departments, and
- Federal government.

Key stakeholders for the Proposal are summarised in Table 5-1 . During the development of the Proposal, Newmont Boddington has continued to engage with key stakeholder groups based on interest and proximity to Newmont Boddington.

Regarding consultation with Traditional Owners for the Boddington region, Newmont established the Mooditj Booja Community Partnership Agreement in 2006. Under this Agreement, the Relationship Committee was established to work together on initiatives and monitor progress towards outcomes. It operates under a specific Terms of Reference requiring a consensus on decisions. The RDA2 design considerations and the scope of associated flora/fauna baseline studies has been shared at quarterly Relationship Meeting engagements. The Relationship Committee visited the site of the proposed RDA2 and their advice during this site visit influenced the decision review previous heritage surveys of the area.

The GKBAC reviewed the governance arrangement for the Relationship Committee in early 2024 and the parties agreed to pause meetings until the proposed restructuring was completed. The proposed new engagement model was confirmed at an Extraordinary General Meeting of the Relationship Committee. Hence, the relationship Committee did not meet between Q2 2024 and Q1 2025. However, during this hiatus, the GKBAC CAC was engaged on proposed management of RDA2 including a site visit to the existing facility in October 2024 and a second workshop aimed to improve how the Site's cultural heritage management plan addresses less tangible cultural heritage values. The GKBAC CAC provided the nomination of survey participants for the current heritage surveys which are underway.

Table 5-1 Key Stakeholder Groups

Stakeholder Group	Stakeholder	Key Interests
Commonwealth Government	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Department of Industry, Science and Resources	Matters of National Environmental Significance (MNES) Life of mine for Boddington, challenges and opportunities.
State Government	Environmental Protection Authority (EPA) EPA Services	Administers EP Act Part IV (EP Act) EIAs
	Department of Planning, Lands and Heritage	Heritage, cultural, ethnographic and archaeological sites
	Department of the Premier and Cabinet	Life of mine for Boddington, challenges and opportunities
	Department of Water and Environmental Regulation (DWER)	Administers *RIWI Act* Provision of licences to abstract water Groundwater and surface water quality and quantity Administers Part V (EP Act), Industry regulation and licensing, and *Contaminated Sites Act 2003* Supports administration of the Environmental Protection Authority and Part IV of the EP Act and *Environmental Protection Amendments Act 2020*

Stakeholder Group	Stakeholder	Key Interests
	Department of Energy, Mines, Industry Regulations and Safety (DEMIRS)	Administers *Mining Act* and *Regulations* Tenement conditions Mining proposals and programs of work Mine closure Mining rehabilitation fund Rehabilitation standards Safety in mining sector
	Department of Biodiversity, Conservation and Attractions (DBCA)	Administers *Biodiversity Conservation Act 2016* (BC Act) Flora, fauna and habitat conservation Interest in projects that are located on or near DBCA managed land Baseline surveys and licenses to take flora and fauna
	Department of Fire and Emergency Services	Fire breaks Provision of emergency services
	Department of Jobs, Tourism, Science and Innovation (DJTSI)	Administers State Agreement Acts Major Projects Renewable energy initiatives
Traditional Owners, and Representative Bodies	Gnaala Karla Booja Aboriginal Corporation and Cultural Advice Committee (as holder of collective rights of former Native Title Claimants) Heritage survey Cultural Knowledge holders	Potential socio-economic opportunities resulting from the Proposal for individuals and/or businesses including rehabilitation and closure of existing RDA Direct and indirect impacts to cultural, heritage and social values of significance Water management – surface and subsurface, quantity and quality Flora and Fauna (traditional resources) cultural assets Closure and post mining land use
Local Government	Shire of Boddington	Local economy Benefits to local economy and community Social surrounds and impacts with potential changes in operations Safety of locals and passers-by Use of public roads and infrastructure Compliance with building, health, sewage and other Local government regulation

Stakeholder Group	Stakeholder	Key Interests
Local Communities	Shires and local communities of Boddington, Dwellingup, Wandering and Williams	Water management Local employment opportunities Potential environmental impact to flora and vegetation Community impacts resulting from noise and dust Local community benefit strategies Use of local and regional roads.
Interested Stakeholders		
Non-government organisations and interest groups	Environmental Groups Peel Harvey Catchment Council (PHCC) Locals for Environmental Action and Protection (LEAP) Conservation Council of WA WA Forest Alliance Chamber of Commerce and Industry Peel Development Commission	Potential interest in baseline surveys, significance of modelled impacts, monitoring data and biodiversity offset opportunities. Potential cumulative impacts to Northern Jarrah Forest biodiversity. Local content and service provision
Utilities and other service providers	Main Roads Telstra Water Corporation	Transportation studies and access to and from the Proposal Interruptions to other facilities and services – power, gas, water, sewers, mobile signal etc.

5.2 Stakeholder Engagement Process

As part of the established stakeholder engagement process, Newmont Boddington undertakes structured regular, routine engagement with various identified stakeholders to inform, consult, collaborate with and empower the community and other stakeholders in the planning and decision-making process. The objectives of the established stakeholder engagement process are to:

- Identify Newmont Boddington stakeholders, including marginalised groups, and manage the relationships in a consistent manner
- provide sufficient information to interested stakeholders such that they can make informed decisions, raise issues and concerns, and obtain feedback as part of the life of mine process
- establish relationships with key stakeholders that enable ongoing dialogue through the mine development and operation, and
- ensure effective monitoring, measurement and tracking processes for all stakeholder interactions.

Newmont Boddington has several standing representative and consultative stakeholder engagement forums and established communication channels, and these are summarised in Table 5-2.

Table 5-2 Structured Stakeholder Meeting Groups and Frequency

Stakeholder Group	Method	Stakeholder Category	Engagement Level	Purpose
Boddington Gold Mine Environmental Management Liaison Group (BGMEMLG)	Twice Yearly Meeting (in person)	Representatives from State Government Departments: DEMIRS DWER – EP Act Part IV and V DBCA Department of Jobs, Tourism, Science and Innovation (DJTSI).	Consult	Provide consultation opportunities relating to environmental management Site inspection opportunity for regulators.
Community Reference Group (CRG)	Quarterly Meeting (in person)	Self-nominated membership with community-endorsed terms of reference and an independent chair. Includes members from: Shire Executive and Councillors from Boddington, Williams and Wandering Local Non-government organisations (NGOs) such as PHCC, Friends of Boddington Reserves and Community Resource Centres Local Traditional Owners Boddington Police Boddington District High School.	Consult	Provide consultation opportunities relating to community issues and opportunities.

Stakeholder Group	Method	Stakeholder Category	Engagement Level	Purpose
Local Emergency Management Committee (LEMC)	Three yearly Meeting (in person)	Shire of Boddington's statutory committee that includes WA Police, DFES, and local volunteer groups: State Emergency Service and bushfire brigades	Consult	Collaboratively approach local emergency management and provide updates on site activity or access changes.
Moorditj Booja Community Partnership Agreement (CPA) Relationship Committee	Quarterly Meeting (in person)	Nominated Group	Consult	Engage and seek feedback on matters relating to First Nations peoples, businesses, heritage, and other items.
South West Sustainability Partnership (SWSP)	Meeting (in person)	Nominated Group participants from: Newmont South32/Worsley Alcoa.	Consult	Carry out regular engagement with South West organisations with a vested interest in the Northern Jarrah Forest.

In addition to the regular stakeholder forums listed in Table 5-2, Newmont Boddington has also conducted community town halls consisting of an open invitation for community members to discuss aspects of Newmont Boddington operations held locally in the town of Boddington, site visits with stakeholder groups, stakeholder specific briefings, and provides operational updates in local community newsletters.

Newmont Boddington has also developed a microsite for communication of the Proposal at Newmont.com. As this Proposal progresses through the regulatory processes and project lifecycle, the Proponent will continue to engage with key stakeholders on a regular basis. Stakeholder engagement will be recorded and maintained in the stakeholder engagement database. The Proposal's stakeholder engagement program seeks to support a consistent approach to managing stakeholder and community relations.

5.3 Stakeholder Engagement Outcomes

Newmont Boddington maintains a Stakeholder Engagement Register, which tracks consultation with identified key stakeholders. The Approved Proposal underwent environmental impact assessment under the WA EP Act and federal EPBC Act from 2012 to 2014. This involved considerable stakeholder engagement inclusive of many stakeholders listed in Table 5-2. Tailings study updates have remained a key topic of discussion at forums such as BGMEMLG, Community Reference Group and Relationship Committee since 2019.

Regarding this Proposal, the outcomes of the key consultation undertaken since 2022 are summarised in Table 5-3, noting the Boddington tailings strategy has been discussed at key forums (BGMEMLG, CRG, Relationship Committee) since 2019. Newmont will continue to consult with key regulatory bodies and stakeholder groups on this Proposal through regular engagement forums and targeted engagements prior to referral to the regulators under Part IV of the EP Act.

Table 5-3 Stakeholder consultation relevant to the Proposal

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
DWER and Water Corporation	30/01/2023	Update on current operations and planned expansion of current F1/F3 RDA from 600 Mt to 750 Mt maximum storage capacity. LOM tailings study. Concern was raised regarding any further encroachment into the P1 or P2 areas of South Dandalup Dam Catchment as tailings dams are considered incompatible with drinking water catchments.	This constraint was introduced into early design work. Complete avoidance is not consistent with safety objectives, and this will be assessed with updated designs.
	07/03/2023	Site visit by DWER and Water Corporation representatives with a focus on inspection of the F1/F3 RDA facility. Discussion included: ▪ Emergency response planning ▪ Localised groundwater impacts, monitoring and mitigation strategies ▪ Water Corporation queried the bores, water quality, geology and installation methodology.	Infrastructure drawings were provided and explained. Shapefiles for 750 Mt maximum extent and borrow/gravel pits provided to DWER and Water Corporation. Clarification regarding cyanide analysis programs provided.
Water Corporation	22/06/2023	Discussion included: ▪ Global Industry Standard on Tailings Management (GISTM) and Newmont Boddington's ESG practices ▪ Newmont Boddington operational review ▪ F1 RDA facility details ahead of 750 Mt expansion submission ▪ Freeboard and surface water management, discussed noting the significant operational capacity of the facility ▪ Discussion of worst-case credible failure modes of F1RDA (extreme risk	Groundwater modelling report shared once finalised. Extension of offer for future site visits or inspections as required by Water Corporation.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		under GISTM) and impact on South Dandalup Drinking Water Catchment ▪ Water Corporation needs to consider failure analysis comparison with their own dams. Noted that the facility presents a significant latent risk. ▪ Want to examine groundwater and seepage impacts / modelling.	
DEMIRS	02/02/2023	Update on 750 Mt plans, potential new booster station and cyclone plant for LOM tailings strategy. Should new infrastructure be required, Newmont Boddington looking to place it within the existing mining tenure. Newmont Boddington provided information on materials balance for closure, seepage sumps and maintenance of the High-Density Polyethylene (HDPE) liner. DEMIRS recommended focusing future studies on dust generation and closure material balance review based on the proposed changes.	DEMIRS had no objections to early approval of the infrastructure within the existing tenure and is amenable to including it in the 750 Mt mining proposal.
	25/03/2025	Update on RDA2 phased construction plans and *Mining Act* approval requirements. DEMIRS advised they want to clearly see the link from the early phased work in the approved footprint to the ultimate footprint.	Following additional design and planning, Newmont will provide DEMIRS with updated information and clearly demonstrate how the phases of work combine.
DCCEEW	10/04/2025	Outline of Proposal provided by Newmont and advised of intention to submit referral in 2025 to DCCEEW.	No action.
BGMEMLG: DWER – Part IV and Part V	08/06/2022	Tailings study update provided regarding expansion plans for current facility and RDA1-	No questions from regulators on tailings study.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
DEMIRS DBCA DJTSI		X pre-feasibility study (making the current tailings facilities larger). No issues or topics raised relevant to tailings management.	
	07/12/2022	Focus area was Newmont Boddington dam safety performance and construction update and progress towards compliance with the GISTM. No issues or topics raised relevant to tailings management.	No questions from regulators on tailings study.
	17/05/2023	Comprehensive discussion on GISTM and commitment towards compliance at all Newmont operations. Regulators queried regarding emergency response planning. Update provided regarding expansion of F1/F3 RDA to 750Mt and approvals in progress. Progress update on LOM tailings study and discussion on RDA1-X and RDA2. Advised an options selection workshop would occur in June.	Future update to BGMEMLG participants to be provided when emergency plans are updated.
	06/12/2023	Progress update on approval applications for expansion of F1/F3 RDA to 750Mt. Update to the group that RDA2 was selected as the preferred facility following the June options study. Working through understanding footprint requirements for supporting infrastructure (e.g. drains, pipelines, roads, surface water management and bauxite). Additional spring surveys completed in 2023.	No questions from regulators on tailings study.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
	05/06/2023	Overview of the Proposal and environmental studies undertaken to date. DWER expectations regarding concept for opportunities for discharge of treated water into local system (e.g. Gringer Creek, Boggy Brook, Hotham River) – EIA to consider what happens to riparian vegetation when discharge ceases. EPA expectations around Management Plans – new GHG MP to include trajectory aligned to next zero in 2050. Stakeholders interested in participating in initial discussions on development of technology for regional biodiversity monitoring capability?	Further consultation with DWER's Mining Industrial Assessments (South) will occur as required.
	10/12/2024	LOM tailings update provided inclusive of progress of approvals for increased storage capacity for existing facility and progress of studies for RDA2 in the treefarm. Discussion of phased approval approach for RDA2 given existing approved footprint. DEMIRS advised they would appreciate some more discussion on this in the new year. DEMIRS unsure regarding phased approach and would want to see linkage to the final facility design. Progress update on the site-wide water balance provided.	Newmont committed to meeting with DEMIRS when additional design information was available.
Community Reference Group	21/04/2022 11/09/2022 13/12/2022	A Life of Mine (LOM) tailings study was provided at all meetings. This was inclusive of the planned expansion of the existing facility and the proposed future facility study which was underway. The need to seek approvals	No action required.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		was advised and reminders of public review processes provided. GISTM compliance updates also provided at each meeting. No tailings specific issues were raised and the group commenced planning for a site visit to inspect the F1/F3 RDA.	
	22/03/2023 13/06/2023 11/09/2023 11/12/2023	LOM Tailings RDA Options Projects update inclusive of expansion of the current facility to 750 MT and the approvals process Newmont needs to take. LOM tailings decision was shared with selection of RDA2 over the RDA1-X facility. Discussion on study plans and additional surveys which will be required to input into approval applications for additional footprint around RDA2. Participants asked to consider the Proposal and advice on planned studies and if there were any concerns of gaps in studies or additional social or environmental issues not being covered. No additional environmental or social issues were raised.	No action required.
	18/03/2024 17/06/2024 02/09/2024 02/12/2024	Overview of the Proposal and environmental studies undertaken to date. Discussed surplus water management including concept for opportunities for discharge of treated water into local system (e.g. Gringer Creek, Boggy Brook, Hotham River).	Investigate engagement of an independent consultant for key stakeholders to provide meaningful input on decisions that may impact livelihoods and the natural environment.
	31/03/2025 16/06/2025	Overview of the Proposal and provision of information from environmental studies	No actions.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		undertaken to date including heritage, flora, dieback and fauna. Results from noise and air quality modelling discussed in June 25. Discussion regarding phased construction plans and commencing works within the Approved Footpirnt in 2026.	
Boddington Community Forums	01/11/2023	Meeting and exhibit. Included description of tailings facilities operation and risk, controls and governance arrangements including application of GISTM. Emergency response planning and July exercise was discussed.	Newmont Boddington have considered the issues raised in framing this referral and will be key considerations in the approvals and related technical studies.
	06/08/2024	Overview of the Proposal and environmental studies undertaken to date. Water management including impacts to local creeks from drying climate. Future management of vegetation (burn offs and weed control).	
Peel Alliance	23/05/2024	Overview of water management on site Plans for RDA2 including scopes of studies Peel Alliance shared its studies on each Peel local government area water allocation issues Explained concerns around Position Statement on expansion of mining areas	No unidentified issues raised in relation to scope of studies underway Newmont shared information on water usage – in particular, the operating strategy for abstraction of surface water and associated monitoring outcomes
PHCC & Board Meeting	16 August 2024	Update on the Proposal status including environmental studies to inform referral process Opportunities for collaboration	Newmont reiterated intention to continue collaborative partnership with PHCC and encourages feedback on the Proposal.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		PHCC expressed an interest to continue engagement with Newmont Boddington to identify projects for collaboration.	
Main Roads	04/08/2024	Newmont presented on the Proposal and the intention for use of Plantation Road for access to the site during construction phase. Newmont sought discussion on whether an upgrade would be required for the intersection of Albany Highway and Plantation Road. Main Roads advised a traffic impact assessment should be conducted and provided to Main Roads for consideration.	Traffic impact assessment completed and provided to Main Roads in April 2025.
Moorditij Booja CPA-Relationship Committee	22/03/2022 26/06/2022 28/09/2022 16/12/2022	Tailings dam study updates provided at each meeting including plans for new approvals to expand the current F1/F3 RDA to a maximum storage volume of 750Mt and, for the new tailings storage facility. Future tailings dam strategy discussions included assessment of the RDA1-X option and studies which were underway in 2022 as part of this review.	No actions.
	30/03/2023 07/06/2023 14/09/2023 14/12/2023	Tailings dam study updates including plans for new approvals to expand the current F1/F3 RDA to a maximum storage volume of 750Mt and, for the new tailings storage facility. Updates were provided on the RDA1-X study and the decision to return to the RDA2 design in the Saddleback Treefarm in late 2023. Discussion on the planned studies particularly those which will focus on assessment of potential impact to Gringer Creek.	No actions.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		Discussions during 2023 provided context regarding GISTM and how Newmont was required to meet compliance with this new standard. Relationship Committee members queried timing of RDA2 and the renegotiation of the Community Partnership Agreement by the end of 2025. September 2023 meeting included a site visit for RC representatives to the F1/F3 RDA as well as the Saddleback Treefarm to show committee members where the main embankment wall would be located. Advice provided that 100 m buffer applied to ephemeral creeks for avoidance and proposal that where not possible, to engage heritage monitors.	
	21/03/24 (*Extraordinary meeting of RC with GKBAC*)	Tailings dam study update including plans for new approvals to expand the current F1/F3 RDA to a maximum storage volume of 750Mt and, for the new tailings storage facility. Extraordinary meeting of Relationship Committee at which Executive of GKB explained to Relationship Committee, following which meetings were put on hold until May 2025. From this point forward heritage matters (e.g. survey requests) would be managed through the CAC and GKB Impact. Relationship Committee meetings resumed May 2025.	Newmont to develop options on how the future interaction may look and flow of information to GKB.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
GKBAC CAC	15/08/2024	Presentation to Cultural Advice Committee on water management (in response to observations made by survey participant member of CAC that had taken part in a S32 survey north of the RDA/off lease and was concerned about dry country and flora/fauna health and any dewater effect of Newmont operations.	Link provided to public monitoring outcome reports Invitation extended to visit site to observe management.
	25/09/2024	Information about the Proposal provided and introduced proposed Noongar Standard Heritage Agreement (NSHA) Activity Notice for Heritage Survey in RDA2 area. Request for participants for heritage survey.	Directed Newmont Boddington Proponent to agree a NSHA with GKB where new clearing was required. In lieu of a NSHA agreement, Newmont Boddington Proponent submitted amended Activity Notice.
	30/10/2024	Activity Notice request re-presented to CAC and clarification sought for survey participants, future engagement expectations, resourcing and timeframes.	No action required. Survey participants subsequently nominated.
	26/11/2024	Site visit by GKBAC Lands and Heritage Team and CAC members. Site visit included F1/F3 RDA and discussion regarding priority surveys for the Saddleback Treefarm area.	No action specific to RDA2 required.
	25/02/2025	Newmont presented on intended ground investigation programs required to advance design of RDA2 and made a request for CH monitors to be deployed consistent with long-established site practices and heritage agreement.	No action required.
	19/05/2025	Newmont-funded independent environmental SME presented to GKB CAC on review of environmental management of the existing tailings facility.	Commitment made to ongoing discussions and provision of further information upon receipt of consolidated minutes and questions from GKBAC.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		Newmont provided responses to questions raised by SME and CAC members with a focus on management processes in place around existing tailings storage facility.	
Local Emergency Management Committee (LEMC)	01/05/2023 28/08/2023 27/11/2023	Discussions on GISTM and Newmont Boddington's progress towards compliance. Sharing of details of emergency response planning and Task/Action/Response Plans (TARP) for the F1/F3 RDA. Desktop exercise completed based on tailings failure flow completed in August.	Emergency procedures updated as required based on feedback from these meetings.
	26/02/2024 27/05/2024 26/08/2024 23/11/2024	Newmont continued to discuss compliance journey with GISTM. Newmont provided a presentation around what tailings are and a report on the desktop exercise was provided to LEMC committee members. Updates were also provided regarding Newmont Boddington's plan to ensure re-certification to the International Cyanide Management Code.	
Department of Fire and Emergency Services (DFES)	21/06/2023	Engaging with department on GISTM F1 RDA facility and expansion plans for 750 Mt capacity. Discussion of worst-case credible failure modes of F1 RDA (extreme risk under GISTM) and Newmont Boddington's ERP. Newmont Boddington invited to State Emergency Management Committee Meeting to present on Tailing and GISTM. Discussed that facility is necessary and facility is managed to highest standard	No actions.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		F1 RDA facility is regarded as safe and has high tech safety mechanism under ANCOLD standards. It was noted facility will be full by 2029 and F1 RDA will be closed and rehabilitated to stable landform. Explained there is an Emergency Response Plan that covers multiple types of events including cyanide and fire emergencies.	
State Emergency Management Committee	02/08/2023	Background on engagement (meeting with DFES). Tailings dams in WA. Failure lead time and Newmont Boddington actions during failure. Impacts of failure.	No action required.
South32 Worsley Alumina Pty Ltd	20/07/2023	GISTM compliance. Inundation and failure mechanisms. F1 RDA. Impacts of facility failure. Failure scenario study. Engagement with key stakeholders.	Looked at possibility of joint Emergency Response Training with South32 around a tailings scenario. Sent copy of the presentation.
	07/05/2025	Consultation regarding progress on programs of work and planning for RDA2, particularly in relation to footprint and future *Mining Act* tenure applications.	No action required.
Hon. Bill Johnston MLA Minister for Mines and Petroleum, Energy, Hydrogen Industry and Industrial Relations	21/08/2023	Boddington LOM Tailings study update provided as well as discussion on GISTM Conformance.	No action required.
Bibbulmun Track Foundation (BTF)	02/10/2023	Newmont Boddington advised BTF on plans to increase the maximum storage capacity of the F1/F3 RDA and this will involve a 10 m increase in height.	No action required.

Stakeholder	Date	Issues /topics raised	Proponent response / outcome
		BTF advised they would be most concerned if the change resulted in visual or noise impacts on track walkers. BTF would advise if the Board required a briefing. Newmont Boddington advised the 2012 Visual Impact Assessment was being updated at present and no additional impact is anticipated beyond current assessment. No briefing of the Board is required. DBCA will engage with BTF when a formal submission is received from Newmont Boddington.	
BTF Board	29/02/2024	Presentation provided to the BTF Board discussing the plans for expansion of the current F1/F3 RDA and the future RDA2 in the treefarm. Newmont advised a visual impact assessment from viewpoints along the Bibbulmun Track had been undertaken. Questions around the direction of the viewshed used at one location was raised as the current facility is more visible at this location.	When the visual impact assessment is updated, Newmont will re-assess visibility at this location.

6 Object and Principles of the EP Act Framework

The Object of the EP Act is to protect the environment of the State, having regard to the principles in s4A of the EP Act. Table 6-1 outlines Newmont Boddington's consideration of the Object and Principles of the EP Act in relation to the Proposal.

Table 6-1 Principles of the EP Act

Principle	Considerations
1. The **precautionary principle** Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by: careful evaluation to avoid, where practicable, serious, or irreversible damage to the environment; and an assessment of the risk weighted consequences of various options.	Planning and development of the Proposal has used the current EPA Guidelines and scientific information to form a robust understanding of the environmental baseline. This included review of protected species threat profiles, and completion of technical studies and surveys for flora, fauna, noise, air quality, GHG, visual impacts and hydrogeology, using suitable qualified subject matter experts (**SMEs**). Newmont Boddington has used the environmental baseline information to identify potential environmental impacts during early project planning and located stockpiles and other infrastructure in cleared land and pine plantations to avoid these impacts where practical. The Proposal has been designed to avoid impacts to the Priority Ecological community located in the vicinity of the RDE. The footprint for the Proposal has been designed to maintain a 100 m buffer between RDA2 from Gringer Creek, where previous design required a 2 km diversion of this ephemeral creek. Appropriate technical guidance has been applied in the preparation of technical studies and Newmont Boddington considers there to be a high degree of confidence in the data, assessment and the conclusions drawn.
2. The **principle of intergenerational equity** Where the present generation should ensure that the health, diversity, and productivity of the environment is maintained and enhanced for the benefit of future generations.	Newmont Boddington has avoided areas of native vegetation by utilising existing disturbed areas such as cleared, fallow and plantation sites wherever possible. Newmont Boddington's planning processes incorporate requirements to protect ecosystems and minimise biodiversity impacts, including MNES and other regional and locally valued features. Where impacts are foreseen to occur these are managed in accordance with the mitigation hierarchy of avoid, minimise, rehabilitate and where required, offset to maintain the health, diversity and productivity of the environment into the future. Newmont Boddington has identified control measures to mitigate potential adverse impacts to the environment and surrounding community to ensure impacts are minimised and environmental values are maintained for future generations. Newmont Boddington will collaborate with stakeholders to seek opportunities for involvement and advice regarding on-ground works. Newmont Boddington will continue its engagement for ongoing socio-economic investment. The Proposal has considered post-mine land use planning. The existing operation has a MCP to ensure the decommissioning of the mine and its associated operations are carried out in a method that is consistent with the

Principle	Considerations
	original and surrounding land uses. When *Mining Act* tenure is granted for the Proposal, the MCP will be updated to include the closure planning information for RDA2 and supporting infrastructure. The implementation of the MCP will promote consistency with the principle of intergenerational equity through minimisation of legacies following completion of mining operations.
3. The **principle of the conservation of biological diversity and ecological integrity** Conservation of biological diversity and ecological integrity should be a fundamental consideration.	The design of this Proposal has prioritised previously disturbed or otherwise degraded land in preference to areas of native vegetation. The additional footprint will avoid PEC. Additional mechanisms to conserve biological diversity, conservation or ecological integrity include: ▪ Risk assessments to assess the environmental values and apply the mitigation hierarchy process (avoid, minimise, rehabilitate, or offset). ▪ Progressive rehabilitation to areas that are no longer required for mining or supporting operational activities. ▪ Exposure of local NGOs and community groups (e.g. school children) to environmental monitoring programs with the aim to educate the purpose and outcomes of the monitoring. ▪ Regional Biodiversity Partnership with Alcoa and South32 to share data and invest in studies for the Northern Jarrah Forest. To date funding has been provided to DBCA for a feral cat study and the group is working towards development of an Indigenous Ranger group for the Northern Jarrah Forest in conjunction with the Gnaala Karla Boodja Aboriginal Corporation. ▪ Identification of offsets when other possible mechanisms to enhance ecological integrity have been exhausted. This principle is a key consideration for the Revised Proposal as it directly relates to the EPA's objectives for Flora and Vegetation, Terrestrial Fauna and Inland Waters. Newmont Boddington has considered this principle through the assessment of these factors (Sections 8 to 10).
4. Principles relating to **improved valuation, pricing, and incentive mechanisms**: Environmental factors should be included in the valuation of assets and services. The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance, and abatement. The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the	Newmont Boddington acknowledges the requirements to transparently assess Environmental Factors against current and future asset value, pricing and incentive mechanisms. Newmont Boddington accepts that it is responsible for the costs relating to the management of waste and pollution, including avoidance, containment, decommissioning, rehabilitation and closure. This will include fees associated with estimated emissions to the environment through Part V of the EP Act (e.g. Works Approval and Licences) consistent with the polluter pays principle. GHG emissions are a contributor to climate change and the emissions from the Proposal will contribute to WA's GHG emissions. Newmont Boddington will bear the cost of emission reduction and offset strategies to minimise its contribution to GHG emissions over the life of the Proposal. Options for progressive rehabilitation, or other practical measures which may reduce overall closure costs have been explored during pre-feasibility and feasibility phases. Newmont Boddington will ensure goods and services required to implement the Proposal activities are obtained through ethical and responsible pathways and the pricing structures are inclusive of the full life cycle.

Principle	Considerations
use of natural resources and assets and the ultimate disposal of any waste. Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solution and responses to environmental problems.	
5. The **principle of waste minimisation** where all reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	Newmont Boddington will continue to employ industry best practice to minimise waste volume and increase recycling opportunities where practicable, such as reducing excess packaging materials (plastic wrap, packing foam etc when purchasing from suppliers). Newmont Boddington's standard practice is to apply the waste management hierarchy of avoidance, reuse, recycling, recovery of energy, treatment, containment and disposal. Newmont Boddington is exploring the potential to expand or the creation of new revenue, streams (recycling / reuse and repurpose) and the potential to support existing local business or provide new growth opportunities within the local community.

7 Assessment of Preliminary Key Environmental Factors

In the preparation of this Proposal Newmont Boddington has considered the significance of potential impacts as outlined in the EPA Procedures Manual (EPA, 2024e) and *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023c).

A risk assessment of the Proposal scope has identified four potential Preliminary Key Environmental Factors (Table 7-1). These factors require additional consideration and investigation to quantify the potential impact that is likely to occur as a result of activities of the Proposal scope and to identify the cumulative impact in relation to the Approved Proposal. The Preliminary Key Environmental Factors align with the Key Factored conditioned in MS971. Chapters for each factor are outlined in Table 7-1.

Environmental Factors related to the Sea theme were not considered for the Revised proposal. All other Environmental Factors deemed not to be key factors are summarised in Section 12.

Table 7-1 Preliminary Key Environmental Factors

Environmental Factor	Potential Environmental Impacts	Included in MS971	Section
	Land		
Flora and Vegetation	Yes - Activities included under this Proposal include clearing of vegetation within the RDE.	Condition 6	Section 8
Terrestrial Fauna	Yes - Activities included under this Proposal include clearing of habitat for terrestrial fauna in the RDE.	Condition 9	Section 9
	Water		
Inland Waters	Yes - Activities included under this Proposal have potential to impact on surface water and groundwater quality.	Condition 7	Section 10
	People		
Social Surroundings	Yes - Activities included under this Proposal have potential to impact on social surroundings including operational noise, dust and potential impacts to Aboriginal Cultural Heritage.	Condition 8	Section 11

8 Flora and Vegetation

8.1 EPA Objective

The EPA objective for Flora and Vegetation (EPA, 2016a) is:

'To protect flora and vegetation so that biological diversity and ecological integrity are maintained'

8.2 Policy and Guidelines

Table 8-1 the relevant policy and guidance for Flora and Vegetation and summarises how this material has been considered for the Proposal.

Table 8-1 Flora and Vegetation - policy and guidance

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors and Objectives (EPA 2023a)	This assessment has been conducted based on the EPA's objective for flora and vegetation. The referral considers the EIA goals, evaluates the significance of impacts, and application of the required mitigation hierarchy.
Technical Guidance – Flora and Vegetation Surveys for EIA (EPA 2016e)	Considered in the design (methods and approach) of flora and vegetation surveys (previous guidelines were used where surveys were undertaken before current guidelines).
Environmental Factor Guideline: Flora and Vegetation (EPA 2016a)	This document was considered in the preparation of this section of the referral ▪ Applied the relevant considerations for environmental impact assessment ▪ Identified the values of flora and vegetation, and their significance ▪ Identified activities that can impact on flora and vegetation, and ▪ Considered the links with other environmental factors.
Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2024e)	This have been considered in planning for the Part IV approval process and has been used to inform the preparation of this referral.
Instructions on how to prepare an Environmental Review Document (EPA 2024b)	Forms the basis of the referral headings and content to be provided in future ERD submission.
Referral of a proposal under section 38 of the Environmental Protection Act 1986: Instructions (EPA 2024d)	
Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2024c)	This document was considered in the revision of the Weed and Forest Disease Monitoring and Management Plan (**WFMMP**).

Policy or Guidance	How the Policy and Guidance has been considered
Other State or Commonwealth	
Biosecurity and Agriculture Management Act 2007 (WA)	Requirements considered during vegetation condition assessment of recorded in the disturbance footprint required for this Proposal and RDE.
Corporate Policy Statement No. 3: Management of Phytophthora Dieback (DBCA 2022) Phytophthora Dieback Management Manual (DBCA 2023b) Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomic* (DoEE 2018)	Requirements and recommendations for dieback management outlined in these documents were reviewed and incorporated into updated WFMMP.
Relevant EPBC Act listed species specific survey guidelines and protocols.	These documents were used as guidance when undertaking surveys of EPBC listed species and potential survey limitations.
Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DCCEEW 2013)	Considered in the impact assessment for MNES flora.
Environmental Management Plan Guidelines (DCCEEW 2024a)	This document was considered, although not deemed to be relevant to the Flora and Vegetation environmental factor (no environmental management plan has been prepared for flora or vegetation).
WA Environmental Offsets Policy (Government of Western Australia 2011)	Considered in development of the impact assessment for Flora and Vegetation.
WA Environmental Offsets Guidelines (Government of Western Australia 2014)	
Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DSEWPaC 2012a)	

8.3 Receiving environment

8.3.1 Studies and survey Effort

Flora and vegetation surveys including baseline and targeted surveys, have been undertaken in the wider survey area extent (Figure 8-1) since the 1980s. The results of these surveys have assisted in developing a detailed understanding of the vegetation and flora that exists in and around the RDE. Table 8-2 presents the coverage of these surveys.

A total of 21 surveys have been undertaken within the RDE and surrounding areas (Table 8-2). This has resulted in a significant level of detailed baseline botanical surveys and extensive targeted searches for conservation significant flora providing spatial coverage of the RDE and immediate surrounds. The detailed baseline botanical surveys have focused on areas of native remnant vegetation and have included assessment of remnants within agricultural lands. A minimum of three vegetation survey plots (quadrats) or transects have been established in the same, but discontinuous vegetation site type, to enable replication, to the extent practicable (Mattiske 2021).

The targeted searches for threatened and priority flora were undertaken during all the botanical surveys within the RDE (including the traverses undertaken on the regular grid systems) and in additional areas that are more likely to support threatened and priority species (Mattiske 2021). The design of the targeted flora searches have been informed by desktop searches (i.e. collation of potential species lists), specific searching for flora species, increased understanding of site preferences of flora (as related to landforms, soils and site conditions) and the species lifeforms/habitat (Mattiske 2021).

Two dieback assessments within the RDE were conducted by a DBCA-registered dieback Interpreter in accordance with the *FEM047 Phytophthora dieback Interpreter's Manual* for lands managed by the Department of Biodiversity, Conservation and Attractions (**DBCA**) produced by the Forest and Ecosystem Management Division (DCBA 2015).

Table 8-2 Flora and vegetation surveys

Author and Year	Title	Summary
Mattiske, 2025a	Threatened and Priority Flora search for Newmont Boddington Gold Mine within the Residue Dam Expansion Areas	Survey for vegetation type and Conservation Significant Flora within 200 m of boundary of RDA2.
Astron, 2024	Boddington Gold Mine Weed Mapping Survey November 2023	Survey undertaken to collect information on the weed species inventory, abundance, cover and extent at Newmont Boddington Mine and surrounding areas.
Mattiske, 2024b	Assessment of Flora and Vegetation Values of Hotham Farm	Desktop review of flora and vegetation values of Hotham Farm.
Mattiske 2024a	Assessment of Flora and Vegetation Values on Residue Dam Expansion Areas (survey completed 2023)	Report summarising desktop and flora and vegetation field survey results of RDA2 area and potential expansion of existing facilities. No TEC are likely to occur, however, the report highlighted potential for G1 and G3 PEC in small areas of the footprint.
Mattiske 2023	Memorandum: Threatened and Priority Flora search for Newmont Boddington Gold Mine within the Newmont Geotech Test sites	Summary report discussing field assessment of proposed geotechnical field program sites. Geotechnical assessment is a mandatory requirement in preparation for construction of the RDA2 tailings storage facility. Noting one P3 species (*Goodenia ?katabudjar*) was sighted and activities were assessed to ensure this area was avoided.
Umwelt, 2023b	Plant Cell Density Analysis 2022	Assessment of vegetation health in accordance with Groundwater and Groundwater Dependent Vegetation Monitoring and Management Plan (**GGDVMMP**).
Umwelt, 2023a	Groundwater Dependent Vegetation Baseline Transect Establishment	The aim of this project was to establish baseline monitoring transects in accordance with the GGDVMMP.

Author and Year	Title	Summary
Umwelt, 2023c	Multispectral Imagery Capture Plant Cell Density Change Analysis – 2019 – 2021	Assessment of vegetation health in accordance with GGDVMMP
Glevan 2024	Dieback Assessment of Phytophthora Occurrence Report for RDA2.	A comprehensive Phytophthora Dieback assessment of the Approved Proposal footprint to determine dieback occurrence.
Terratree, 2023	Comprehensive Dieback Assessment of F1 RDA, Extended N05, and Waste Dump Expansion (WRD11 and D4WRD)	A comprehensive Phytophthora Dieback assessment as part of the 2022 Triennial Dieback assessment within the Newmont Boddington Development Envelope.
Mattiske 2021	Assessment of Flora and Vegetation on Worsley Mine Expansion Primary Assessment Area	Consolidation of the results of all previous surveys (1980 to 2019) within the Primary Assessment Area into a single technical report.
Woodman, 2019	Multispectral Imagery Capture and Inspection, March 2019	Monitor the health of groundwater dependent vegetation surrounding the site in order to track performance of Newmont Boddington groundwater management.
Mattiske, 2013	Assessment of Flora and Vegetation Values on the Proposed WRL, the Potential Land Swap Area and the Southern Section of Hotham Farm, Boddington Gold Mine	Site-vegetation type classification, description and mapping, and targeted searches for Threatened and Priority flora.
Mattiske, 2012b	Flora and Vegetation of the Sotico Survey Area	Site-vegetation type classification, description and mapping, and targeted searches for Threatened and Priority flora.
Mattiske, 2012a	Threatened and Priority Flora Assessment of the Hotham Pipeline and Hedges Dam	Threatened and Priority flora survey.
Mattiske, 2010	Assessment of the Wetlands on the Boomerang, Pillow and Round Swamps	Assessment of the condition of the wetlands within the Boomerang, Pillow and Round swamps including flora and vegetation descriptions, vegetation health and setting up transects for future monitoring.
Mattiske, 2010	2009 Assessment of Flora and Vegetation Values on RDA Expansion Area at Newmont Boddington Gold Mine	Site-vegetation type classification, description and mapping, and targeted searches for Threatened and Priority flora.

Author and Year	Title	Summary
Mattiske, 2005	Review of Flora and Vegetation Located in the Boddington Gold Mine and Hedges Lease Areas	Site-vegetation type classification, description and mapping, and targeted searches for Threatened and Priority flora.
Heddle et al., 1980	Vegetation Complexes of the Darling System, Western Australia, in Atlas of Natural Resources of the Darling System	Mapping of vegetation complexes of the Darling System, based on broad relationships with underling geology, landforms and soils and climatic zones with reference to key structural and floristic components of regional vegetation patterns.

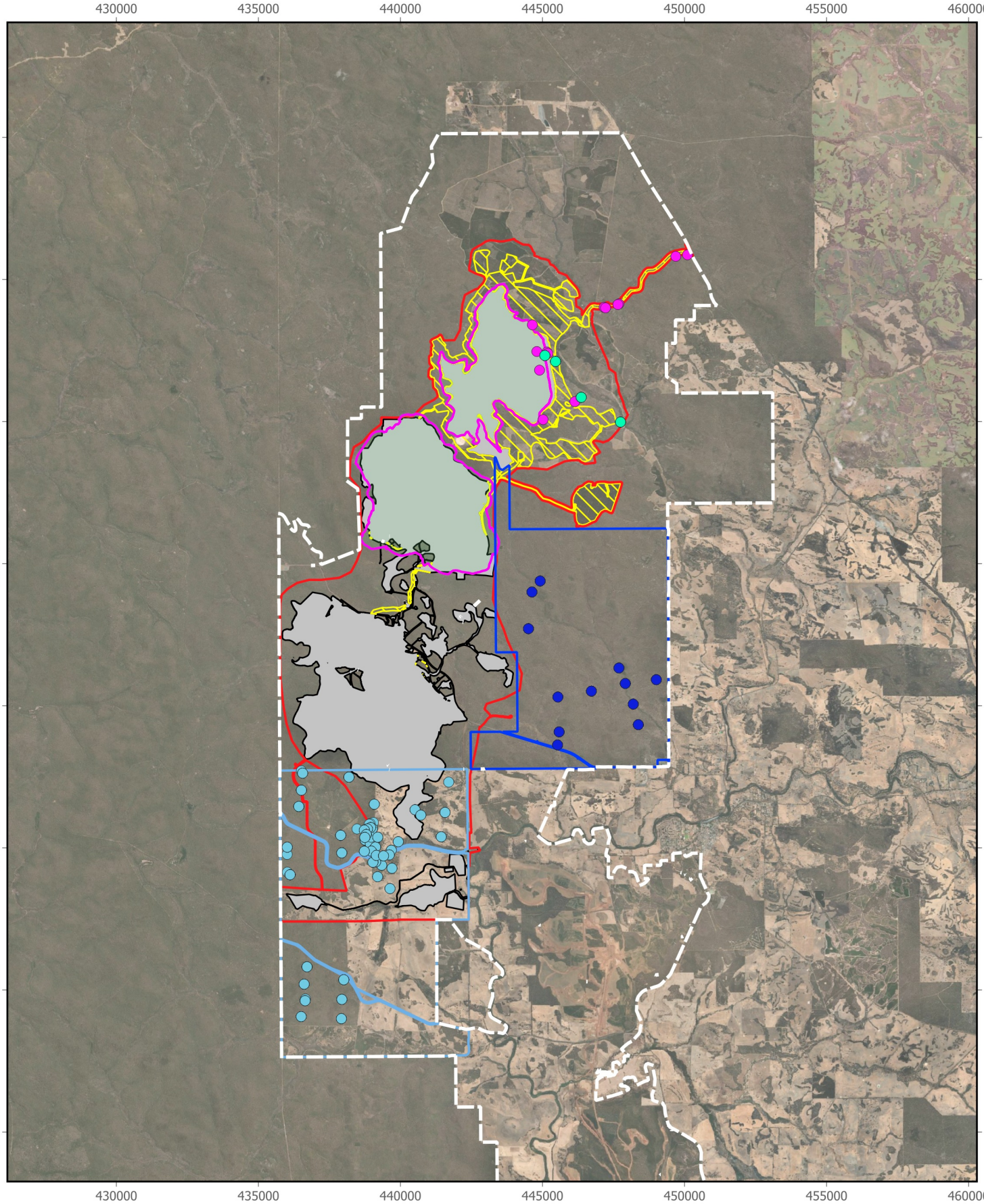


Figure 8-1 Survey Efforts including the Wider Survey Area

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Survey Details

- Vegetation Monitoring Plots (Mattiske, 2013)
- Assessment of Flora and Vegetation Values (Mattiske, 2024)
- Assessment of Flora and Vegetation Values (Mattiske, 2024)
- Flora and Vegetation Assessment (Mattiske, 2024)
- Wider Survey Area (Mattiske, 2021)

Sample Sites

- Mattiske, 2013
- Mattiske, 2024
- Mattiske, 2024
- Mattiske, 2024

N

0 1 2 km

Scale @A4 1: 180000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024)
Imagery ©Bing Aerial, Esri

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Drawn By: oostveenperrylj Date: 23 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Flora_250522.qgz

8.4 Survey adequacy

The comprehensive nature of the historical flora and vegetation surveys within the RDE provides a detailed understanding of the flora and vegetation.

An assessment of limitations associated with the overarching survey effort, as aligned with the EPA's Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016e), is provided in (Table 8-3)(Mattiske 2025a, 2024,2023, 2021). The surveys within the RDE and surrounds have been conducted at the optimum flowering times for the majority of species (typically during spring).

Table 8-3 Potential Flora and Vegetation Survey Limitations for the RDE

Limitation	Assessment
Sources of information and availability of contextual information (i.e. pre-existing background vs new material)	Not a constraint: Reference resources such as mapping by (Beard et al., 1979) (Mattiske and Havell, 1998) previous vegetation mapping completed for Newmont Bodington and Worsley by E.M Mattiske and Associates and Mattiske Consulting Pty Ltd teams together with online flora and vegetation information, has provided an appropriate level of information. Minor constraint: Population numbers for some conservation significant flora species were unable to be quantified as some older records held at the Western Australian Herbarium and the early survey work undertaken by Mattiske outlined in Table 8-2 was based on data collected prior to the introduction of the global positioning system. The details on some of the WA Herbarium records were also very general in terms of locational and plant number details.
Scope (i.e. what life forms, etc., were sampled)	Not a constraint: All life forms have been sampled adequately during the surveys with the majority of the extensive survey work being undertaken in spring. All site characteristics have been adequately sampled during the surveys.
Proportion of flora collected and identified (based on sampling, timing and intensity)	Not a constraint: The surveys have been undertaken in multiple seasons over multiple years with the majority conducted in the spring months, which is the optimum seasonal window for flora and vegetation surveys in the southwest of WA. Surveys, specimen collection and identification has been performed in accordance with DBCA (and former Species and Communities and Licencing Branch/Departments) approved flora licence agreements and requirements.
Completeness and further work which might be needed (i.e. was the relevant survey area fully surveyed)	Not a constraint: As outlined above, numerous detailed surveys have been completed across Newmont Boddington's and Worsley's operations, and, as such, a substantial portion of the area has been surveyed. Survey effort has included established survey sites, targeted searches and general traversing of the area. Minor constraint: As noted above, the data available to assist in the determination of potential old growth forest areas is historical in nature (i.e. some time has passed since the assessment of logging debris and number of stumps).
Mapping reliability	Not a constraint: Aerial photographic maps, grid survey sites, foot traverses and permanent plots have enabled a comprehensive coverage of the flora and vegetation values. They have also allowed boundary definitions of the vegetation and the vegetation condition maps to be completed with a high degree of confidence.

Limitation	Assessment
Timing, weather, season, cycle	Not a constraint: Aerial photographic maps, grid survey sites, foot traverses and permanent plots have enabled a comprehensive coverage of the flora and vegetation values. They have also allowed boundary definitions of the vegetation and the vegetation condition maps to be completed with a high degree of confidence.
Disturbances (fire flood, accidental human intervention, etc.)	Not a constraint: No disturbances have impacted upon the surveys. While there have been some fire occurrences within the RDE, survey of these areas post-fire has enabled coverage of any short-term impacts on the coverage of flora values.
Resources (i.e. were there adequate resources to complete the survey to the required standard?)	Not a constraint: Adequate resources were provided for the completion of the survey work.
Access problems (i.e. ability to access survey area)	Not a constraint: Access constraints associated with the RDE have been negligible. The level of survey effort in the RDE has been extensive and provides a comprehensive representation of the flora and vegetation values in the RDE.
Experience levels (e.g. degree of expertise in plant identification to taxon level)	Not a constraint: The detailed flora and vegetation surveys (excluding targeted surveys such as weeds and dieback) have been undertaken by Mattiske Consulting. Mattiske botanists have extensive experience, both within the RDE (as they have completed the majority of the survey work), and the Northern Jarrah Forest. Field personnel have the appropriate training in sampling and identifying the flora of the region. Any plants not identifiable in the field or by the Mattiske botanists have been processed and identified by specialist taxonomists at the WA Herbarium.

8.5 Regional vegetation

The RDE is located within Northern Jarrah Forest as defined by IBRA wholly within Northern Jarrah Forest subregion (JF1) (DCCEEW 2020). The Northern Jarrah Forest subregion is characterised by Jarrah (Eucalyptus marginata) forest on ironstone gravels and Marri-Wandoo (Corymbia calophylla - Eucalyptus wandoo) woodlands on loamy soils, with sclerophyll understoreys.

Vegetation complexes, Cooke, Coolakin, Dwellingup 4, Pindalup and Yalanbee 5 occur within the disturbance footprint required for this Proposal. None of these complexes are restricted or less represented (<10%) in all DBCA managed lands (Government of Western Australia, 2019).) (Table 8-4, Figure 8-2) (Mattiske, 2025a).

8.6 Local vegetation

A total of 20 site-vegetation types, three cleared (ag – agriculture and other), plantation (pine trees) and plantation (agricultural areas) were defined and mapped in the survey (Mattiske 2024) (Table 8-5, Figure 8-3).

None of these site vegetation types are locally or regionally restricted; however the localised occurrence of the granite areas (G3) have species with potential similarities to the species on the granite PEC areas as defined to the south in the Mt Saddleback areas near Boddington (DBCA PEC Mount Saddleback Heath Communities PEC (P1), (DBCA 2023a).

The dominant vegetation types in the RDE include S, H and PS. The majority of the footprint required for this Proposal consists of land previously cleared for plantations Table 8-5.

A number of vegetation types are considered locally significant, as identified and discussed in Table 8-5.

Table 8-4 Extent of regional vegetation complexes mapped within the RDE

Vegetation Complex	Description	Pre-European Extent (ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent Remaining within DBCA Managed Land (%)	Extent within the Revised Development Envelope (ha)	Extent of footprint required for this Proposal (ha)	Extent proposed to be cleared as a percent of current extent (%)
Cooke	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata – Corymbia calophylla* (subhumid zone) and open forest of *E. marginata* subsp. *thalassica – C. calophylla* (semiarid and arid zones) and on deeper soils adjacent to outcrops, closed heath of Myrtaceae – Proteaceae species and lithic complex on granite rocks and associated soils in all climatic zones, with some *E. laeliae* (semiarid), and *Allocasuarina huegeliana* and *E. wandoo* (mainly semiarid and perarid zones).	36,779	30,304	82.4%	62.5%	509	6	0.02
Coolakin	Woodland of *Eucalyptus wandoo* with mixtures of *E. patens*, *E. marginata* subsp. *thalassica* and *Corymbia calophylla* on the valley slopes in arid and perarid zones.	163,992	64,205	39.2%	20.1%	1429	409	0.64
Dwellingup 1	Open forest of *Eucalyptus marginata* subsp. *marginata – Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.	208,491	181,0389	86.8%	82.3%	209	0	0
Dwellingup 2	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in subhumid and semiarid zones.	86,128.3	71,056.0	82.5%	23.4%	31	0	0

Vegetation Complex	Description	Pre-European Extent (ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent Remaining within DBCA Managed Land (%)	Extent within the Revised Development Envelope (ha)	Extent of footprint required for this Proposal (ha)	Extent proposed to be cleared as a percent of current extent (%)
Dwellingup 4	Open forest of *Eucalyptus marginata* subsp. *thalassica* – *Corymbia calophylla* on lateritic uplands in semiarid and arid zones.	132,416	115,662	87.3%	70.1%	6137	1002	0.87
Michibin	Open woodland of *Eucalyptus wandoo* over *Acacia acuminata* with some *E. loxophleba* on valley slopes, with low woodland of *Allocasuarina huegeliana* on or near shallow granite outcrops in arid and perarid zones.	168,040	42,996	25.6%	5.1%	740	0	0
Pindalup	Open forest of *Eucalyptus marginata* subsp. *thalassica* – *Corymbia calophylla* on slopes and open woodland of *E. wandoo* with some *E. patens* on the lower slopes in semiarid and arid zones.	167,151	128,358	76.8%	60.1%	3587	135	0.11
Swamp	Mosaic of low open woodland of *Melaleuca preissiana* – *Banksia littoralis*, closed scrub of *Myrtaceae* spp., closed heath of *Myrtaceae* spp. and sedgelands of *Baumea* and *Leptocarpus* spp. On seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones.	53,658.2	40,613.0	75.7%	64.2%	1495	0	0

Vegetation Complex	Description	Pre-European Extent (ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent Remaining within DBCA Managed Land (%)	Extent within the Revised Development Envelope (ha)	Extent of footprint required for this Proposal (ha)	Extent proposed to be cleared as a percent of current extent (%)
Williams	Mixture of woodland of *Eucalyptus rudis* – *Melaleuca rhaphiophylla*, low forest of *Casuarina obesa* and tall shrubland of *Melaleuca* spp. on major valley systems in arid and perarid zones.	28,984.	7,517	25.9%	0.3%	30	0	0
Yalanbee 5	Mixture of open forest of *Eucalyptus marginata* subsp. *thalassica* – *Corymbia calophylla* and woodland of *E. wandoo* on lateritic uplands in semiarid and perarid zones.	126,610	83,829	66.2%	38.8%	15	8	0.01

Note: Source: Government of Western Australia 2019. 2018 South West Vegetation Complex Statistics. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth, https://catalogue.data.wa.gov.au/dataset/dbca

2018 South West Vegetation Complex Statistics -DBCA-047 does not take into account detailed site rehabilitation, plantation and pasture areas, these are derived from Mattiske 2024.

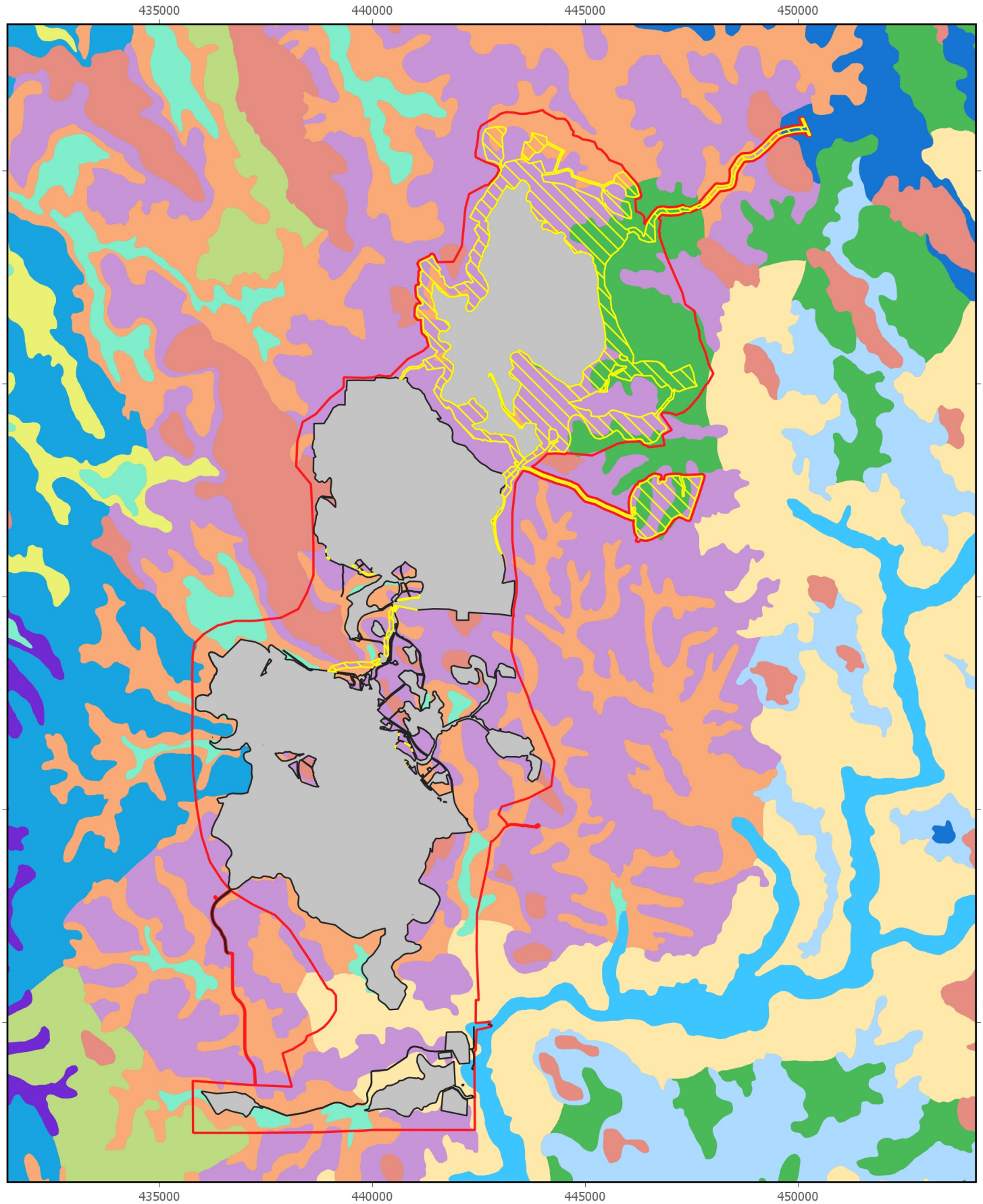


Figure 8-2: Regional Vegetation Complexes Mapped

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Regional Vegetation Complexes

- Cooke, Ce
- Dwellingup, D1
- Dwellingup, D2
- Dwellingup, D4
- Yalanbee, Y5
- Yalanbee, Y6
- Swamp, S
- Coolakin, Ck
- Michibin, Mi
- Pindalup, Pn
- Yarragil 1, Yg1
- Yarragil 2, Yg2
- Williams, Wi

N

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), DBCA (2018)
Imagery Esri Satellite

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Drawn By: mcdonaldlr Date: 22 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Vegetation_250108 - LM_figures_C.qgz

Table 8-5 Site vegetation types in the RDE

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
A	Tall shrubland of *Melaleuca lateritia*, *Hakea varia, Melaleuca viminea* and *Melaleuca incana* subsp. *incana* on clay-loams in seasonally wet valley floors	**Local** Locally significant, supports priority flora **Regional** Not considered significant in a regional context.	625.86	293	8
A2	Low open woodland of *Melaleuca rhaphiophylla* over *Astartea scoparia* and low herbs on seasonally waterlogged clays and clay loams in seasonally wet valley floors	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	8.88	3	1
AC	Open woodland of *Eucalyptus wandoo* and *Eucalyptus rudis* over *Juncus pallidus, Astartea scoparia, Taxandria linearifolia* and *Lepidosperma tetraquetrum* over herbs on clay loams in seasonally wet valley floors	**Local** Locally significant, supports priority flora **Regional** Not considered significant in a regional context.	58.52	6	0
AD	Low open woodland of *Eucalyptus rudis* and *Eucalyptus marginata* over *Banksia littoralis*, *Hakea prostrata* and *Pericalymma ellipticum* over low shrubs and herbs on leached sands over sandy-gravel on lower slopes	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	14.09	2	0

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
AX	Open woodland of *Eucalyptus rudis* over *Acacia saligna, Melaleuca incana* subsp. *incana* and *Hypocalymma angustifolium* on clay- loams on valley floors	**Local** Considered significant in a local context due to potential to support diversity of vegetation types and conservation significant flora species. **Regional** Not considered significant in a regional context.	516.87	171	0
AY	Open woodland of *Eucalyptus rudis* and *Eucalyptus wandoo* over *Acacia saligna, Hakea prostrata* and *Hypocalymma angustifolium* on clay- loams on valley floors	**Local** Considered significant in a local context due to potential to support diversity of vegetation types and conservation significant flora species. **Regional** Not considered significant in a regional context.	907.69	307	9
D	Open forest of *Corymbia calophylla* and *Eucalyptus marginata* over *Hakea lissocarpha*, *Macrozamia riedlei, Acacia alata, Babingtonia camphorosmae, Hypocalymma angustifolium* and *Phyllanthus calycinus* on clay-loams on lower slopes	**Local** Locally significant, supports priority flora **Regional** Not considered significant in a regional context.	976.09	245	19

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
DG	Open forest of *Corymbia calophylla* and *Eucalyptus marginata* over *Hakea lissocarpha*, *Macrozamia riedlei, Pericalymma ellipticum, Grevillea bipinnatifida, Allocasuarina humilis, Acacia alata, Babingtonia camphorosmae, Hypocalymma angustifolium* and *Phyllanthus calycinus* on clay-loams on lower slopes with localised patches of outcropping	**Local** Considered significant in a local context due to potential to support diversity of vegetation types and conservation significant flora species. **Regional** Not considered significant in a regional context.	51.67	0.5	0
G1	Mosaic of open heath of *Proteaceae* – *Myrtaceae* spp. with emergent patches of *Eucalyptus drummondii* on shallow soils on slopes	**Local** Not considered significant in a local context. **Regional** Representative of Mt Saddleback Heath Communities PEC (Priority 1), supports priority flora	194.48	13	0
G2	Mosaic of open woodland of *Allocasuarina huegeliana* and closed heath of *Proteaceae* and *Myrtaceae* spp. to lithic complex on exposed or shallow granite outcrops	**Local** Not considered significant in a local context. **Regional** Not recognised as PEC. May have species with potential similarities to the species on the Mt Saddleback Heath Communities PEC (Priority 1).	186.89	4	2

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
G3	Open heath of *Banksia squarrosa* subsp. *squarrosa*, *Hakea incrassata, Hakea undulata, Petrophile heterophylla* and *Petrophile serruriae* on shallow soils over granite outcrops on slopes with occasional emergent *Eucalyptus drummondii*	**Local** Not considered significant in a local context. **Regional** Not recognised as PEC. May have species with potential similarities to the species on the Mt Saddleback Heath Communities PEC (Priority 1).	137.59	23	0
G4	Open scrub and tall shrubland of *Hakea trifurcata* and *Hakea undulata* with admixtures of mallee species including *Eucalyptus latens* and *Eucalyptus aspersa* on clay to clay-loam soils over outcrops on slopes	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	15.66	3	0
G5	Low woodland of Eucalypt mallee species including *Eucalyptus aspersa, Eucalyptus latens, Eucalyptus longicornis* and *Eucalyptus drummondii* with occasional *Eucalyptus wandoo* over low shrubs of *Allocasuarina humilis, Hakea incrassata, Synaphea damopsis* and herbs on clay loams and sandy loams on slopes.	**Local** Not considered significant in a local context. **Regional** Not recognised as PEC. May have species with potential similarities to the species on the Mt Saddleback Heath Communities PEC (Priority 1).	5.98	2	0

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
H	Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* over *Petrophile striata, Daviesia decurrens, Daviesia longifolia* and *Daviesia rhombifolia* on sandy loam to sandy gravels on slopes and ridges	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	5422.58	815	112
H2	Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* with occasional admixtures of *Banksia grandis* and *Persoonia longifolia* over *Acacia celastrifolia, Daviesia preissii, Leucopogon capitellatus* and *Styphelia tenuiflora* on gravel and sandy-gravel soils of slopes and less undulating hills	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	1045.46	11	3
HG	Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* over *Petrophile striata, Lepidosperma squamatum, Styphelia tenuiflora, Daviesia preissii*, and *Daviesia decurrens. Grevillea bipinnatifida, Allocasuarina humilis* and *Hakea undulata* on shallower sandy-gravel soils over granites or secondary laterisation areas on slopes and less undulating hills	**Local** Considered significant in a local context due to potential to support diversity of vegetation types and conservation significant flora species. **Regional** Not considered significant in a regional context.	150.23	1	0

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
L	Open woodland of *Eucalyptus patens* with some *Eucalyptus wandoo* over *Xanthorrhoea preissii*, *Macrozamia riedlei, Trymalium ledifolium, Acacia saligna* and *Hakea prostrata* on clay and clay loam soils on lower slopes	**Local** Distribution is restricted **Regional** Not considered significant in a regional context.	264.37	65	8
M	Open woodland of *Eucalyptus wandoo* over *Trymalium ledifolium*, *Macrozamia riedlei* and *Hakea lissocarpha* on clay loams with some gravel on mid to upper slopes and ridges	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	4139.75	296	21
M2	Woodland to open woodland of *Eucalyptus accedens*, *Eucalyptus wandoo*, *Eucalyptus marginata*, *Corymbia calophylla* over *Hakea lissocarpha, Macrozamia riedlei, Banksia squarrosa* subsp. *squarrosa, Hypocalymma angustifolium, Babingtonia camphorosmae, Grevillea bipinnatifida* and *Allocasuarina humilis* on clay-loams over shallow granites on mid to upper slopes	**Local** Considered significant in a local context due to potential to support presence of conservation significant flora species. **Regional** Not considered significant in a regional context.	544.20	4	1

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
MG	Open woodland of *Eucalyptus wandoo* over *Trymalium ledifolium, Macrozamia riedlei, Pericalymma ellipticum, Hypocalymma angustifolium, Grevillea bipinnatifida, Allocasuarina humilis* and *Hakea lissocarpha* on clay-loams over shallow granite on mid to upper slopes and ridges	**Local** Considered significant in a local context due to potential to support diversity of vegetation types and conservation significant flora species. **Regional** Not considered significant in a regional context.	501.24	11	2
O	Open forest to woodland of *Eucalyptus marginata* and *Corymbia calophylla* over *Daviesia decurrens, Daviesia preissii* and *Bossiaea ornata* on sandy-gravels on slopes.	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	8.13	8	0
PS	Open forest of *Allocasuarina fraseriana, Eucalyptus marginata, Corymbia calophylla* and *Banksia grandis* over *Adenanthos barbiger, Leucopogon capitellatus* on gravels and sandy gravels on slopes and ridges	**Local** Considered significant in a local context due to potential to support presence of conservation significant flora species. **Regional** Not considered significant in a regional context.	2545.25	1062	95
R	Open woodland of *Eucalyptus marginata* and *Corymbia calophylla* over *Trymalium ledifolium*, *Phyllanthus calycinus* and *Hypocalymma angustifolium* on sandy gravels associated with nearby shallow outcropping	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	28.15	2	0

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
S	Open forest of *Eucalyptus marginata* and *Corymbia calophylla* with admixtures of *Allocasuarina fraseriana, Banksia grandis* and *Persoonia longifolia* over *Acacia celastrifolia*, *Hovea chorizemifolia, Daviesia preissii, Leucopogon capitellatus* and *Styphelia tenuiflora* on sandy gravels on slopes and ridges	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	3651.55	1055	126
SP	Open forest of *Eucalyptus marginata, Corymbia calophylla* and *Allocasuarina fraseriana* with admixtures of *Banksia grandis* over *Lasiopetalum cardiophyllum, Acacia celastrifolia, Styphelia tenuiflora, Daviesia decurrens* and *Trymalium ledifolium on* sandy gravel to gravel soils on slopes and ridges	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	1373.10	255	19
ST	Open forest of *Eucalyptus marginata* and *Corymbia calophylla* with admixtures of *Allocasuarina fraseriana, Persoonia longifolia* and *Banksia grandis* over *Stylidium dichotomum*, *Acacia urophylla, Acacia celastrifolia, Leucopogon verticillatus, Clematis pubescens* and *Leucopogon capitellatus* on sandy loam gravel soils on slopes and ridges	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	877.10	180	2

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
SW	Open forest of *Eucalyptus marginata* and *Corymbia calophylla* over *Hypocalymma angustifolium*, *Babingtonia camphorosmae*, *Acacia celastrifolia*, *Hovea chorizemifolia*, *Daviesia preissii*, *Leucopogon capitellatus* and *Styphelia tenuiflora* on seasonally moister sandy gravels on slopes	**Local** Considered significant in a local context due to potential to support presence of conservation significant flora species. **Regional** Not considered significant in a regional context.	143.12	22	9
W	Open forest of *Corymbia calophylla*, *Eucalyptus marginata* and *Eucalyptus patens* over *Hakea lissocarpha, Hypocalymma angustifolium, Acacia extensa* and *Synaphea petiolaris* on loam soils on lower slopes	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	48.23	1	0
Y	Open woodland of *Eucalyptus wandoo* over *Gompholobium marginatum*, *Acacia nervosa, Babingtonia camphorosmae, Hypocalymma angustifolium, Macrozamia riedlei, Phyllanthus calycinus* and *Gastrolobium calycinum* on clay and clay-loam soils on lower slopes	**Local** Considered significant in a local context due to potential to support presence of conservation significant flora species. **Regional** Not considered significant in a regional context.	2052.77	373	14

Vegetation Code	Vegetation Association Description	Local Significance	Mapped Total Wider Survey Area (ha)	Extent within the Revised Development Envelope (ha)	Extent within the footprint required for this Proposal (ha)
YG	Open woodland of *Eucalyptus wandoo* over *Gompholobium marginatum*, *Acacia nervosa, Babingtonia camphorosmae, Hypocalymma angustifolium, Macrozamia riedlei, Pericalymma ellipticum, Grevillea bipinnatifida, Allocasuarina humilis, Phyllanthus calycinus* and *Gastrolobium calycinum* on clay and clay-loam soils with localised outcropping on lower slopes	**Local** Considered significant in a local context due to potential to support presence of conservation significant flora species. **Regional** Not considered significant in a regional context.	456.38	15	4
Z	Open forest of *Eucalyptus marginata* and *Corymbia calophylla* over *Macrozamia riedlei, Xanthorrhoea preissii, Hakea lissocarpha and Phyllanthus calycinus* on sandy-loam to sandy-loam gravel soils on slopes	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.	1374.93	547	73
CL	Cleared	**Local** Not considered significant in a local context. **Regional** Not considered significant in a regional context.		5410	109
Dam	Waterbody			163	0
PL	Plantations			49	13
PL – Ag	Plantations on agricultural areas			2347	910
Rehab	Rehabilitation areas			414	0

435000 438000 441000 444000 447000 450000 453000

6390000 6387000 6384000 6381000 6378000 6375000 6372000 6369000

Figure 8-3: Site Vegetation Types within Revised DE

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Vegetation Types

A, A2, A3, AD, AX, AY, AY/D, B, CL, D, DAM, DG, E, G1, G2, G3, G4, G5, H, H2, HG, L, M, M2, MG, O, P, PL, PL - Ag, PS, PW, R, RE, S, SP, ST, SW, W, Y, YG, Z

N

0 1 2 km

Scale @A3 1: 75000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024),
Imagery ©Esri Satellite

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\\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Flora_250507 - LM Cockatoo Ratings.qgz

8.7 Vegetation condition

Vegetation mapping conducted within the RDE by Mattiske (2025, 2024), found 2429 ha (17%) to be in Excellent condition and 8476 ha (60%) to be Completely Degraded in pine plantation based on the vegetation condition scales outlined in the EPA Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016g) (Table 8-6)(Figure 8-4).

Table 8-6 Vegetation condition within the RDE

Vegetation Condition	Extent within the RDE (ha)	Extent within the footprint required for this Proposal (ha)	Extent in the RDE (%)
Excellent	2429	157	17
Very Good to Excellent	1035	327	7
Very Good	1540	37	11
Good	79	0	1
Degraded	622	0	4
Completely Degraded	8476	1038	60
Total	**14,182**	**1,560**	**100**

8.8 Threatened and priority ecological communities

No Commonwealth or State listed TEC have been recorded within the RDE.

One PEC, the Priority 1 PEC – Mount Saddleback Heath Communities, also occurs in the RDE (Figure 8-5). The PEC community on Mount Saddleback, as defined by DBCA, has affinities with the site-vegetation types within the areas of heath, open scrub and mallee communities that have been identified and mapped as subsets of the G site-vegetation types within the Mount Saddleback area by Mattiske (2021, 2024).

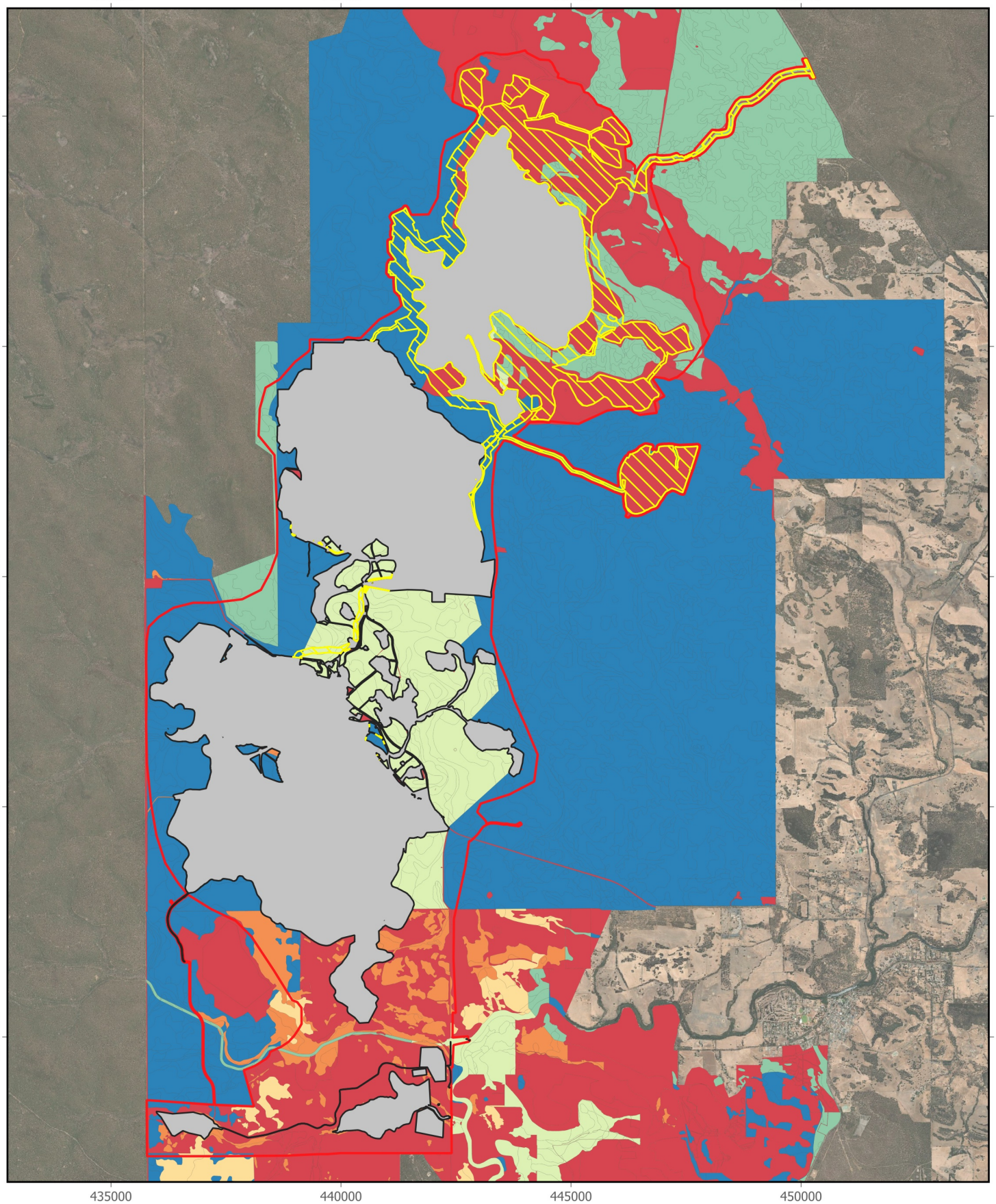


Figure 8-4: Vegetation Condition

LEGEND

- Proposed Disturbance Footprint
- Proposed Development Envelope
- Approved Disturbance Footprint

Vegetation Condition

- Completely Degraded
- Degraded
- Good
- Very Good
- Very Good to Excellent
- Excellent

N

0 2.5 5 km

Scale @A4 1: 112500
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), DBCA (2018)
Imagery Esri Satellite

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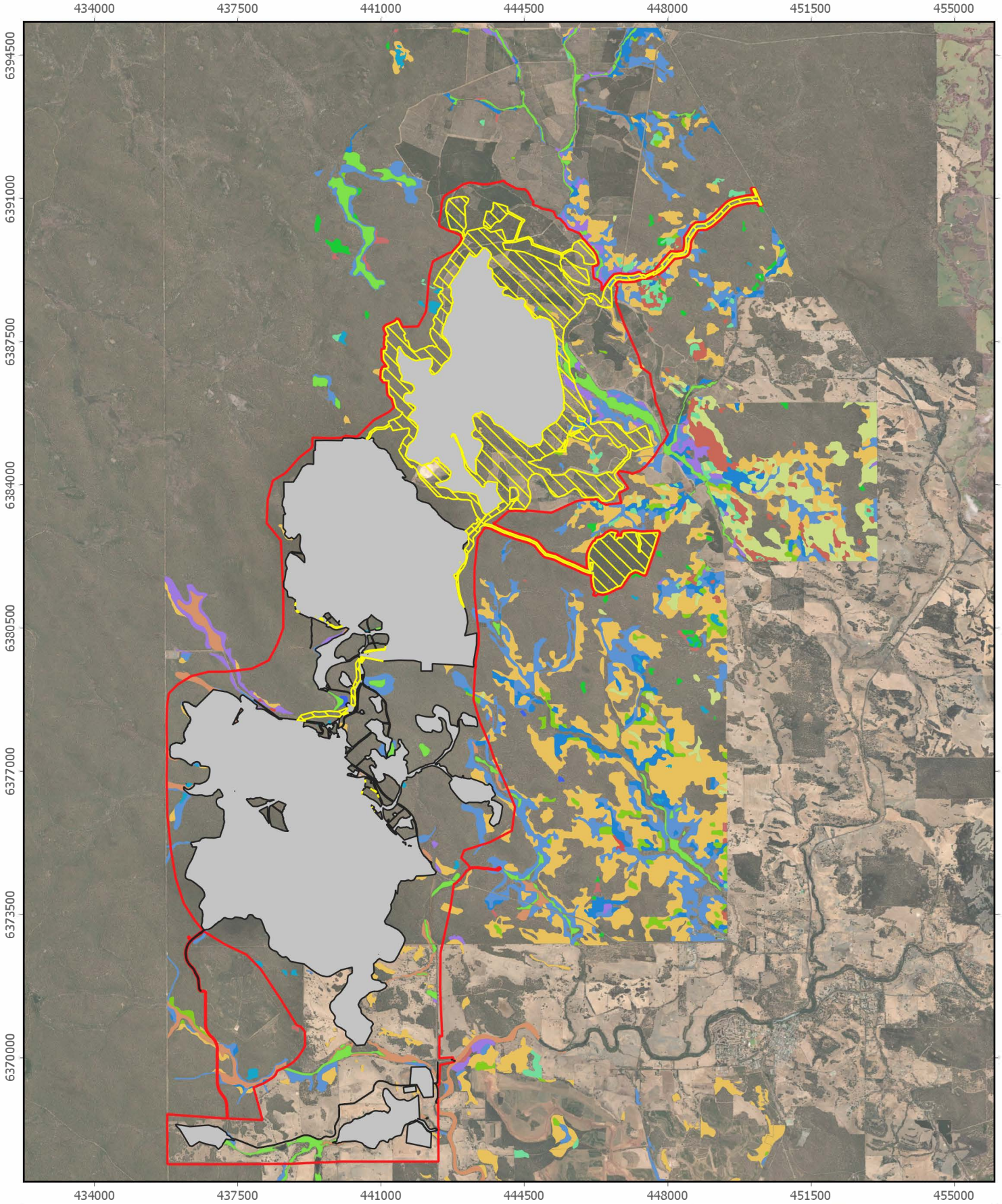


Figure 8-5: Conservation Significant Vegetation

LEGEND

- Proposed Disturbance Footprint
- Approved Disturbance Footprint
- Proposed Development Envelope

Conservation Significant Vegetation

- A
- AX
- DG
- G1 (Priority Ecological Community)
- G2
- G3 (Priority Ecological Community)
- G4 (Priority Ecological Community)
- G5
- HG
- L
- M
- MG
- M2
- Y
- YG

N

0 1 2 km

Scale @A4 1: 125000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024),
Imagery Esri Satellite

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Drawn By: mcdonaldlr Date: 22 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Vegetation_250108 - LM_figures_C.qgz

8.9 Groundwater dependent vegetation

Groundwater Dependent Vegetation (**GDV**) is typically characterised by the presence of flora species that rely on groundwater and are known as phreatophytes. Phreatophytes may be classified as either obligate or facultative phreatophytes depending on their reliance on groundwater (Eamus et al. 2016).

Obligate phreatophytes are flora species confined to habitats with permanent access to groundwater.

Facultative phreatophytes are flora species that can utilise groundwater to satisfy a proportion of their ecological water requirement (**EWR**) when it is available. However, some individuals may also satisfy their EWR by relying solely on uptake from upper unsaturated soils layers where groundwater is inaccessible.

The potential GDV types were determined on the basis of the extent of the site-vegetation types that occurred in watershed areas and that supported flora species, that are known from wider botanical studies in the northern Jarrah Forest to prefer and occur on seasonally moister and wetter soils (Mattiske, 2021)(Figure 8-6). These include vegetation complexes that support groundwater vegetation species and site-vegetation types that prefer and occur on seasonally moister and wetter soils on the Swamp, Pindalup and Coolakin valley systems.

These represent topographical low points where groundwater in the shallow groundwater aquifer is perched on top of the clay layer and discharge (Umwelt 2025). These areas are therefore, not considered as directly connected to the bedrock aquifers which are subject to dewatering. Upland vegetation in the Boddington area is not considered to be of a type which is dependent on groundwater, although this vegetation may use groundwater when it is available.

Species considered as indicators of moister soils and, hence, potential groundwater dependent ecosystems include *Banksia littoralis*, *Acacia divergens*, *Thomasia paniculata*, *Astartea scoparia*, *Eucalyptus rudis*, *Hypocalymma angustifolium*, mixed Melaleuca species and *Taxandria linearifolia*. Jarrah typically occurs on well-drained soils and mortality may be higher in areas of impeded drainage, as it is more sensitive to waterlogging than other Forest eucalypts on the Darling Range (Mattiske 2024).

Groundwater dependent ecosystems within the RDE include Round Swamp, Pillow Swamp and Boomerang Swamp which have surface soil water holding capacity (Mattiske 2021).

8.10 Old growth forest

There are no patches of old growth forests occurring in the RDE areas as supplied by the DBCA. The mapped extent of old growth forests is shown in Figure 8-7

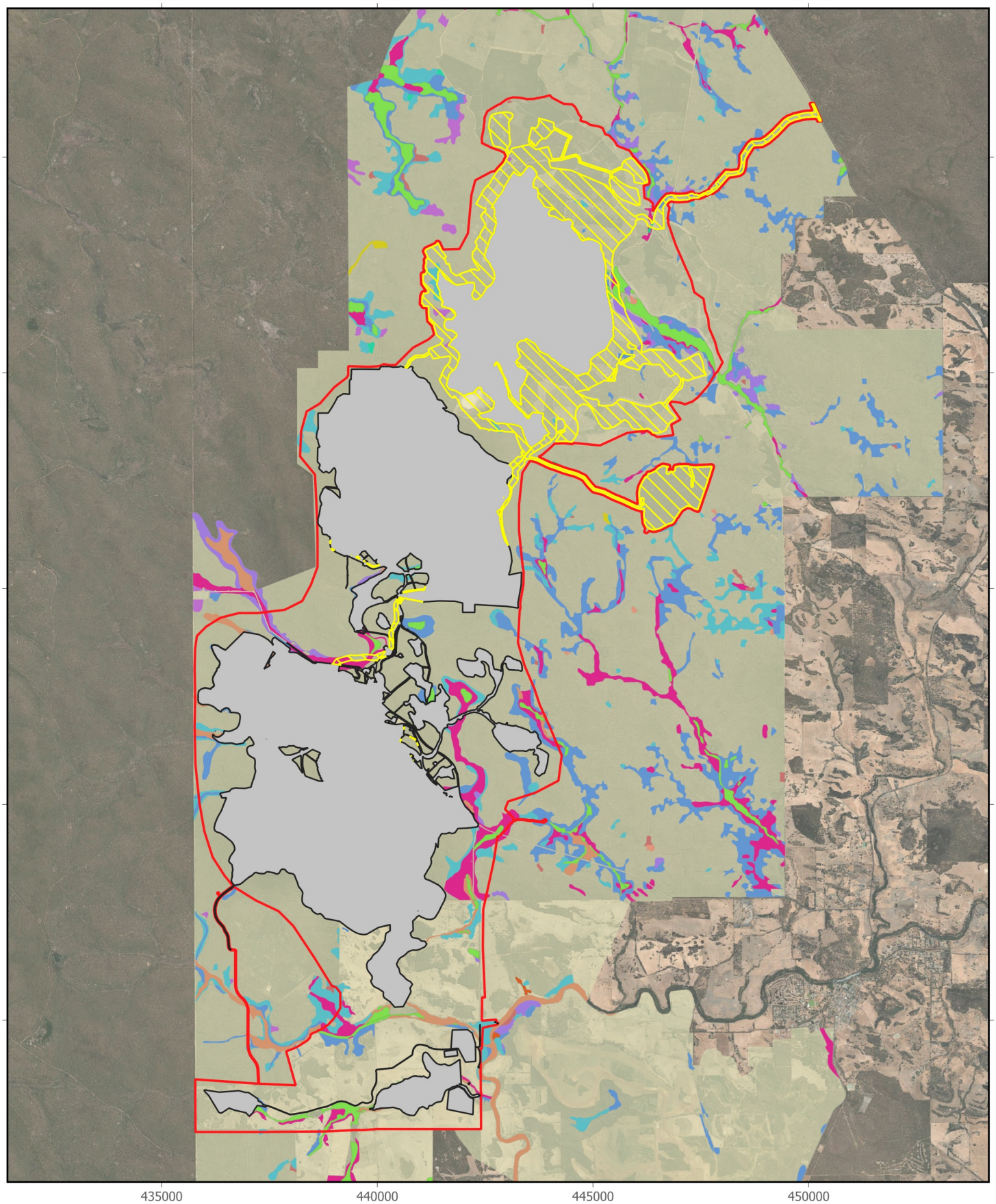


Figure 8-6: Potential Groundwater Dependent Vegetation

LEGEND

- Proposed Disturbance Footprint
- Approved Disturbance Footprint
- Proposed Development Envelope

N

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024)
Imagery Esri Satellite

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Old-growth forest

Current extent and changes made between December 2018 and December 2019

Scale 1:500,000

0 25 50 100 km

Projection: UTM
Coordinates: MGA (Zone 50)

Legend

Existing and proposed[1] tenure

- State forest, timber reserve and miscellaneous reserve
- Other land managed by the Department for conservation

Old-growth forest[2]

- Additional old-growth forest identified through field survey and data refinements[3]
- Reversions to non old-growth forest identified through field survey and data refinements[3]
- Old-growth forest - no change
- Examples of additions identified through field survey
- Examples of reversions identified through field survey
- DBCA region boundary
- Revised Development Envelope
- Major roads

[1] As proposed in the *Forest Management Plan 2014-2023* and from subsequent land acquisitions and area management plans
[2] All old-growth forest (including those areas outside existing and proposed conservation reserves) is excluded from timber harvesting
[3] Map depicts changes identified through data refinements greater than 2 hectares

Old-growth changes made between December 2018 and December 2019	Area (ha)
Additions identified by government agencies	239
Additions from data refinements	11
Reversions identified by government agencies	7
Reversions from data refinements*	177
No change	334,016
Total old-growth forest	**334,266**

* 174 ha of old-growth jarrah forest mapped as infested with *Phytophthora* dieback

Data Directory

Theme	Source	Month	Year	Custodian
Old-growth forest	DBCA	December	2019	Forest Management Branch
Existing and proposed tenure	DBCA	June	2019	Forest Management Branch
Topography	DBCA	June	2015	Geographic Information Services Branch
Management boundaries	DBCA	December	2012	Geographic Information Services Branch

The Department of Biodiversity, Conservation and Attractions does not guarantee that this map is without flaw of any kind and disclaims all liability for any error, loss or other consequence which may arise from relying on any information depicted.

Produced by the Forest Management Branch under the direction of the Director General, Parks and Wildlife Service, Department of Biodiversity, Conservation and Attractions.

January 2020

Department of Biodiversity, Conservation and Attractions
GOVERNMENT OF WESTERN AUSTRALIA
PARKS AND WILDLIFE SERVICE

MIDWEST
WHEATBELT
SWAN
SOUTH WEST
MOORA
CALINGIRI
GOOMALLING
GINGIN
TOODYAY
NORTHAM
BULLSBROOK
WANNEROO
MUNDARING
YORK
PERTH
JARRAHDALE
MANDURAH
DWELLINGUP
BODDINGTON
NARROGIN
WILLIAMS
HARVEY
BUNBURY
COLLIE
BRAND HIGHWAY
NORTHERN HIGHWAY
GREAT EASTERN HIGHWAY
GREAT NORTHERN HIGHWAY
TOODYAY ROAD
GREAT SOUTHERN HIGHWAY
BROOKTON HIGHWAY
FREEWAY
KWINANA FREEWAY
FORREST HIGHWAY
WESTERN HIGHWAY
ALBANY HIGHWAY
SOUTHERN HIGHWAY
SOUTH COALFIELDS ROAD

Figure 8-7: Old Growth Forest (DBCA 2020)

8.11 Flora

Desktop assessment of relevant databases, literature and spatial data preceded the field assessments to:

- Produce a species list that represents the likely flora assembly of the survey areas;
- Identify the possible occurrence of threatened and priority flora;
- Identify the possible occurrence of TECs and PECs; and
- Identify the possible occurrence of important wetlands of the survey areas.
- Databases and literature used to inform the objectives of the desktop assessments included:
- DBCA TEC and PEC database
- FloraBase
- DBCA NatureMap
- EPBC Act Protected Matters Search Tool (**PMST**); and
- Historical documentation and vegetation mapping of the region.

A total of 585 vascular plant taxa of 233 genera and 73 families are known in the wider Boddington area (Mattiske 2024). The most commonly represented families are Fabaceae (56 taxa), Proteaceae (29 taxa) and Myrtaceae (26 taxa) (Mattiske 2024).

8.11.1 Threatened and priority flora

Threatened Flora

Desktop searches indicate that nine Threatened flora species under the BC Act and EPBC Act have the potential to occur within the RDE, including:

- *Caladenia hopperiana*
- *Caladenia dorrienii*
- *Pultenaea pauciflora*
- *Eleocharis keigheryi*
- *Morelotia australiensis*
- *Andersonia sp. Saxatilis (F. & J. Hort 3324)*
- *Verticordia fimbrilepis subsp. fimbrilepis*
- *Diuris micrantha*, and
- *Anthocercis gracilis.*

Based on local landforms, soil characteristics, and distribution patterns derived from previous studies and Florabase (Western Australian Herbarium 2024), only four species have a low to moderate potential to occur within the RDE:

- *Andersonia sp. Saxatilis (F.J. Hort 3324)*
- *Caladenia dorrienii*
- *Caladenia hopperiana,* and
- *Morelotia australiensis.*

Priority Flora

A total of 45 Priority flora species, as listed by DBCA, have been recorded within the RDE:

- Three Priority 1 species have a moderate to moderate-high potential to occur
- Four Priority 3 species have a moderate to moderate-high potential to occur, and
- Three Priority 4 species have a moderate to moderate-high potential to occur.

A 200-meter survey was conducted around the Approved Proposal footprint within the footprint required for this Proposal. No Threatened species were recorded. Mattiske (2025) identified one Priority-listed species within the footprint required for this Proposal. *Hibbertia ? hortiorum* (P1) was recorded at 32 locations, with a total of 51 plants within the survey area. Confirmation was not possible as the survey was conducted after the flowering period.

The likelihood of species occurring within the RDE was determined using the following criteria:

- Recorded occurrences within 10 km of the Approved Proposal survey area, including desktop search results. More recent, proximal, and numerous records were ranked higher,
- Potential presence of suitable habitat and landforms, such as soil type, bedrock, topography, drainage lines, and vegetation, and
- Survey-documented records within or in close proximity to the Approved Proposal survey area were ranked Moderate or High.

Results from desktop searches of the EPBC Act Protected Matters database, DBCA NatureMap database, and available records in the Western Australian Herbarium (**WAH**) and Threatened and Priority Flora (**TPFL**) databases and likelihood of occurrence are shown in Table 8-7 and Figure 8-8.

8.11.2 Weeds

None of the weeds recorded during survey of the Approved Proposal are listed as Weeds of National Significance (**WONS**) (DCCEEW 2024d). A search of the WA Organism List database (DPIRD 2024) found two Declared Pest under the *Biosecurity and Agriculture Management Act 2007* (WA) (BAM Act) including:

- Cape Tulip (**Moraea flaccida*). Legal Status: Declared Pest S22(2). Keeping Category: Exempt, and
- Narrow-leaved Cotton Bush (*Gomphocarpus fruticosus*) Legal Status: Declared Pest S22(2). Keeping Category: C3.

The location of known weed infestations are shown in Figure 8-9.

Table 8-7 Conservation significant flora recorded or likely to occur within the footprint required for this Proposal

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Caladenia hopperiana	EN	T	Restricted distribution to the Boddington area. Occurs on low-lying, winter wet swampland within the Jarrah Forest region. Recorded mainly in the AY and Y site-vegetation types.	**Low to Moderate**, as restricted to area southeast of Boddington in winter wet low-lying valleys near swamp areas.
Caladenia dorrienii	EN	T	Occurs on clayey loam. Moist sites adjacent to rivers and seasonal creeks.	**Low to Moderate** as mainly species on moister sites adjacent to rivers and seasonal creeks, extends as occasional occurrence near Brookton Highway, but mainly south of Darkan in Wheatbelt.
Verticordia fimbrilepis subsp. *fimbrilepis*	EN	T	Occurs on gravelly sandy or clayey soils, flats and road verges.	**Low** as restricted to areas north of Albany Highway and then into wider Wheatbelt.
Anthocercis gracilis	VU	T	Occurs on sandy or loamy soils and granite outcrops within the Jarrah Forest and Avon Wheatbelt regions. Most populations appear to occur on the western fringes of the Jarrah Forest. Recorded historically within local granite outcrops.	**Very Low** as mainly on escarpment near Perth with occasional outliers north of Albany Highway and north-east of Boddington.
Diuris micrantha	VU	T	Occurs on brown loamy clay. Winter-wet swamps, in shallow water	**Very Low** as restricted to area southwards near Darkan and on Swan Coastal Plain.
Eleocharis keigheryi	VU	T	Occurs on clay, sandy loam. Emergent in freshwater: creeks and claypans.	**Very Low** as mainly species on Swan Coastal Plain, northern sandplains and in wider Wheatbelt.
Morelotia australiensis	VU	T	Occurs in sand, sandy loam. Flats, well-drained areas.	**Low to Moderate** as restricted to mainly on fringes of Coastal Plain near Perth and Bunbury, with a few locations near Albany Highway.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Pultenaea pauciflora	VU	T	Occurs on sandy damp; clay lateritic soils. Undulating country	**Low** as restricted to mainly within the Wheatbelt from west of Brookton to Narrogin, a few local plants east and southeast of Boddington.
Andersonia sp. Saxatilis (F.J. Hort 3324)	N/A	T	Occurs in areas associated with granite outcrops.	**Low to Moderate** as restricted to areas north-west of the Boddington area but appears to be associated with granite.
Darwinia hortiorum	N/A	P1	Granite.	**Low** as recorded on granites near Albany Highway to the north- east on Monadnocks and near Wandering.
Calytrix simplex subsp. *simplex*	N/A	P1	Known from areas west of Boddington in the Northern Jarrah Forest, occurs in swamps, Forty-Hollow Road heath areas. This species also been recorded near Armadale, approximately 65 km north-north-east from the RDE. Individuals are mainly located in heath habitats or shallow soils associated with rock outcrop.	**Moderate** as recorded south of Boddington and has potential to occur in survey areas. Another main occurrence occurs closer to Perth and near Albany Highway.
Gastrolobium sp. Prostrate Boddington	N/A	P1	Restricted to the Boddington area in the southwest of WA and occurs on clay loams and valley floors. The majority of plants occur in the wandoo valley systems north of the Newmont Boddington camp with 35 plants known from Camballing Reserve. Significant numbers have been recorded along the Hotham River.	**Moderate to High** as recorded within the areas on the southern sections of the Newmont leases and near Boddington; although not recorded in previous detailed studies on the specific target areas.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Hibbertia ambita	N/A	P1	Taxonomic studies in 2019 re-classified a range of species previously identified as *Hibbertia commutata*. The *Hibbertia commutata* group of plants has been recorded regularly in the Northern Jarrah Forest and in the Boddington and Collie areas. *Hibbertia ambita* occurs in a range of sites from lower valley slopes to rehabilitated areas within the Northern Jarrah Forest.	**Moderate to High** as recorded near Boddington; as recently defined it depends on flowering material to ensure identification.
Hibbertia ?hortiorum	N/A	P1	Northern Jarrah Forest. Species has been recorded in Murray and Wandering. potentially recorded within the PF.	**Moderate to High** as potentially recorded within the footprint required for this Proposal. Not able to confirm due to timing of the survey work after the flowering had occurred.
Papistylus intropubens	N/A	P1	Localised and restricted distribution in the Jarrah Forest region. Recorded within the Tunnell Road heath community.	**Low** as restricted to heath community south of Boddington, restricted to Tunnel Road Heath
Synaphea panhesya	N/A	P1	Distributed mainly in wandoo and powder-bark/Wandoo Woodlands and near granites. Occurs in mainly Northern Jarrah Forest areas but is also known from the Dandaragan Plateau sub-region on the Swan Coastal Plain.	**Low** as recorded mainly north of Mundaring, with a recording Tunnel Road Heath in 1998.
Banksia recurvistylis	N/A	P2	Occurs on clay-loam-sand over granite or laterite within the Jarrah Forest region.	**Low to Moderate** as restricted mainly to areas near Albany Highway and north-west of the Boddington area, but appears to be associated with granites and has been recorded near Wandering.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Banksia subpinnatifida var. *subpinnatifida*	N/A	P2	Mainly recorded in shallow soils associated with outcrops and valley floors. Occurs in the Tunnell Road and Forty-Hollow heaths outside the RDE. The species distribution extends to the east into the Wheatbelt and has been recorded within the Dryandra Woodland and further east of Wickepin.	**Low** as typically found further east and south of the site.
Grevillea crowleyae	N/A	P2	Mainly recorded in gravel soils. Distribution is mainly northeast and eastwards into the Wheatbelt.	**Very Low** as mainly northeast and eastwards into Wheatbelt.
Haloragis aculeolata	N/A	P2	Occurs on black sand or clay over limestone.	**Very Low** as mainly north-eastwards into Wheatbelt and on coastal plain south and north of Perth.
Logania sylvicola	N/A	P2	Occurs on laterite rises associated with brown clay to clayey sand.	**Very Low** as mainly southwards of Boddington and into Wheatbelt.
Banksia subpinnatifida var. imberbis	N/A	P3	Mainly recorded in shallow soils associated with outcrops and valley floors on eastern fringes of the Jarrah Forest. Recorded in heaths, including the Tunnell Road heath community. Distribution extends southwards to Mount Barker area on eastern fringes of Southwest Forests.	**Moderate to High** as recorded near Boddington in Tunnel Road heath; although mainly south within Wheatbelt.
Goodenia katabudjar	N/A	P3	Occurs on eastern lateritic hills mainly in Jarrah and Wandoo Woodlands. Recorded in control and rehabilitation areas within the Northern Jarrah Forest and surrounds. This species extends north-east and south-east of Mt Saddleback.	**Moderate to High** as recorded previously near Boddington and Wandering; although on the eastern fringes of the Jarrah forest.
Halgania corymbosa	N/A	P3	Predominantly grows in association with granite outcrops, but does extend to Jarrah Forest areas, mainly in the Northern Jarrah Forest. This species also extends into the Swan Coastal Plain, mainly east and north-east of Perth on the Darling Scarp.	**Low to Moderate** as has been recorded south of Albany Highway on Saddleback farm and in Newmont leases; although largely near Perth and north-eastwards.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Asteridea gracilis	N/A	P3	Mainly on granite outcrops. Populations are distributed through the Northern Jarrah Forest, near Albany, Esperance Plains and on the Swan Coastal Plain. Recorded within the Forty-Hollow Road heath community.	**Low to Moderate** as south of Boddington; although mainly near Perth and north of Mundaring with a few outliers on southern coast.
Byblis gigantea	N/A	P3	Occurs in sandy-peat swamps. Seasonally wet areas.	**Low to Moderate** as mainly near Perth and north of Albany Highway with occasional occurrence south of Boddington.
Stylidium marradongense	N/A	P3	Relatively locally restricted to the Boddington and local eastern Jarrah Forest. Individuals have been recorded in rehabilitation areas. Occurs on gravelly soils and heath areas, including Tunnell Road heath and areas with lateritic boulders.	**Moderate to High**, recorded near Boddington and also extends southwards into Wheatbelt.
Grevillea dissectifolia+	N/A	P3	Occurs in loam soils over granites and in creeks, including further west in Jarrah Forest.	**Moderate,** recorded in forest near Albany Highway and further north.
Hemigenia microphylla	N/A	P3	Sandy clay, peaty clay, granite. Winter-wet depressions.	**Low** as mainly recorded on Swan Coastal Plain and southwards from Bridgetown; although recorded west of survey areas in central Jarrah forest.
Hakea oldfieldii	N/A	P3	Occurs in red clay or sand over laterite. Seasonally wet flats.	**Low to Moderate** as mainly recorded near Bunbury, north-west of Boddington and in wider southern Wheatbelt.
Meionectes tenuifolia	N/A	P3	Occurs on grey sand or grey-brown clay, shallow soils. Seasonally inundated flat, edge of swamps.	**Low** as mainly recorded on Swan Coastal Plain and northwards from Perth om ranges, occasional occurrence south of Boddington and southwards in western fringes of Wheatbelt.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Netrostylis sp. Blackwood River (A.R. Annels 3043)	N/A	P3	Occurs in wet inundated areas or along creeks.	**Low** as mainly recorded on Swan Coastal Plain and in southern forests and southern Wheatbelt, occasional occurrence south of Boddington and southwards in Wheatbelt.
Stylidium marradongense	N/A	P3	Occurs in sand over laterite. Jarrah-Marri forest	**Moderate-High** recorded near Boddington and also extends southwards into Wheatbelt.
Tetratheca similis	N/A	P3	Occurs in sandy clay with lateritic boulders	**Low,** recorded on fringes of forest and Wheatbelt to the north of Albany Highway.
Thysanotus cymosus	N/A	P3	Occurs on clay, granitic or lateritic sand.	**Moderate,** recorded on fringes of forest near Albany Highway, north of Albany Highway and Wheatbelt.
Acacia alata var. platyptera	N/A	P4	Occurs in sand, clay or loam over granite. Granite outcrops & hills, rocky watercourses.	**Low,** mainly on fringes of forests and in Wheatbelt.
Acacia cuneifolia	N/A	P4	Occurs on sand, clay or loam over granite, granite outcrops and hills, rocky watercourses. Grows in the Jarrah Forest and Avon Wheatbelt regions.	**Low,** mainly on fringes of forests and in Wheatbelt.
Acacia oncinophylla subsp. patulifolia	N/A	P4	Occurs on clay, gravelly sandy clay. Lateritic ridges, clay flats.	**Low,** mainly on Darling Scarp and then on fringes of Wheatbelt north and south of Boddington.
Banksia insulanemorecincta	N/A	P4	Occurs on yellow sand, clay, gravel, laterite, granite. Open scrubby flat, slopes, low heath.	**Low,** north of Albany Highway.
Caladenia integra	N/A	P4	Clayey loam. Granite outcrops, rocky slopes.	**Low,** near Albany Highway, mainly on fringes of forests and in Wheatbelt.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Senecio leucoglossus	N/A	P4	Widespread in the northern Jarrah Forest and occurs in small patches. Regularly recorded during surveys in the Northern Jarrah Forest. Occurs also in the Southern Jarrah Forest and on the Swan Coastal Plain.	**Moderate,** widespread in northern forest with a few outliers on Swan Coastal Plain.
Calothamnus quadrifidus subsp. *teretifolius*	N/A	P4	Occurs in moister sites and in heath areas. Main occurrence is in the Donnybrook Sunklands with localised occurrence in central Jarrah Forest. The main populations and occurrences occur on the southern Swan Coastal Plain to the south of Bunbury. Recorded in rehabilitated areas.	**Low,** mainly south of Bunbury, with occasional collection on Mt Saddleback.
Chorizema ulotropis	N/A	P4	Moist to dry soils, white sand with gravel, laterite, granite. Outcrops, winter damp to dry areas, flats.	**Low-Moderate,** mainly southern Wheatbelt with a few in northern Jarrah Forest.
Cyanothamnus tenuis	N/A	P4	Laterite, stony soils, granite.	**Low-Moderate,** mainly in northern Jarrah forest, Darling Scarp, near Bunbury on coastal plain and isolated occurrence on clay soils near Hotham River south of Boddington.
Darwinia pimelioides	N/A	P4	Loam, sandy loam. Granite outcrops.	**Low-Moderate,** mainly in northern Jarrah forest, Darling Scarp, near Bunbury on coastal plain and isolated occurrence on clay soils near Hotham River south of Boddington.
Darwinia sp. Dryandra (G.J. Keighery 9295)	N/A	P4	Gravelly clay. Lateritic ridges.	**Low,** mainly in Wheatbelt, with a few occurrences on eastern fringes of forests.
Drosera occidentalis	N/A	P4	White/black sand over yellow clay, yellow sand, moist brown/grey clay/sand, peaty sand, sandy clay. Damp flats, flood plain.	**Low to Moderate,** mainly near Darling Scarp near Perth, occasional occurrence in central forest areas and south of Boddington.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Eucalyptus exilis	N/A	P4	Grey sand, gravelly loam. Lateritic ridges.	**Low,** mainly on northern sandplains to north of Perth and on northern fringes of forest and Wheatbelt north of Albany Highway.
Gastrolobium ovalifolium	N/A	P4	Sandy clay. Gravelly hills	**Low,** mainly in Wheatbelt, with a few occurrences on eastern fringes of forests to north of Albany Highway.
Hydrocotyle lemnoides	N/A	P4	Occurs in swamps	**Low,** mainly near Perth and north of main forests, with a few occasional outliers.
Lasiopetalum cardiophyllum	N/A	P4	Occurs mainly in Jarrah-Sheoak forests on sandy-gravels. Extends into Stene and George blocks and southwards on the eastern fringes of the southwest forests into the Wheatbelt. The main patches of this species occur on the eastern fringes of the northern and central Jarrah Forest, which extend well beyond the RDE. Other patches occur south and south-east of Boddington in the Wheatbelt. The species has been recorded in rehabilitation areas, albeit in relatively low numbers.	**High,** mainly occurs on eastern fringes of the forest with a few occurrences into the Wheatbelt.
Darwinia thymoides subsp. St Ronans	N/A	P4	Occurs on sandy or gravelly clay-loam soils, slopes and flats, granite outcrops within the Jarrah Forest and Avon Wheatbelt regions.	**Low to Moderate**, one recorded just west of Gold mine, but mainly northwards on the eastern fringes of the forest and the Wheatbelt.
Lasiopetalum bracteatum	N/A	P4	Occurs on sandy clay, clay, lateritic gravel. Along drainage lines, creeks, gullies, granite outcrops.	**Moderate,** mainly occurs on eastern fringes of the forest with a few occurrences into the Wheatbelt.
Ornduffia submersa	N/A	P4	Occurs in freshwater 0.05 to 0.6m deep. Pools, lakes, swamps, winter-wet depressions, claypans.	**Low,** mainly on Swan Coastal Plain and then on fringes of forest and Wheatbelt.

Species	Conservation Status		Distribution (as related to populations)/Habitat	Likelihood of occurrence in footprint required for this Proposal
	EPBC Act	BC Act/ DBCA Listing		
Parsonsia diaphanophleba	N/A	P4	Occurs in alluvial soils along rivers.	**Low,** mostly on Swan Coastal Plain with a few outliers and one record west of Newmont Boddington operations.
Schoenus natans	N/A	P4	Occurs in winter-wet depressions.	**Very Low,** throughout southwest, but not near Boddington.

Figure 8-8: Conservation Significant Flora

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Flora Records

- Ac - *Acacia cuneifolia*
- Bsi - *Banksia subpinnatifida var. imberbis*
- Bt - *Bossiaea disticha*
- Cg - *Chordifex gracilior*
- Do - *Drosera occidentalis*
- Dt - *Darwinia thymoides subsp. ?St Ronans*
- Dt - *Darwinia thymoides subsp. St Ronans*
- Gk - *Goodenia katabudjar*
- Gm - *Grevillea manglesii subsp. dissectifolia*
- Gpb - *Gastrolobium sp.* Prostrate Boddington
- H?h - *Hibbertia ?hortiorum*
- Ha - *Hibbertia ambita*
- Hc - *Halgania corymbosa*
- Ho - *Hakea oldfieldii*
- Lc - *Lasiopetalum cardiophyllum*
- Sl - *Senecio leucoglossus*
- Sm - *Stylidium marradongense*

Conservation Code (DBCA)

- Possible P1
- P1
- P3
- P4

Vegetation Composition

- A
- A2
- A3
- AD
- AX
- AY
- AY/D
- B
- CL
- D
- DAM
- DG
- E
- G1
- G2
- G3
- G4
- G5
- H
- H2
- HG
- L
- M
- M2
- MG
- O
- P
- PL
- PL - Ag
- PS
- PW
- R
- RE
- S
- SP
- ST
- SW
- W
- Y
- YG
- Z

N

0 1 2 km

Scale @A3 1: 75000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024), Ecologia (2023),
Imagery ©Bing Aerial, Esri

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Map09 Map10 Map11 Map12 Map18 Map13 Map43 Map14 Map42 Map41 Map39 Map19 Map40 Map38 Map37 Map30 Map33 Map32 Map25 Map35 Map45 Map01 Map36 PF9 PF7 PF6 Map56 Map49 PF10 PFOpp3 PF5 PF4 PF2 PF3

435000 440000 445000 450000

Figure 8-9 Introduced Flora

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2025), Astron (2024)
Imagery Esri

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8.12 Potential environmental impacts

This Proposal has the potential to result in the following direct and indirect impacts to vegetation and flora values:

Direct

- Clearing of 528 ha of native vegetation including 157 ha Excellent, 327 ha Very Good to Excellent and 37 ha Very Good condition in the Northern Jarrah Forest IBRA region (Table 8-6), and
- Clearing of known individuals of Priority Flora species identified in Table 8-7.

Indirect

- Changes to vegetation from changes to surface water regimes, and
- Changes to vegetation or impacts to flora species from dieback, weeds and dust.

Newmont Boddington has focused the following discussion on the potential direct and indirect impacts of the Proposal within the RDE and has also outlined the combined effects expected with the implementation of the Revised Proposal. Information about impacts associated with the Approved Proposal have been provided for context; however, it should be noted that impacts previously assessed for the Approved Proposal have not been reassessed here. Cumulative impacts to Flora and Vegetation are addressed in Section 16.

8.12.1 Direct impacts

Loss of vegetation and flora from clearing

Regional vegetation complexes

The national objectives and targets for biodiversity conservation in Australia have been set to prevent clearance of ecological communities with less than 30% of their pre-European extent as below this value, species loss appears to accelerate exponentially (Commonwealth of Australia 2001).

The Government of Western Australia has assessed vegetation complexes mapped against presumed pre-European extents in the Northern Jarrah Forest IBRA region. Five vegetation complexes, Cooke, Dwellingup 4, Pindalup, Swamp and Yallendee 5 have over 70% of the pre-European extent remaining (DPIRD, 2019).The proposed vegetation clearing of 528 ha within the RDE amounts to 0.5% in relation to these vegetation complexes in WA (Table 8-9).

Site vegetation types

As part of the assessment of the regional significance of the clearing, the extent of the proposed clearing has been compared with the mapped extent of native vegetation within a wider survey area near Boddington (Table 8-10). This approach was used due to the lack of detailed mapping at this scale over all of the southwest forests. In this context there is a need to rely on the interpretations of Dr Mattiske and her teams who have undertaken extensive work in the northern Jarrah Forest to interpret the local significance and regional significance of some of these communities (Mattiske, 2021). The extent of remaining native vegetation remains relatively high in the vicinity of the Proposal. Approximately 29,295 ha of native vegetation occurs in the wider survey area (Table 8-10).

Of the 20 significant site vegetation types identified from the RDE in Section 8.6, 12 significant vegetation types occur in the additional clearing within of the footprint required for this Proposal. Of these vegetation types, 5 will be subject to less than 1% impact of the mapped extent in the wider survey area, 6 will be subject to less than 6% impact and 1 will be subject to 11.3% impact from the Proposal (Table 8-10).

Of the 7 non-significant vegetation types, 3 will be subject to less than 1% impact of their mapped extent in the wider survey area, and 4 will be subject to less than 6% impact from the Proposal (Table 8-10).

Significant flora

The Proposal has the potential to affect the representation and distribution of significant flora species as a result of direct clearing native vegetation.

Results from desktop searches indicate that the RDE contains conservation-significant flora. Based on local landforms, soils, and distribution patterns derived from previous studies and Florabase most threatened and priority species have a low to moderate likelihood of occurrence within the footprint required for this Proposal (Table 8-8) (Mattiske 2021, 2024).

Surveys conducted to date within the footprint required for this Proposal have not identified any flora species listed as Threatened under the EPBC or BC Acts. Given threatened species have not been identified, the presence of such species within the footprint required for this Proposal is unlikely. Targeted searches in suitable habitats, undertaken by Mattiske (2025a), did not record any individuals.

One priority species *Hibbertia ?hortiorum* (P1)were recorded during survey of the footprint required for this Proposal (Mattiske 2025a).

The following priority species have a moderate or high likelihood of occurrence and are likely be impacted by the activities in the footprint required for this Proposal:

- *Gastrolobium sp. Prostrate Boddington (M. Hislop 2130)* (P1)
- *Hibbertia ambita* (P1)
- B*anksia subpinnatifida var. imberbis* (P3)
- *Goodenia katabudjar* (P3)
- *Stylidium marradongense* (P3)
- *Lasiopetalum cardiophyllum (P4), and*
- *Senecio leucoglossus (P4).*

All of the species are represented in the wider survey area. Mattiske (2021, 2023) assessments of the Wider Survey Area identified the following:

- Geographically restricted threatened species:
    - *Anthocercis gracilis* (T) – Occurs in granite habitats
    - *Caladenia dorrienii* (T) – Found near rivers and seasonal creeks
    - *Caladenia hopperiana* (T) – Located in Quindanning Timber Reserve valley systems
    - *Eleocharis keigheryi* (T) – Threatened under the BC Act; occurs in swampy seasonal wetland areas
    - *Pultenaea pauciflora* (T) – Vulnerable under the EPBC Act; found in Luptons forest area and Dale Forest block
    - *Diuris micrantha (T)* – Vulnerable under the EPBC Act; occurs near Darkan-Quindanning Road and Swan Coastal Plain
- *Lasiopetalum cardiophyllum* (P4) – Mainly found in eastern Jarrah-Sheoak forests near Boddington, with lower population estimates than earlier observations in nearby State Forest
- S*enecio leucoglossus* (P4) – Widespread but in low numbers throughout the northern Jarrah Forest
- *Gastrolobium sp. Prostrate Boddington (P1)* – Found mainly in Wandoo woodlands north of the Newmont Boddington Mine camp and near the Hotham River
- *Hibbertia ambita* (P1) – Occurs across various sites, from lower valley slopes to rehabilitated areas
- *Goodenia katabudjar* (P3) – Scattered across lateritic hills in Jarrah and Wandoo woodlands, likely in higher numbers than observed, and

- *Stylidium marradongense* (P3) – Prefers gravelly soils and heath areas, including Tunnell Road heath, and is largely restricted to Boddington and nearby Jarrah Forest.

Records of Priority flora species within the footprint required for this Proposal are found within the Wider Survey Area which indicates that the Proposal is unlikely to change the conservation status of priority flora species (Table 8-8).

Table 8-8 Preliminary assessment of potential impacts to priority flora

Species	Conservation Status		Site Vegetation Types	Number of Individuals Recorded in the Wider Survey Area[1]	Preliminary Assessment of Impact to Distribution/Populations
	EPBC Act	BC Act/ DBCA Priority List			
Hibbertia ?hortiorum	N/A	P1	S, SP	Not recorded	This species has only recently been defined by Thiele (2019) and as such is likely to be more widespread. This species has been recorded west of the areas surveyed within the footprint required for this Proposal (Mattiske, 2025a).
Lasiopetalum cardiophyllum	N/A	P4	AY, D, G3, G4, H, P, PS, S, ST, Y, YG, Z, Rehabilitation	779	Known populations are mapped within the Wider Survey Area. Further, this species is also more widely distributed in the southwest forests and extends into the Wheatbelt.
Senecio leucoglossus	N/A	P4	G4, H, P, PL, PS, S, ST, Z, Rehabilitation	104	This species is widespread in the Northern Jarrah Forest and occurs in small patches.
Gastrolobium sp. Prostrate Boddington (M. Hislop 2130)	N/A	P1	D, G1, L, M, P, Y, Z	14,988	Approximately 25,757 individuals of the species have been recorded in the Wider Survey Area, with the largest known population or density of the species occurring within the Wider Survey Area. This taxon is known from three populations in the Boddington area. The main population occurs in the Wandoo Woodlands north of the Newmont Boddington Mine camp in the Habitat Preservation Area and also along the Hotham River on the lower slopes. This species is a seeder in significant numbers in two of these populations. The Proposal is considered unlikely to significantly impact species distribution, populations of the species at a local scale or affect the conservation status of the species at a regional level.

Species	Conservation Status		Site Vegetation Types	Number of Individuals Recorded in the Wider Survey Area[1]	Preliminary Assessment of Impact to Distribution/Populations
	EPBC Act	BC Act/ DBCA Priority List			
Hibbertia ambita	N/A	P1	D, H, P,	61	This species was only recently described. This species has been recorded in the forest areas on the fringes of Hotham Road, near Quindanning, south of Boddington in forest and Worsley rehabilitation areas. *Hibbertia commutata* has been a dominant plant in the Boddington area and it is expected that numbers will increase markedly in future years both within the forest areas and also rehabilitation areas. The main constraint is that it is difficult to differentiate *H. commutata* and *H. ambita* without flowering material which restricts identification. Given the distribution and readiness of locating *Hibbertia ambita* within rehabilitation areas it is unlikely that the Proposal will significantly impact populations of the species at a local scale or affect the conservation status of the species.
Banksia subpinnatifida var. imberbis	N/A	P2	Rehabilitation	0	There has been no recordings of *Banksia subpinnatifida var. subpinnatifida* within the Wider Survey Area. It has only been recorded in older rehabilitation so is likely to have formed part of a seed mix prior to implementation of provenance restrictions. This species is known to return within rehabilitation and therefore establishment of the species can be supported through regeneration processes. The Proposal is not expected to affect the distribution or populations of this species as it is not known locally.
Goodenia katabudjar	N/A	P3	P, ST, Rehabilitation	32	Known from populations within the Wider Survey Area and therefore the Proposal is unlikely to impact populations of this species at a local scale or affect the conservation status of the species at a regional level.

Species	Conservation Status		Site Vegetation Types	Number of Individuals Recorded in the Wider Survey Area[1]	Preliminary Assessment of Impact to Distribution/Populations
	EPBC Act	BC Act/ DBCA Priority List			
Stylidium marradongense	N/A	P3	H, P, S, Y, G3, Rehabilitation	156	The species distribution in the local area is known from populations in the Wider Survey Area.

[1] Data sourced from Mattiske (2021, 2023) survey and publicly available data

There remains un-surveyed areas of vegetation and suitable habitat within the footprint required for this Proposal and therefore sufficient spatial data is unavailable for a cumulative impact assessment of conservation-significant flora at a local scale. Given most recorded Priority species occur across a broad range and are represented by individuals in the Wider Survey Area, potential impacts from the Proposal are unlikely to be significant. However, further surveys will be conducted in the remaining un-surveyed areas to confirm this and results of these surveys will be presented in the ERD.

8.12.2 Indirect impacts

Changes to vegetation from dieback, weeds and dust

Weeds

Weeds have the potential to outcompete and displace native vegetation if introduced or conditions are altered to favour their growth. Proposal activities have the potential to spread existing weeds and to introduce new weed species into previously weed free areas.

Weeds may be spread and/or introduced by vehicles and equipment, resulting in soil and weed vegetative material being transported around site and being present on equipment entering and exiting site.

Indirect impacts of weeds are managed the implementation of the Weed and Forest Disease Monitoring and Management Plan (**WFMMP**) (Appendix G). The implementation of the WFMMP prevents the realisation of additional indirect impacts by not increasing existing areas of infestation and by actively reducing weed infestations through weed control program.

The Proposal will adopt the controls outlined in the WFMMP to reduce the risk of introduction and spread of weeds. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to vegetation from weeds is unlikely to be significant.

Dieback

Phytophthora dieback (or dieback) is a disease caused by the introduced soil-borne pathogen *P. cinnamomi.* While some plant species are resistant, others are susceptible to the disease caused by the pathogen, which can result in chlorosis, dieback and usually death (Wills and Keighery 1994).

Disease expression caused by Phytophthora species occurs in native vegetation when the following variables and environmental conditions are present:

- Host – plant species are present that are susceptible to Phytophthora spp.
- Pathogen –Phytophthora spp. Pathogen must be present, either residing in susceptible or resistant species

- Environment – soil temperatures of 15-30°C and pH 5-6 (acidic) are required for *Phytophthora cinnamomi (P. cinnamomic)* survival and activity. Some Phytophthora species, including *P. multivora,* can survive in alkaline soils, and
- In WA, dieback is a significant environmental issue for operations in the Southwest region. Dieback has a range of hosts in Southwest WA, predominantly from the Ericaceae, Fabaceae, Myrtaceae, Proteaceae, and Xanthorrhoeaceae plant families.

There is potential to introduce the pathogen into down-gradient receiving areas. This down-gradient spread can occur if drainage lines within or adjacent to the footprint required for this Proposal become contaminated with dieback, or infected soil is transported off-site into uninfested areas.

The risk of transporting dieback infected soil increases significantly during wet conditions when soil and vegetative material can easily adhere to vehicles and machinery. In dry conditions, the risk of transporting infected soil is reduced.

A desktop assessment of the RDE was conducted by Terratree (2023b). Search of the Dieback Information Delivery Management System (DIDMS) database identified 15 positive results for *P. cinnamomi*, nine positive results for *P. pseudocryptogea*, and one positive result for *P. inundata* within the RDE.

DBCA's Vegetation Health Services laboratory was contacted for information regarding positive *P. cinnamomi* sample locations that had not been uploaded to DIDMS, and this search identified a further 29 sample results within the RDE. Of these 19 sample results, 18 were for *P. cinnamomi*, 7 were for *P. cryptogea*, 1 was for *P. citricola* (now *P. multivora*) and 3 samples were for other unknown species of Phytophthora.

The *P. cinnamomi* occurrence assessments of the Approved Proposal footprint completed by Glevan (2024) and the RDE by Terratree (2023b) throughout the life of project have recorded the presence of *P. cinnamomi* from several places in the RDE. Infested areas were found mainly alongside major roads and mining operation areas. Uninfested areas were found throughout the assessment area, with the major areas of uninfested vegetation existing within forest areas to the east. Some areas of the uninfested forest vegetation to the west were also found. Uninterpretable areas were mainly limited to gullies; however, some small pockets of Allocasuarina vegetation were also found to be uninterpretable. Some temporarily uninterpretable areas of vegetation close to the main mining operation areas were found. Dieback occurrence within the RDE is detailed in Figure 8-10.

Newmont Boddington will undertake dieback surveys of the RDE and footprint required for this Proposal and existing hygiene management measures will be implemented. The Proposal will adopt the dieback hygiene measures outlined in the WFMMP to reduce the risk of introduction and spread of dieback as well as protect adjacent vegetation that may be uninfected. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to vegetation from dieback are unlikely to be significant.

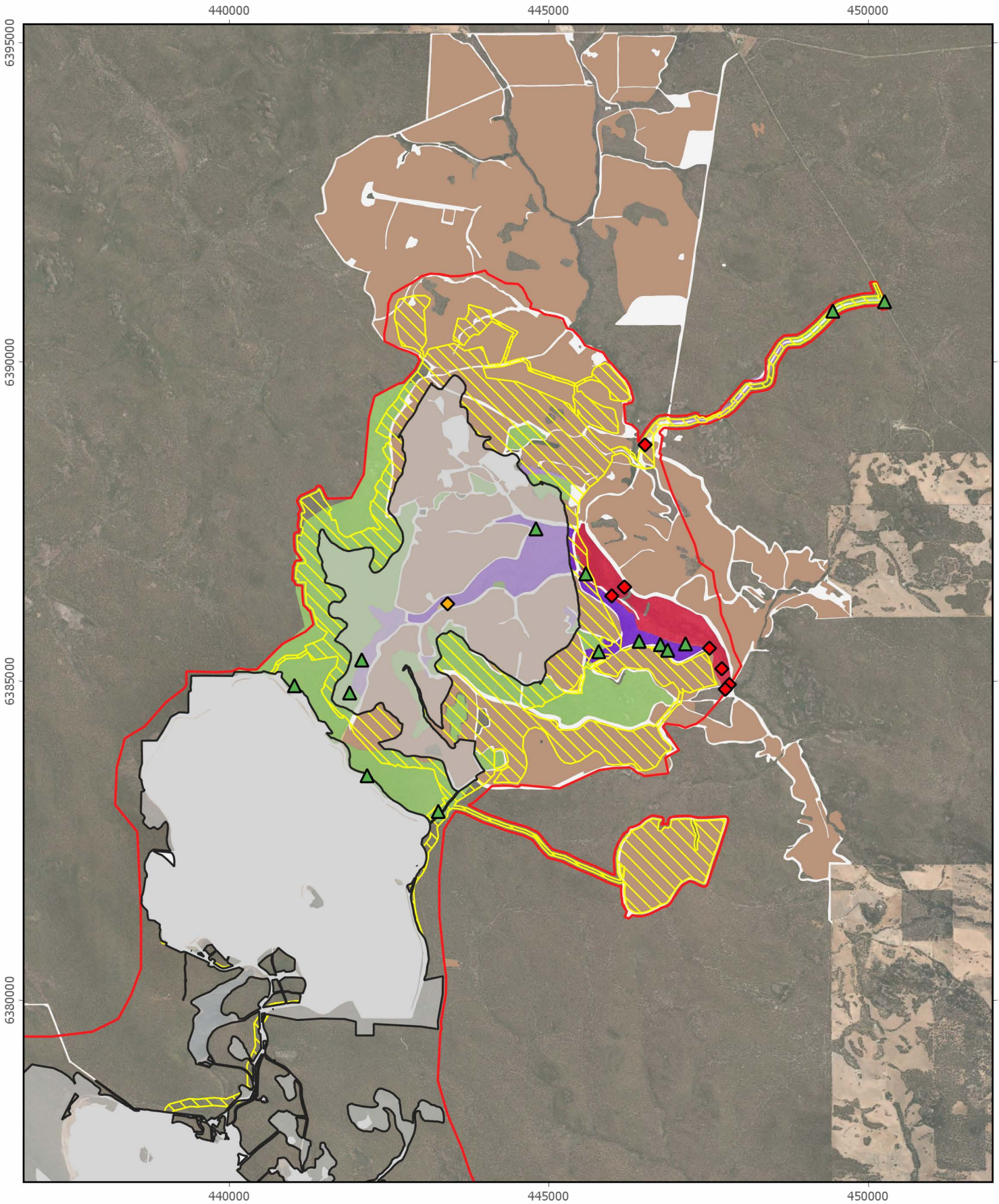


Figure 8-10: Phytophthora Dieback Mapping

LEGEND

- Proposal Footprint
- Approved Disturbance Footprint
- Revised Development Envelope

Dieback Survey Samples (2024)

- Negative
- P. cinnamomi
- P. inundata

Dieback Occurence

- Excluded
- Infested
- Other Phytophthora
- Uninfested
- Uninfested Unprotectable
- Uninterpretable
- Uninterpretable Unprotectable

Unsurveyed Areas

- Cleared Areas
- Plantations

N

0 1 2 km

Scale @A4 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Mattiske (2024), CDM Smith Australia (2024)
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: mcdonaldlr Date: 9 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Vegetation_250108 - LM_figures_C.qgz

Dust

The construction and operation of the Proposal will result in the generation of dust. An increase in dust is expected to be temporary and likely highly localised. Dust generation is discussed further in Section 11.9.1. There is the potential that the dust deposited may affect the health of susceptible vegetation by adversely affecting photosynthesis and transpiration rates. This is more pronounced during dry seasonal conditions.

Given the high dust levels that occur naturally in summer under the combination of high winds and low rainfall local vegetation is likely to be adapted to increased levels of inert airborne dust. Dust deposition will be mitigated to some extent by periodic high rainfall events, which would remove built-up materials on foliage.

The Proposal is located mostly within plantation, cleared areas and adjacent existing operational/infrastructure areas.

Based on the above, dust emissions from the Proposal are unlikely to have a significant impact on flora or vegetation health.

Changes to vegetation from changes to surface water regimes

Proposed surplus water discharge to Hotham River may result in impacts to riparian vegetation (vegetation health) due to increased inundation. Discharge of surplus water may also impact on riparian vegetation by creating a dependency on permanent surface water flow, which has the potential to alter the composition of the ecological community and vegetation health.

Changes to surface water quality due to the discharge of surplus water to Hotham River are not expected to occur. As described in Section 10.5, to prevent potential impacts to surface water quality, Newmont Boddington will treat water quality going the Hotham River discharge point. Management of surface water discharge is discussed in Section 10.5. Potential impacts to riparian vegetation and GDV in relation to surface water quality are considered unlikely, and therefore are not discussed further.

Altered water regimes resulting from surplus water discharge into Hotham River may cause impacts to the riparian vegetation of Hotham River from potential waterlogging. The action of discharging surplus water will also artificially increase water availability to vegetation downstream of the discharge location. The change in hydrological regime is likely to result in temporary changes to riparian tree species and potentially change the vegetation composition by increasing or decreasing the abundance of riparian shrub, sedge, grass and weed species along the discharge pathway. The surplus water discharge may also attract livestock and feral animals, resulting in trampling and/or overgrazing. Riparian eucalyptus trees have the potential to decline in health when they are permanently inundated. It is anticipated that vegetation adaptation to the altered hydrological regime will be species specific and could include decline in health and/or new growth as well as changes to the composition and/or density of vegetation within the wetting front.

As described in Section 10.4.2, a water balance model has been developed and discharge is proposed to only occur during the wet season months (June to October), when flows are above the median recorded at the Hotham Weir. Potential impacts to riparian vegetation and GDV in relation to inundation are considered unlikely, and therefore are not discussed further.

Groundwater dependent vegetation and changes in groundwater hydrology

The Proposal will result in the clearing of 63 ha of vegetation in the footprint required for this Proposal that grows in association with seasonally inundated soils. Vegetation types A, A2,D, L, SW, Y and YG were identified as potential groundwater dependent vegetation on the basis of the key indicator plant species (Mattiske 2024).

The interpretation in Woodman Environmental (2019) for the Newmont Boddington Mine included a reliance on previous mapping by Mattiske Consulting (2005 and 2012) in the existing Newmont Boddington operations and used the series of site-vegetation types in a similar way to define the potential groundwater dependent vegetation (Mattiske 2021).

The inclusion of site-vegetation types such as SW and PW are considered less reliable, as these site vegetation types occur on the fringes of the valley slopes and may relate to surface water flows and localised soil types capable of holding seasonal water rather than consistently any link with groundwater (Mattiske 2021).

Some of these aspects are still open to interpretation, as the source of the water for the plants may vary from site to site depending on the local conditions. Another key aspect that occurs in some valley systems and swamps is the development of secondary laterisation and lenses of impervious layers thereby holding water in soil profiles with associated soil moisture plant indicators (Mattiske 2021).

The Proposal has been designed to minimise direct clearing of native vegetation including potential GDV and therefore the impacts as a result of the Proposal are considered unlikely to be significant. Notwithstanding this, without conducting an appropriate survey to determine exactly what GDV is present and the phreatophytic nature of vegetation, it is difficult to evaluate the level of risk that the Proposal poses to GDV (Umwelt 2025). To address this, further GDV baseline survey is planned for the Proposal and results will be presented in the ERD.

8.12.3 Cumulative impacts

The most significant cumulative impact on vegetation and flora arising from the Proposal is the loss of native vegetation and flora due to clearing of 528 ha including 157 ha Excellent, 327 ha Very Good to Excellent and 37 ha Very Good condition (in the Northern Jarrah Forest IBRA region (Table 8-6).

The Revised Proposal will result in loss of up to 5963 ha of native vegetation including 5,435 ha from Approved Proposal and 528 ha from the Proposal.

Regional vegetation complexes

When considering the Revised Proposal, the Cooke and Dwellingup 4 complexes will have 80% or more of the pre-European extent remaining with 0.08% of Cooke complex impacted and 0.56% of Dwellingup 4 impacted (Table 8-9).

The Pindalup and Yalanbee 5 complexes will have 76.5% and 66.2% the pre-European extent remaining, respectively. The Revised Proposal impact on the Pindalup complex is 0.41% and 0.01% for the Yalanbee 5 complex (Table 8-9).

The Coolakin complex will have more than 30% of pre-European extent remaining with 0.25% impacted from the Revised Proposal (Table 8-9).

Site vegetation types

As described in Section 8.6, of the 20 locally significant vegetation identified in the RDE 12 occur in the additional clearing within of the footprint required for this Proposal and will be impacted from clearing (Table 8-10). Of these vegetation types, 3 will be subject to less than 1% impact of their mapped extent in the Wider Survey Area for the Revised Proposal, 6 will be subject to less than 10% impact. The remaining 3 locally significant associations will be subject to less than 20% impact from the Revised Proposal to their mapped extent in the Wider Survey Area.

Of the 7 non-significant site vegetation types, 2 will be subject to 1% impact of their mapped extent in the wider survey area, 7 will be subject to less than 10% impact and 1will be subject to less than 20% impact from the Revised Proposal (Table 8-10).

Significant flora

Flora and vegetation surveys within the Wider Survey Area, upon which cumulative impacts could be assessed, have unmapped areas in the RDE and footprint required for this Proposal. Given most recorded Priority species occur across a broad range and are represented by individuals in the Wider Survey Area, potential impacts from the Revised Proposal are unlikely to be significant. However, further surveys will be conducted in the remaining un-surveyed areas to confirm this and results of these surveys will be presented in the ERD.

Changes to vegetation from dieback, weeds and dust

Dieback

Increasing vehicular access combined with disturbance such as clearing for infrastructure, has the potential to introduce and/or spread dieback .The current distribution of dieback within the RDE largely reflect this, with higher dieback occurrences present along drainage areas and existing infrastructure.

The presence of dieback within the RDE has the potential to impact on the condition and structure of native vegetation present, with construction and operational activity potentially increasing the occurrence and spread of dieback. The occurrence of dieback within the RDE is unlikely to impact on any regionally significant vegetation or the regional representation of conservation significant flora species.

The Proposal will adopt the dieback hygiene measures outlined in the WFMMP (Appendix G) to reduce the risk of introduction and spread of dieback as well as protect adjacent vegetation that may be uninfested. Given that these controls have been implemented for the Approved Proposal since operations commenced, potential impacts to vegetation from dieback from the Revised Proposal are unlikely to be significant.

Weeds

A total of 55 introduced taxa (including two planted species and 53 introduced species) may potentially exist in the RDE. None of the introduced species are listed as a Weed of National Significance (DCCEEW, 2024d). Two are listed as declared under the BAM Act (WA) (DPIRD 2024).

Increasing vehicular access combined with disturbance such as clearing for roads and other infrastructure during construction, has the potential to introduce and/or spread weed species. The current distribution of weeds within the RDE largely reflect this, with higher weed occurrences present along drainage areas and existing infrastructure.

The Proposal is likely to result in the spread of weeds into areas of proposed new disturbance (mainly via vehicle/machinery movement). The footprint required for this Proposal is largely within existing pine plantation, or within areas of existing disturbance and adjacent existing operations, and therefore is not likely to significantly increase the occurrence of weeds within the RDE.

Impacts of weeds are managed through the implementation of the WFMMP (Appendix G). The implementation of the WFMMP prevents the realisation of additional indirect impacts by not increasing existing areas of infestation and by actively reducing weed infestations through weed control program.

The Proposal will adopt the controls outlined in the WFMMP to reduce the risk of introduction and spread of weeds. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to vegetation from weeds from the Revised Proposal is unlikely to be significant.

Dust

The Proposal is located within plantation, cleared areas and adjacent to the existing operational/infrastructure areas. Further, the processing limit is already approved in the licence for the Approved Proposal and is not increasing as a result of the Proposal. Therefore, the potential impact on vegetation of dust resulting from the Revised Proposal is unlikely to be significant.

Table 8-9 Potential impacts to vegetation complexes

	Pre-European Extent (ha)[1]	Current Extent (ha) in Northen Jarrah Forest Bioregion	Pre-European Extent Remaining	Extent within RDE	Approved Proposal[2]	Additional clearing within footprint required for this Proposal	Revised Proposal Footprint	% Complex Remaining Additional clearing within footprint required for this Proposal[3]	% Complex Remaining Revised Proposal[4]	Additional clearing within footprint required for this Proposal against Current Extent	Revised Proposal against Current Extent
Vegetation Complex	**(ha)[1]**	**(ha)**	**(%)**	**(ha)**	**(ha)**	**(ha)**	**(ha)**	**(%)**	**(%)**	**(%)**	**(%)**
Cooke	36,779	30,304	82.4	383	21	4	25	82.4	82.3	0.01	0.08
Coolakin	163,992	64,205	39.2	392	109	54	163	39.1	39.1	0.08	0.25
Dwellingup 4	132,416	115,662	87.3	2681	256	396	652	87.0	86.9	0.34	0.56
Michibin	168,040	42,996	25.6	258	74	0	74	25.6	25.5	0	0.17
Pindalup	167,151	128,358	76.8	1552	465	68	533	76.8	76.5	0.1	0.41
Swamp	53,658.20	40,613.00	75.7	507	264	0	264	75.7	75.2	0.0	0.65
Williams	28,984.00	7,517	25.9	13	0	0	0	25.9	25.9	0.0	0.00
Yalanbee 5	126,610	83,829	66.2	14	0	6	6	66.2	66.2	0.007	0.01

[1] Pre-European extent and current extent based on current DBCA data for the Northen Jarrah Forest Bioregion

[2] Excluding cleared areas and areas within the Approved Proposal (previously assessed area)

[3] Current extent minus area of additional clearing within footprint required for this Proposal as a percentage of Pre-European Extent

[4] Current extent minus area in the Revised Proposal as a percentage of Pre-European Extent

Table 8-10 Potential impact to site vegetation types

Vegetation Complex	Conservation or Other significance	Area mapped within the Wider Survey Area	Area mapped within the RDE	Area remaining within RDE	Approved Proposal	Proposed additional clearing within footprint required for this Proposal		Total Revised Proposal Clearing	
		(ha)	(ha)	(ha)	(ha)	(ha)	As % of mapped in Wider Survey Area	(ha)	As % of mapped in Wider Survey Area
A	Y	624.70	293	166	119	8	1.3	127	20
A2	N	8.90	3	1.5	0.50	1	11.2	2	17
AC	Y	58.50	6	6	0	0	0	0	0
AD	N	14.10	2	2	0	0	0	0	0
AX	Y	516.60	171	83	88	0	0	88	17
AY	Y	913.70	307	256	42	9	1.0	51	6
D	Y	1002.30	248	161	68	19	1.9	87	9
DG	Y	51.70	1	0.50	0	0	0	0	0
G1	Y	217.90	13	11	2	0	0	2	1
G2	Y	186.90	4	2	0	2	1.1	2	1
G3	Y	136.40	23	23	0	0	0	0	0
G4	Y	15.60	3	3	0	0	0	0	0
G5	Y	6.00	2	2	0	0	0	0	0
H	N	5356.00	815	589	223	112	2.1	226	6
H2	N	979.60	11	3	5	3	0.3	8	1
HG	Y	140.10	1	1	0	0	0	0	0

Vegetation Complex	Conservation or Other significance	Area mapped within the Wider Survey Area	Area mapped within the RDE	Area remaining within RDE	Approved Proposal	Proposed additional clearing within footprint required for this Proposal		Total Revised Proposal Clearing	
		(ha)	(ha)	(ha)	(ha)	(ha)	As % of mapped in Wider Survey Area	(ha)	As % of mapped in Wider Survey Area
L	Y	264.00	65	48	9	8	3.0	17	6
M	N	4188.90	296	188	87	21	0.5	108	3
M2	Y	544.20	4	3	0	1	0.2	1	0.2
MG	Y	580.90	11	5	4	2	0.3	6	1
O	N	8.13	8	0	8	0	0	8	99.9
PS	Y	2521.50	1062	911	56	95	3.8	151	6
R	N	40.10	2	2	0	0	0	0	0
S	N	4216.90	1055	801	128	126	3.0	254	6
SP	N	1373.10	255	171	65	19	1.4	84	6
ST	N	1292.90	180	170	8	2	0.2	10	1
SW	Y	143.12	22	0	13.5	8.5	5.9	23	15
W	N	67.40	1	1	0	0	0.0	0	0
Y	Y	2049.40	373	231	128	14	0.7	142	7
YG	Y	456.40	15	5	6	4	0.9	10	2
Z	N	1319.40	547	344	130	73	5.5	203	15

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8.13 Mitigation

Newmont Boddington has mitigated the potential impacts to this factor according to the mitigation hierarchy; avoid, minimise, rehabilitate. Table 8-11 outlines the mitigation measures used at Newmont Boddington for each potential impact.

The WFMMP (Appendix G) is an outcomes-based and a management-based management plan.

8.13.1 Other statutory decision-making processes

Newmont Boddington considers that there is no other statutory decision-making process to mitigate the potential environmental impacts of the Proposal on Flora and Vegetation, considering the EPA's *Taking decision making processes into account in EIA: Interim Guidance* (EPA 2021b).

8.13.2 Assessment and significance of residual impacts

Newmont Boddington has considered the significance of flora and vegetation and relevant issues outlined in EPA's Flora and Vegetation Guideline (EPA 2016a) in assessing the significance of the impacts to Flora and Vegetation from the Proposal. The assessment of potential impacts discussed in this section are following the application of mitigation as documented in Table 8-11

Table 8-11 Proposed mitigation measures Flora and Vegetation

Potential Impact	Management Measures	Assessment of Residual Impact	Significance of residual impact
Direct Impacts			
Clearing of 528 ha of native vegetation including 157 ha Excellent, 327 ha Very Good to Excellent and 37 ha Very Good condition in the Northern Jarrah Forest IBRA region. Clearing of known individuals of Priority Flora species identified in Table 8-7.	**Avoid** Surveys within and surrounding the RDE have been utilised to conduct infrastructure and road design. This avoidance process resulted in the final boundaries of the footprint presented in this Proposal, specifically modifications made to avoid the Mt Saddleback Heath Communities PEC (P1), identified during the surveys. **Minimise** The Proposal has been designed to minimise clearing of native vegetation by designing infrastructure within or adjacent to existing disturbed areas or the pine plantation land. The majority of the stockpiles, infrastructure and roads are in pine plantation that is fallow. Newmont Boddington will continue to work with Worsley on planned future clearing footprints and share information **Rehabilitate** An MCP will be developed and implemented in accordance with the Statutory Guidelines for Mine Closure Plans (DEMIRS, 2020b) for the Revised Proposal. Management approaches relating to flora and vegetation, include (but are not limited to): ▪ The selection of plant species used in revegetation will be linked to the appropriate landforms and species lists identified from the baseline flora and vegetation surveys ▪ Monitoring will be used to assess whether initial vegetation establishment has been successful and rehabilitation is developing satisfactorily	The Proposal will result in clearing of 528 ha of native vegetation which is considered not to be significant based on a preliminary assessment. Of the eight vegetation complexes that occur within the RDE, only two complexes (Michibin and Williams) retain less than 30% of their pre-European extent (Government of Western Australia 2019). No additional clearing of these complexes is required for this Proposal and therefore residual impacts are not considered significant. Of the 20 significant site vegetation types identified from the RDE, 12 significant occur in the additional clearing within of the footprint required for this Proposal (Table 8-10). The residual impacts to these vegetation types is unlikely to be significant because the clearing will impact between 0.2% to 11.3% of their mapped extent of the Wider Survey Area. No more than 528 ha of native vegetation will be cleared within the footprint required by this Proposal as an authorised limit additional to what	Following mitigation, the impacts to native vegetation clearing is unlikely to be significant.

Potential Impact	Management Measures	Assessment of Residual Impact	Significance of residual impact
	▪ Where monitoring results indicate vegetation establishment may not meet standards (density, species diversity and plant age heterogeneity), in completion criteria then remedial actions will be implemented (if required), and ▪ Local provenance including conservation significant flora species will be included in rehabilitation seed mixes.	has previously been approved as part of the Approved Proposal (5,435 ha). Records of all priority flora are found regionally in an area defined as the Wider Survey Area, indicating that the Proposal is unlikely to change the conservation status of the impacted priority flora species. The residual impact on priority flora generally aligns with the definition of significant residual impact in the WA Environmental Offset Guidelines, which includes impacts that could cause plants to become rare or endangered (Government of Western Australia 2014).	
Indirect Impacts			
Dust deposition affecting photosynthesis and transpiration rates of flora	▪ Traffic is restricted to established roads and tracks ▪ Water trucks used in construction and operations areas to minimise dust generation ▪ Dust generation is monitored through the use of continuous monitors to determine rates of dust deposition within the RDE and areas adjacent to sensitive receptors ▪ Further information on dust mitigation can be found in Table 11-8.	Whilst disturbances associated with an increase dust is expected as a result of the Proposal, this will be highly localised. Given that activities will take place within operational areas, existing roads and tracks impacts are not expected to be greater than what is already present for the Approved Proposal.	Following mitigation, impacts associated with increased dust are unlikely to be significant.

Potential Impact	Management Measures	Assessment of Residual Impact	Significance of residual impact
Establishment or spread of weed species /populations. Introduction or spread of dieback	**Minimise** Implementation of the WFMMP including: ▪ Vehicles, machinery and personnel will be restricted to designated areas. ▪ Vehicles/machinery to be clean of soil and vegetation upon entry and exit from site. ▪ Vehicles to pass through hygiene wash bay and inspection completed. ▪ Dieback surveys of the footprint required for this Proposal and RDE. A currency of 12 months is required for areas to be cleared. ▪ Demarcation of Phytophthora dieback infested, uninfested and uninterpretable areas in construction and operational areas. ▪ Weed surveys of the RDE are undertaken and where weeds are identified, weed spraying and/or removal is undertaken. **Rehabilitate** Rehabilitation stockpile records are maintained to ensure forest disease status of the material is understood.	The Proposal is likely to result in the spread of weeds or dieback into areas of proposed new disturbance (mainly via vehicle/machinery movement). Weed species declared under the BAM Act (Cotton Bush and Cape Tulip) have been recorded in the RDE. Dieback assessment surveys have been conducted throughout the life of the Approval Proposal have recorded the presence of *P. cinnamomi* from several places in the RDE. Given the above, Newmont Boddington has strict hygiene measures in place as part of the Approved Proposal which will continue to be implemented for the Proposal.	Neither the Proposal alone or the Revised Proposal is likely to result in the introduction or spread of invasive weed species and dieback that would have a significant impact on flora and vegetation given the proposed management measures in the WFMMP such as hygiene management, and weed control measures.

8.14 Assessment and significance of residual impacts

Following the application of the mitigation hierarchy and applying the Residual Impact Significance Model in the WA Offsets Guidelines (Government of Western Australia 2014), Newmont Boddington considers that there will be no significant residual impacts to Flora and Vegetation from the Proposal

8.15 Potential environmental outcomes

The EPA's environmental objective for this factor is 'to protect flora and vegetation so that biological diversity and ecological integrity are maintained'. In the context of this objective: 'ecological integrity' is listed as the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements (EPA 2016a).

Extensive flora and vegetation surveys of the areas within and surrounding the RDE have been completed including targeted significant flora surveys. Additional detailed flora surveys are planned to confirm anticipated impacts to conservation significant flora and vegetation (Table 8-12).

Table 8-12 Proposed flora and vegetation surveys

Proposed Survey	Survey Scope	Commencement Date
Detailed flora and vegetation survey	Detailed survey within the footprint required for this Proposal.	September 2025
Targeted flora survey	Reassess and rescore quadrats from previous surveys that were undertaken in the proposed offset areas. Targeted survey for Priority flora species identified in previous surveys within the proposed offset areas.	September 2025
Comprehensive dieback assessment survey	Comprehensive dieback assessment survey within the footprint required for this Proposal.	H2 2025

Newmont Boddington has incorporated avoidance and minimisation measures into the Proposal design and operational processes, however direct impacts to flora and vegetation are unavoidable. The Proposal will result in the clearing of up to 528 ha of native vegetation.

Management and monitoring is proposed during construction and operation to further minimise indirect impacts to native vegetation, conservation significant vegetation and flora.

Table 8-13 identifies the proposed environmental outcomes. This includes how the proposed environmental outcomes are consistent with the EPA's objective for Flora and Vegetation and whether (and if so how) a proposed environmental outcome can be assured by a limit on the extent of a proposal element/s and/or other condition, or another statutory decision-making process which can mitigate the specific potential impacts of the Proposal on flora and vegetation.

As required by the EPA's *ERD Instructions for Significant Amendments* (EPA 2024b), Newmont Boddington considers that the EPA should review the Approved Proposal implementation conditions related to Flora and Vegetation under section 40AA(3). This review could be incorporated into the EPA's assessment report under section 44, as part of the Proposal's evaluation under section 40. The goal is to modernize these conditions to align with the EPA's contemporary approach to condition setting, which has been reflected in EPA Reports and ministerial statements since early 2023.

Based on the above, Newmont Boddington considers that the Proposal can be implemented such that the EPA objective can be met.

Table 8-13 Environmental outcomes and proposed assurance and monitoring

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
Clearing of 528 ha of native vegetation including 157 ha Excellent, 327 ha Very Good to Excellent and 37 ha Very Good condition in the Northern Jarrah Forest IBRA region.	Contributes to the cumulative clearing of Good to Excellent condition vegetation in the Northern Jarrah Forest IBRA Bioregion.	**Condition A1:** Limit on extent of proposal element: Up to 5,963 ha of native vegetation within the Revised Development Envelope. **B1 Flora and vegetation** **Condition B1:** The Proponent must ensure that the Revised Proposal is implemented in such a manner that the following limitation or maximum extents / capacities / ranges are not exceeded including: Clearing of no more than 528 ha of native vegetation for the Proposal. Clearing of no more than 5,963 ha of native vegetation for the Revised Proposal	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance ▪ Annual land disturbance reporting against approved limits/extents	The potential residual impact of the proposed clearing to cumulative clearing in the Northern Jarrah Forest Bioregion can be managed so that the environmental outcome is consistent with EPA's objective.
Clearing of 528 ha of native vegetation including 157 ha Excellent, 327 ha Very Good to Excellent and 37 ha Very Good condition in the Northern Jarrah Forest IBRA region.	No impacts to regionally significant vegetation (PECs). The representation of locally significant vegetation will be maintained in the local area to an extent that ecological integrity is not threatened.	**Condition B2** The Proponent must implement the Revised Proposal to achieve the objective of no disturbance to the Mount Saddleback Heath Priority Ecological Community.	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance ▪ Annual land disturbance reporting against	The representation of regional vegetation and locally significant vegetation will not be significantly impacted, and the local and regional extent of significant vegetation will be maintained which is consistent with EPA's objective.

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
			approved limits/extents.	
Clearing of 12 significant site vegetation types between 0.2% to 11.3% of their mapped extent of the Wider Survey Area (Table 8-10)	The representation of vegetation types will be maintained in the Northern Jarrah Forest IBRA region.	**Condition A1** Limit on extent of proposal element	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance ▪ Annual land disturbance reporting against approved limits/extents.	The representation of regional vegetation and locally significant vegetation will not be significantly impacted, and the local and regional extent of significant flora will be maintained which is consistent with EPA's objective.
Indirect impacts to flora and vegetation from weeds, forest disease and dust.	No impacts to regionally significant vegetation types G1 and G3, which represent the P1 PEC Mount Saddleback Heath Communities.	**Condition B3** The Proponent shall implement hygiene protocols consistent with the Management of *Phytophthora cinnamomi* for Biodiversity Conservation in Australia, Part 2 National Best Practice Guidelines as amended or replaced from time to time.	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance ▪ Annual land disturbance reporting against approved limits/extents.	The representation of regional vegetation and locally significant vegetation will not be significantly impacted, and the local and regional extent of significant flora will be maintained which is consistent with EPA's objective.
Indirect impacts to flora and vegetation from weeds, forest disease and dust.	No impacts to regionally significant vegetation types G1 and G3, which represent the P1 PEC Mount Saddleback Heath Communities	**Condition B4** The Proponent must implement weed hygiene measures during construction activities and operations to prevent the introduction or spread of environmental weeds in the	Standard management practices: ▪ Internal site disturbance permit process to	The representation of regional vegetation and locally significant vegetation will not be significantly impacted, and the local and regional extent of significant vegetation will be

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
		footprint and in surrounding areas as a result of the Revised Proposal.	manage ground disturbance ▪ Annual land disturbance reporting against approved limits/extents.	maintained which is consistent with EPA's objective.

9 Terrestrial Fauna

9.1 EPA objectives

The EPA objective for Terrestrial Fauna (EPA 2016d) is:

'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained'.

9.2 Relevant policy and guidance

Table 9-1outlines the relevant policy and guidance for Terrestrial Fauna and summarises how this material has been considered for the Revised Proposal.

Table 9-1 Terrestrial Fauna Policy and Guidance

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors and Objectives (EPA 2023a)	This assessment has been conducted based on the EPA's objective for flora and vegetation. The referral considers the EIA goals, evaluates the significance of impacts, and application of the required mitigation hierarchy.
Technical Guidance – Terrestrial Surveys for EIA (EPA 2020b) Technical guidance – Sampling of short-range endemic invertebrate fauna (EPA, 2016f)	Considered in the design (methods and approach) of terrestrial fauna and short range endemic (**SRE**) surveys (previous guidelines were used where surveys were undertaken before current guidelines).
Environmental Factor Guideline: Terrestrial Fauna (EPA 2016d)	This document was considered in the preparation of this section of the referral • Applied the relevant considerations for environmental impact assessment • Identified the values of terrestrial fauna, and their significance • Identified activities that can impact on terrestrial fauna • Considered the links with other environmental factors
Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2024e)	This have been considered in planning for the Part IV approval process and has been used to inform the preparation of this referral.
Instructions on how to prepare an Environmental Review Document (EPA, 2024b)	Forms the basis of the referral headings and content to be provided in in this referral and future ERD submission.
Referral of a proposal under section 38 of the Environmental Protection Act 1986: Instructions (EPA 2024d)	

Policy or Guidance	How the Policy and Guidance has been considered
Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2024c)	This document was considered in the revision of the Terrestrial Fauna Management Plan (**TFMP**), Black Cockatoo Management Plan (**BCMP**) and WFMMP.
Other State or Commonwealth	
Survey Guidelines for Australia's Threatened Mammals (DSEWPC 2011a) Survey Guidelines for Australia's Threatened Birds (DEWHA 2010) Survey Guidelines for Australia's Threatened Reptiles (DSEWPC 2011b)	These documents were used as guidance when undertaking surveys of EPBC listed species and potential survey limitations.
Referral guidelines for 3 WA threatened black cockatoo species: Carnaby's cockatoo, Baudin's cockatoo and the forest red-tailed black cockatoo (DAWE 2022).	Used as guidance to assess and manage EPBC listed black cockatoo species that are likely to be impacted by the Proposal.
Carnaby's Black Cockatoo *(Calyptorhynchus latirostris)* Recovery Plan: Western Australian Wildlife Management Program No. 52 (DPaW, 2013) Forest Black Cockatoo (Baudin's Cockatoo *Zanda baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan, (DEC 2008)	These documents were used as guidance to assess and manage EPBC listed species that may be impacted by the Proposal.
Chuditch (*Dasyurus geoffroii*) National Recovery Plan: Wildlife Management Program No. 54, (DEC 2012b)	
National Recovery Plan for the Woylie (*Bettongia pencillata ogilbyi*): Wildlife Management Program No. 51, (DEC 2012a)	
Relevant EPBC Act listed species specific survey guidelines and protocols.	These documents were used as guidance when undertaking surveys of EPBC listed species and potential survey limitations.
Matters of National Environmental Significance Significant Impact Guidelines 1.1 (DEWHA 2013)	Considered in the impact assessment for MNES fauna.
Environmental Management Plan Guidelines (DCCEEW 2024a)	This document was considered, although not deemed to be relevant to the Flora and Vegetation environmental factor (no environmental management plan has been prepared for flora or vegetation).

Policy or Guidance	How the Policy and Guidance has been considered
WA Environmental Offsets Policy (Government of Western Australia 2011)	Applied avoidance and mitigation measures to the Proposal • Considered cumulative impacts in the regional context in determining significant residual impact • Quantified the preliminary significant residual impact
WA Environmental Offsets Guidelines (Government of Western Australia 2014)	
Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DSEWPaC 2012)	

9.3 Receiving environment

9.3.1 Studies and survey effort

Terrestrial fauna surveys over the RDE and other nearby premises (Worsley) have been completed since 1982. This has provided a comprehensive understanding of the terrestrial fauna that utilise areas in and around the footprint required for this Proposal and RDE. In addition, Phoenix (2025) undertook a desktop review of previous reports, survey data and field survey of the Proposed Habitat Protection Offset. This has provided a comprehensive understanding of the terrestrial fauna that may utilise areas in and around the footprint required for this Proposal. A summary of the key baseline studies undertaken to date relevant to the Proposal and Revised Proposed are summarised in Table 9-2 and the extent shown in Figure 9-1 and Figure 9-2.

Five surveys report on the results of multi-seasonal systematic biodiversity surveys, which included both trapping and habitat searches for fauna. It is important to note that well designed biodiversity surveys that focus on systematic and repeatable collection of data that investigate both spatial and temporal variability, provide substantially more robust data than is possible using other techniques such as single season trapping surveys, targeted surveys for discrete fauna species or site assessments. The methodology employed in these studies was consistent with this approach with only minor alterations including the addition of equipment, such as trail cameras, ultrasonic recorder, as these became available and relevant to the focus of the studies.

A total of five SRE fauna field surveys have been undertaken wholly or partially within the RDE. These surveys comprise three detailed surveys and one desktop survey (Table 9-2). Invertebrate fauna records, including potential and confirmed SRE species records and habitat information have been consolidated from recent and historic surveys within and nearby the RDE and the West Australian Museum (**WAM**) databases.

Reporting in the literature outlined in Table 9-2 includes assessment of the fauna assemblages recorded and encountered during each of the surveys and analyses of data to define the quality of habitats, the use of surveyed habitats by fauna, and the observed seasonal variations in relative abundance of fauna.

Table 9-2 Fauna Surveys

Author and Year	Title	Summary
Terrestrial Fauna		
Phoenix Environmental Sciences Pty Ltd (Phoenix, 2025)	Targeted significant mammal and black cockatoo survey for the Boddington Gold Project Prepared for Newmont Australia Ltd	Phoenix completed targeted significant mammal and black cockatoo survey of the Proposed Habitat Preservation Offset. Five Threatened, one Conservation Dependent (**CD**) and 2 Priority (**P**) species were recorded during the survey, all of which were recorded in the Proposed Habitat Preservation Offset including: ▪ Chuditch (Vulnerable (VU)), ▪ Woylie (Endangered (EN)/Critically Endangered) ▪ South-western Brush-tailed Phascogale (CD), ▪ Quenda (P4) ▪ Western Brush Wallaby (P4) ▪ Baudin's Cockatoo (EN) ▪ Carnaby's Cockatoo (EN) ▪ Forest Red-tailed Black Cockatoo (VU).
Ecologia Environmental 2024a	Newmont Boddington Gold Future Tailings Detailed and Targeted Fauna Assessment	Ecologia undertook a detailed terrestrial vertebrate fauna assessment and targeted significant fauna survey of future tailing storage areas. Additional targeted survey effort extending into the adjacent forest was undertaken to provide context for significant fauna species occupancy and habitat utilisation. Seven significant fauna species were recorded, being Baudin's Black Cockatoo (**BBC**), Carnaby's Black Cockatoo (**CBC**), Forest Red-tailed Black Cockatoo (**FRTBC**), Chuditch, Western Rosella, Brush-tailed Phascogale, Quenda and Western Brush Wallaby.
Ecologia Environmental 2024b	Newmont Boddington Gold Hotham Wind Farm Detailed and Targeted Fauna Assessment.	Ecologia undertook a detailed terrestrial vertebrate fauna assessment and targeted significant fauna survey of the Hotham Wind Farm survey area, with additional targeted survey effort extending into adjacent state forest to provide context for significant fauna species occupancy and habitat utilisation. Nine significant fauna species have been recorded within the survey area during the surveys, including BBC, CBC, FRTBC, Chuditch, Peregrine Falcon, Western Rosella, Brush-tailed Phascogale, Quenda and Western Brush Wallaby.
Biologic Environmental Survey 2023	South32 Worsley Alumina Boddington Mine and Offset Properties – Numbat Habitat Assessment.	The Numbat habitat assessment survey was completed between the 24 and 27 October 2022. Assessed the suitability of the Study Area to support Numbat and calculate habitat quality scores for the EPBC Environmental Offset Policy. Evidence of Numbat presence was recorded near Newmont Boddington Mine, from diggings and scats (confirmed from laboratory analysis). Newmont Boddington Mine received a higher overall habitat score of the localised habitat quality.

Author and Year	Title	Summary
Ecologia Environmental, 2023	Fauna Salvage and Translocation Program: N05 Extension Project	Pre-clearing fauna salvage and relocation survey. Brush-tailed Phascogale and Chuditch relocated.
Phoenix 2023a	Black cockatoo breeding habitat assessment for the Worsley Mine Expansion Project Prepared for South32 Ltd	Phoenix completed black cockatoo breeding habitat assessment of Worsley Primary Assessment Area. Confirmed breeding events are of either FRTBC or CBC. It is considered that BBC may still breed throughout the Primary Assessment Area in low numbers.
Phoenix 2023b	Black cockatoo habitat assessment for the Worsley Bauxite Alumina Project Prepared for South32 Ltd	Phoenix completed regional black cockatoo habitat assessment of the Worsley Primary Assessment Area. FRTBC was the most frequently recorded followed by CBC and BBC. The overwhelming majority of remnant vegetation assessed was considered high quality foraging habitat for all three species.
Ecologia Environment 2022	Newmont Boddington Gold Mine: Fauna Management Plan Extended N05 Preclearing Trapping and Fauna Spotting	Ecologia Environment was commissioned to ensure the clearing program meets established trapping and relocation program criteria, legal and animal ethics requirements and is conducted appropriately prior to timber harvesting and clearing works. Desktop search and risk assessment. Trapping and relocation program updated. Recorded species included BBC, CBC and FRTBC.
BIOSTAT 2021	Worsley Mine Expansion Primary Assessment Area (PAA) Desktop Fauna Assessment.	Desktop Fauna Assessment, terrestrial vertebrate fauna survey and review of the proposed Worsley Mining Development Envelope (**WMDE**). The fauna habitats present in the WDME are typical for the bioregion, representing and dominated by varying form of forest and woodland communities. The majority of the WMDE consists of a mosaic of agricultural and cleared areas.
Ninox Wildlife Consulting 2012a	Vertebrate Fauna Survey Within Newmont Boddington Gold Mine: An Assessment of Potential Waste Rock Disposal Areas.	Level 2 vertebrate fauna survey of the proposed WRD expansion. The survey consisted of ten sampling sites that were sampled over two seasons (autumn and summer) during 2011/2012. Sampling sites comprised three previously sampled locations and seven new sites. Site selection ensured that all major fauna habitats were represented by the sampling sites and some of the 2001–2002 sites that had been affected by a wildfire were also replicated. An ecological baseline study of conservation significant fauna of proposed WRD expansion. The northeastern proposed WRD area had the highest number of significant fauna but all four sections supported a range of significant vertebrate fauna species. Presence of habitat types recorded.

Author and Year	Title	Summary
Ninox Wildlife Consulting 2012b	Vertebrate Fauna Survey within Saddleback Treefarms Area Newmont Boddington Gold Mine: An Assessment of Potential Residue Disposal areas.	Level 2 vertebrate fauna survey conducted over the proposed RDA2 location in Saddleback Treefarm to the northeast of current operations. Sampling continued over two seasons (summer and autumn) 2012. Locations surveyed supported a wide range of vertebrate fauna species, including a number of fauna species of conservation significance that are protected under both Federal and State government legislation. The habitats sampled were relatively undisturbed given that much of the area has been managed as a pine plantation for many years, resulting in corridors and remnants of native vegetation. Remnants supported a substantial proportion of the vertebrate fauna that could be expected to occur as resident species in the area.
Finn 2011	Assessment of habitat values for black cockatoo species within the eastern acquired lands at Newmont Boddington Gold Mine.	Black cockatoo habitat assessment in the area to the east of the Newmont Boddington Mine site (eastern acquired lands). The area was assessed for its value as feeding and breeding habitat for CBC, BBC and FRTBC. Presence of habitat types recorded. All three black cockatoo species were observed within the acquired lands and observations of feeding residues also suggest that all three species use the acquired lands as a feeding habitat. Nesting activity for two species, for CBC and FRTBC was also observed.
Lee et al. 2012	Ecology of Black Cockatoos at a Mine-site in the Eastern Jarrah Marri Forest, Western Australia.	An ecological baseline study of black cockatoos in Newmont Boddington's mining tenements and adjacent areas was undertaken. The study consisted of a general distribution survey and behavioural observations. Connected to School of Biological Sciences & Biotechnology at Murdoch University ongoing studies.
Ninox Wildlife Consulting 2003	The Vertebrate Fauna of the Boddington Gold Mine.	Baseline surveys during autumn, winter and spring of 1984 defining the bird, mammal, amphibian, and reptile species at Boddington (fauna, vegetation, and soil). Additional surveys in 2001 and 2002 additional baseline data for the Newmont Boddington Mine area and to compare species numbers with those recorded in the original 1984 survey. The report includes a summary of data from the original baseline study, a comparison with the new results and a review of conservation significant fauna.
Biota Environmental Sciences 2003	Sotico Pty Ltd Boddington Plantation Expansion – Fauna Assessment	Level 1 desktop fauna assessment in the plantation area which has been identified as the preferred location for the second RDA.

Author and Year	Title	Summary
Environmental Management and Research Consultants 1998	Results and Recommendations of a vertebrate fauna survey conducted for Hedges Gold in the following areas: remnant forest on the Hotham Farm and forest adjacent to the Hedges Gold Mine December 1998.	A fauna survey was conducted on Hotham Farm and areas adjacent to Hedges Gold Mine; to identify areas of important fauna habitat, rare or uncommon species. Investigation for important fauna habitat, rare or uncommon species. Finding of Chuditch, Brush-tailed Phascogale and Quenda. Observation of BBC and Peregrine Falcon.
Short Range Endemics (SRE)		
Bennelongia Environmental Consultants (Bennelongia) 2024a	Future Tailings - Boddington Gold Short-Range Endemic Fauna Survey Report.	A single season targeted SRE invertebrate fauna survey completed in September 2023. Covered the RDE and Approved Proposal as well as a desktop assessment to identify possible SRE taxa and habitats within the RDE. Two Confirmed SRE and three Likely Potential SRE species were recorded.
Bennelongia 2024b	Hotham Wind Farm - Boddington Gold Short-Range Endemic Fauna Survey Report.	A single season targeted SRE invertebrate fauna survey completed in September 2023. Covered the proposed Hotham Farm Wind Farm as well as a desktop assessment to identify possible SRE taxa and habitats within the RDE. Two Confirmed SRE and five Likely Potential SRE species were recorded.
Phoenix 2023c	Four-phase short-range endemic invertebrate fauna survey for the Worsley Mine Expansion Project.	Phoenix completed a series of Level 2 SRE surveys for the Worsley Alumina Revised Proposal, as follows: • Two-phase survey of the CBME in 2019 • Single phase survey of the WMDE and BTC in 2019 • Two-phase regional survey in 2020 • Two-phase survey of rehabilitated areas within the Saddleback mining area in 2020 This report presents the results of all of these surveys, as well as the SRE taxa identified through several key desktop data sources. As the largest SRE survey of the Northern Jarrah Forest bioregion, the study unveiled a diverse assemblage of taxa with a total of 141 taxa from field survey, comprising of 108 (77%) SRE taxa and 33 (23%) non-SRE taxa. Furthermore, many new and Potential SRE taxa were recorded. When considering all survey results and records available from desktop searches, but excluding the 12 unresolved taxa, 21 SREs have been recorded solely from the Primary Assessment Area.
Outback Ecology Services 2012	Terrestrial Short-ranged Endemic Invertebrate Fauna Baseline Survey	SRE invertebrate field survey as well as a desktop assessment to identify possible SRE taxa and habitats within the RDE.

Author and Year	Title	Summary
	for the Boddington Gold Mine.	From the perspective of habitats that have the potential to support SREs, Outback Ecology Services (2012) concluded that granite outcrops and Melaleuca swampland habitats had a High potential, Allocasuarina and Wandoo woodland had a High potential and the remaining habitats had a Low potential, based on a similar analysis.
Phoenix 2012	Level 2 short-range endemic (SRE) invertebrate survey for the Worsley Primary Bauxite Area Expansion Project.	In 2011 and 2012, Phoenix undertook spring and autumn SRE invertebrate fauna surveys for the Worsley Primary Bauxite Area focusing on the Boddington Bauxite Mine operations. A total of 21 taxa in at least 13 genera from 13 families and six Orders (comprising 368 individuals) were recorded. Five taxa were considered Confirmed SREs, all millipedes. Two species were considered Likely SREs (Potential SRE), both sucking millipedes and a further 15 taxa were considered potential SREs (Potential SRE), under Phoenix' 2012 SRE classification system.

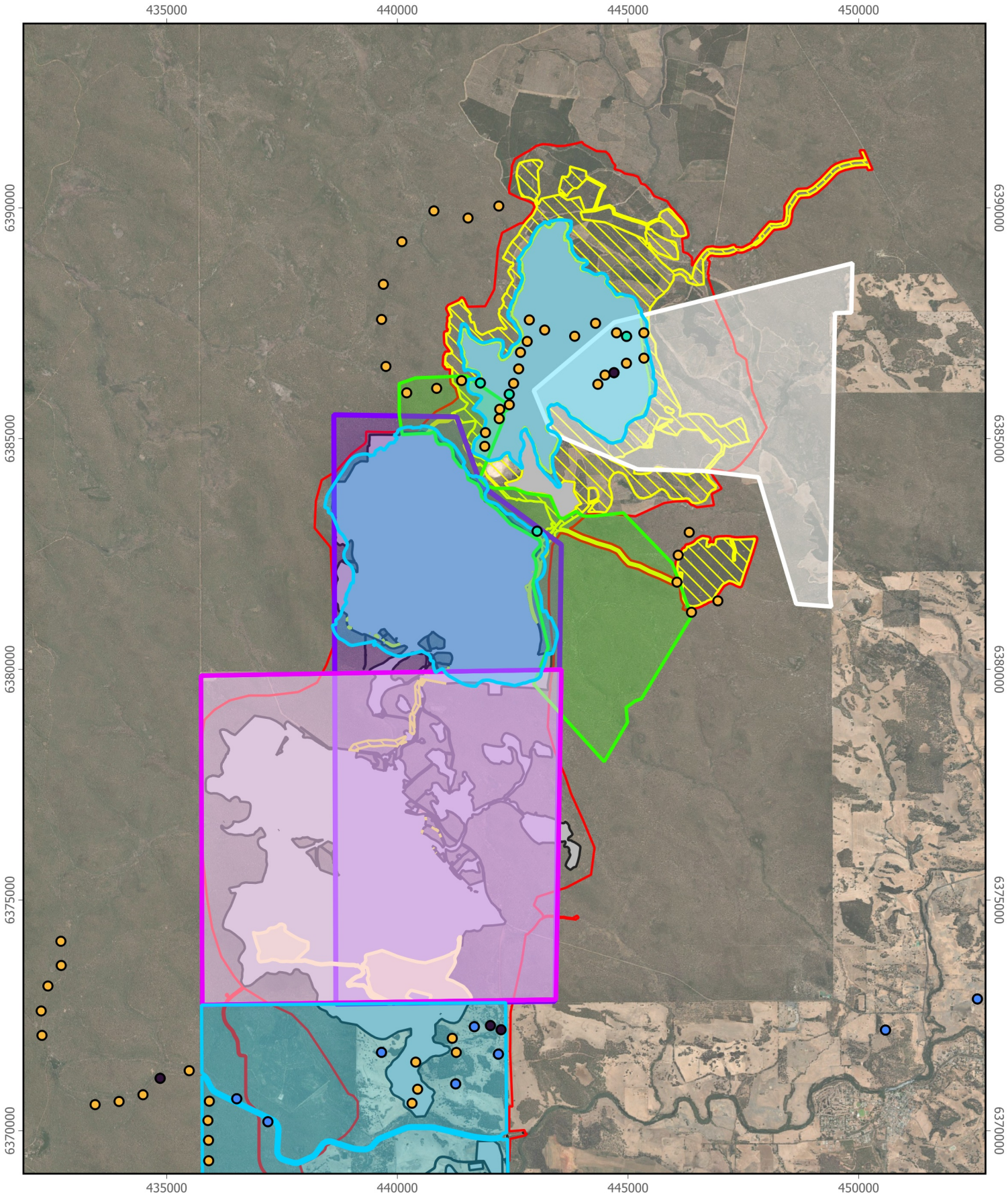


Figure 9-1 Fauna Survey Locations

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Survey Sites (2023)

- Active search
- Autonomous Recording Unit
- Bat detector
- Systematic Bird Survey
- Camera trap
- Systematic trapping site

Surveyed Areas

- Pre-2000
- 2002-2013
- 2012-2013
- 2018-2019
- 2016-2017
- 2023

N

0 1 2 km

Scale @A4 1: 110000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Ecologia Environment (2023), South32 (2021)
Imagery Esri Satellite

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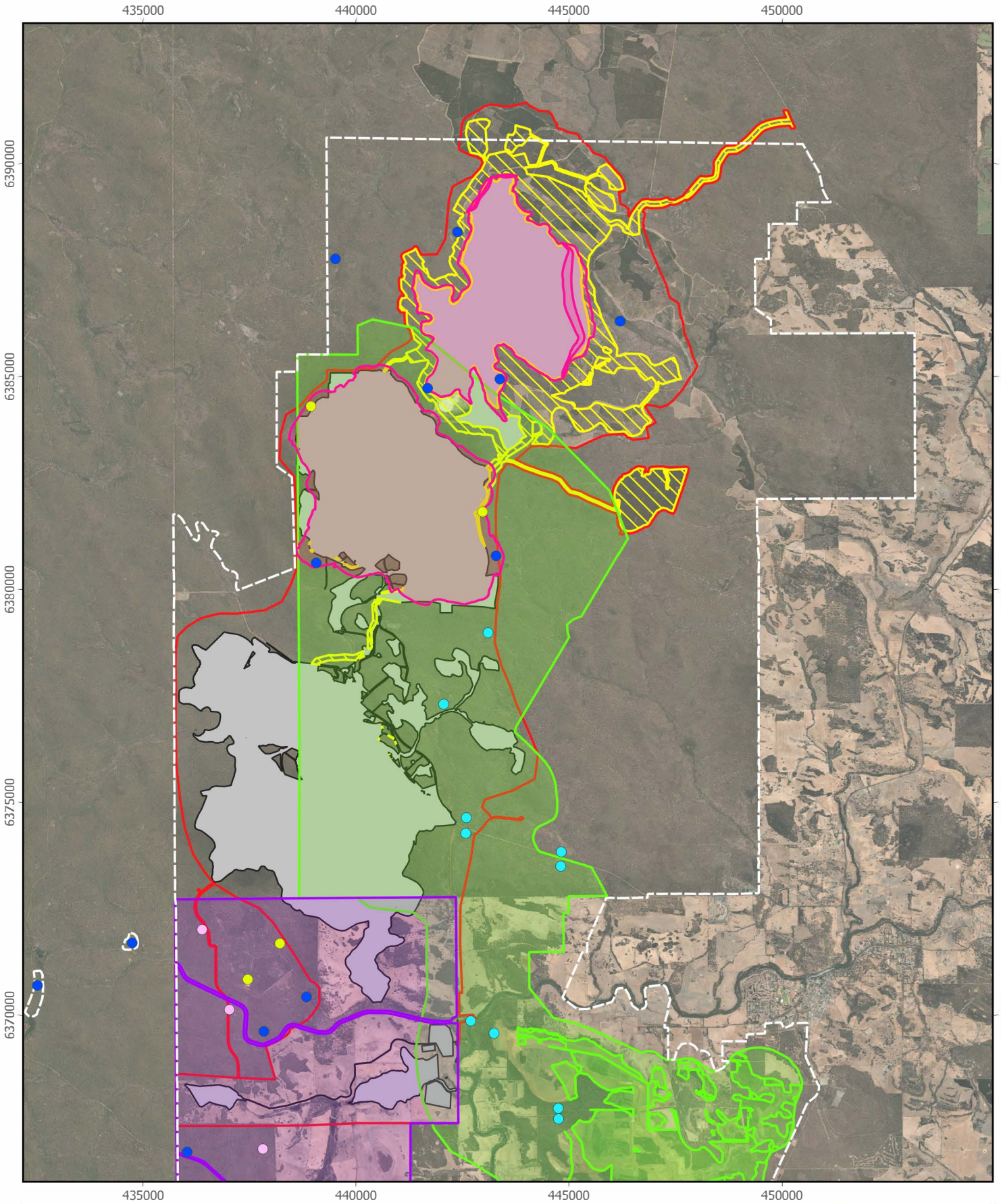


Figure 9-2 Short Range Endemic Species Survey Locations including Wider Survey Area

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Surveyed Areas

- Bennelongia (2024)
- Bennelongia (2024)
- Phoenix (2021a)
- Wider Survey Area

Survey Sites

- Forage
- Habitat
- Trapping
- Wet pitfall trap

N

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Phoenix Environmental Sciences (2021), Bennelongia Environmental Consultants (2024), Mattiske (2024)
Imagery Esri Satellite

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9.4 Fauna habitat mapping

Vegetation mapping by Mattiske (2024) was used to define and delineate broad fauna habitats across the footprint required for this Proposal and RDE. Habitat mapping also made use of the following data sources:

- Heddle et al. (1980) vegetation complexes (Mattiske and Havel 1998)
- Previous Phoenix vegetation and habitat mapping (Phoenix 2023a, 2023b, 2023c), and
- Land Systems (geology, landform, soils, vegetation) (Payne & Leighton 2004).

Fauna habitats are grouped on similar vegetation structure and landscape positions and may be composed of several vegetation communities as recognised in the vegetation assessment of the area by Mattiske (2024).

Based on the same principles presented above, each fauna habitat was then rated for its potential to support SRE Potential Habitat Rating as follows:

- High – defined/known areas of habitat that contain elements that often give rise to specialisation or dependency in invertebrate fauna, such as aspect (e.g., south-facing slopes, deeply incised gullies), geological features (e.g., granite), soil types that retain water (e.g., clay, loam)
- Low – areas of largely intact native vegetation that occur broadly across the landscape, are less incised and typically link more restricted habitats. This includes land that was cleared but has since been rehabilitated or is in the process of being rehabilitated, and
- None – land that has been previously cleared for other uses that no longer contains native vegetation.

9.4.1 Fauna habitats

Fauna habitats identified and mapped in the footprint required for this Proposal and within the RDE broadly align with those described in previous surveys for of the Approved Proposal (Ecologia, 2024a) and historical surveys Ninox Wildlife Consulting (2003, 2012a), and are typical of the land systems and the broader southwest region of WA (Phoenix 2025).

Fourteen broad scale remnant habitat types were identified in the footprint required for this Proposal and RDE during the desktop review (Phoenix 2023a, 2023b, 2023c) (Table 9-3, Figure 9-3). The dominant habitat within the footprint required for this Proposal include Jarrah/Marri woodland, Jarrah/Marri/Allocasuarina woodland and Wandoo woodland. At the finer-scale, additional fauna habitats were identified that are associated with either the valley floors dissecting the uplands, the exposed granite formations, and modified landscapes for plantations or artificial water sources.

Jarrah/Marri Forest provides a wide range of microhabitats for terrestrial vertebrate fauna, including tree hollows, leaf-litter, woody debris and rocky substrates. This habitat type supports important foraging, roosting and nesting/denning habitat for a range of terrestrial vertebrate fauna taxa including all three species of black cockatoo.

Generally, most upper slope and ridge jarrah/marri communities (JC/JM) are found on rockier soils and have a lower tree layer characterised by the presence of Bull Banksia (*Banksia grandis*) with an understorey of low shrubs and native grasses (BIOSTAT 2021). Where they occur on mid and lower slopes (JM/JC/DL), these communities tend to be located on soils with a higher organic content and a relatively denser shrub understorey (BIOSTAT 2021). The presence of sheoak (*Allocasuarina fraseriana*) is an important landscape characteristic for these jarrah/marri communities as it is a food resource for black cockatoo species and Phascogales (BIOSTAT 2021).

Wandoo woodland is comprised of small patches of Eucalyptus wandoo and *Eucalyptus rudis*, with minor drainage lines and creeks on valley floors. Hollow bearing eucalypts and other microhabitats present within

this habitat type provide important refugia for arboreal mammals and significant avifauna taxa, while woody debris provides foraging opportunities and shelter for nonvolant mammal species (Ecologia 2024a).

Heaths and perched heaths occur as isolated patches. These vary from dense low shrubland to sparsely treed open shrubland. Heaths can offer a refuge for fauna due to their extended moisture retention (BIOSTAT 2021). Heaths containing eucalypts and proteaceous species can also be a foraging resource for all three species of black cockatoo.

A review of survey literature and broad-scale vegetation mapping in the southwest of WA by Mattiske and Havel (1998) indicate habitats of limited extent within the Proposal Footprint including Heathland and Melaleuca shrubland occur across the broader landscape, including within the footprint required for this Proposal (Ecologia 2024a). Heathland appear locally associated with the exposed granitic outcropping which is typical of the Quindanning land system in the northern and central Eastern Darling Range or spatially confined to the valley floors dissecting the uplands of the ranges, respectively (Phoenix 2025).

Riparian and wetland vegetation varies from ephemeral depressions to longer lived creek systems, which feed into valley floor depressions surrounded by thickets of water dependent vegetation. Drainage systems may be more open with low fringing vegetation and dense shrubland and/or sedge communities (BIOSTAT, 2021). Vegetation communities along tributaries ranges from melaleuca woodlands and heaths to flooded gum and blackbutt woodlands. These occur in lower slopes and valleys in the landscape. The riparian areas of Hotham River are outside the footprint required for this Proposal.

Plantation habitat type accounts for most of the footprint required for this Proposal and within the RDE to be cleared (Table 9-3). This area is an active plantation subjected to regular clearing activities and plantation areas may be either vegetated or cleared at any given point in time. The plantation crop inside the footprint required for this Proposal is expected to be harvested prior to the Proposal commencing. Although plantation habitat generally lacks the diversity of microhabitats and refugia found within native vegetation, planted pine trees and eucalypts may provide foraging and perching opportunities for black cockatoos and other avifauna species (Ecologia 2024a).

Approximately 109 ha of the footprint required for this Proposal was mapped as cleared and does not provide suitable habitat for fauna (Table 9-3).

Fauna habitat quality is affected by factors including logging, fire and dieback presence. Areas that have been recently logged often have a thicker understorey which can provide refuge for small terrestrial fauna. Fires can also affect the presence of hollows and fallen logs that provide shelter and habitat for species such as Numbats.

435000 440000 445000 450000

6390000 6385000 6380000 6375000 6370000

Figure 9-3 Fauna Habitats

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Fauna Habitat Types

- BB - Blackbutt woodlands on lower slopes
- CL - Cleared lands
- Dam - Dam
- DL - Marri/jarrah on lower slopes
- FD - Mosaic of marri/jarrah on lower slopes and flooded gum riparian communities
- FG - Flooded gum woodlands riparian communities
- JC - Jarrah/marri/Allocasuarina (sheoak) woodlands on slopes and ridges
- JM - Jarrah/marri woodlands on slopes
- JS - Jarrah/marri valley floors and swamps
- ML - Low eucalyptus woodland over low shrubs
- MS - Melaleuca shrublands on seasonally wet valley floors
- PL - Plantations
- RE - Rehabilitation
- WO - Wandoo woodlands
- PH - Heaths including perched heaths
- MW - Flooded gum/melaleuca shrublands on seasonally - wet valley floors

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2025), Mattiske (2024)
Imagery Esri

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9.4.2 Short range endemic fauna habitats

High potential habitat ratings for SRE are associated with habitat attributes that often give rise to specialisation or dependency in invertebrate fauna, particularly more mesic habitats on lower slopes and valley floors and isolated granite outcrops (Phoenix 2023c). These represented a total of 1863 ha in the RDE and 339 ha in the footprint required for this Proposal (Table 9-3 and Figure 9-11)

9.4.3 Habitat linkages and movement corridors

Corridors and remnant vegetation are recognised as critical components for fauna in fragmented landscapes as they allow species diversity and ecosystem function to be maintained. The connectivity of habitats within a landscape reduces the risk of genetic and physical isolation of fauna populations through species movement and dispersal. The extent and quality of remnants and corridors is known to influence the conservation values of a landscape.

The key axis for connectivity in the RDE is the connectivity between the areas to the east and west of Newmont Boddington Mine. There is almost contiguous vegetation creating informal fauna linkages across the RDE that occur between the operational tailings dams and active mining areas and currently north of the tailings facilities (Figure 9-3). Worsley has received approvals MS1237 and EPBC 2019/8437 to conduct bauxite mining operations in and around the Newmont Boddington Mine. It is understood Worsley has committed to the preservation of ecological corridors through this area to maintain connectivity between the state forest to the west and the remnant native vegetation to the east of the operations. Newmont Boddington has committed to preserving these corridor areas wherever possible, especially where these do not intersect with disturbance approved for Newmont Boddington Mine under MS971 and EPBC 2012/6370.

Table 9-3 Terrestrial fauna habitat types within the RDE

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
Blackbutt woodlands on lower slopes	BB	CQ, CW, L, LG, Q, W	Open Eucalyptus woodlands(wet) on sands, clay loam or sandy-gravel on lower slopes and valley floors.	Provides a complex habitat structure with hollow-bearing trees, fallen logs and understorey cover essential for shelter, and contributed to prey availability.	High Value. Residual seasonal moisture combined with leaf litter provides humid, microclimates for SRE.	66	8
Flooded gum woodlands riparian community	FG	AC, AD, AX, AY	Open Eucalyptus woodlands(wet) on sands, clay loam or sandy-gravel on lower slopes and valley floor.	Hollow-bearing trees provide nesting spaces for conservation significant bird species.	High Value. Support a variety of shrubs and trees along the banks. These trees have litter at their base with occasional fallen logs which provide microhabitats for SREs.	480	9
Melaleuca woodland/shrubland on seasonally wet or water-logged clays and clay-loams on valley floors.	MS	A, A1	Tall shrubland of *Melaleuca lateritia, M. viminea, M. incana subsp. incana* and *Hakea varia* on clay-loams on seasonally wet valley floors. Seasonally inundated areas or permanent water-logged, lowlying swamps and depressions. Dominated by Melaleuca	The Hakea sp. provide potential foraging habitat for BBC and CBC. May provide suitable dispersal habitat for Quokka and Rakali. Melaleuca shrubland include a dense understory for refuge and a seasonal water source for fauna.	High Value. Taller vegetation providing microhabitats under bark, fallen logs and in deep complex leaf litter. Residual seasonal moisture combined with leaf litter provides humid, microclimates.	293	8

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
			woodlands and scattered areas of shrubland.				
Melaleuca, E. rudis Woodlands on seasonally wet valley floors	MW	A2, A3	Eucalyptus rudis and melaleuca typically occurring on seasonally wet valley floors	Suitable habitat for Quokka, Rakali, potential foraging habitat for Carnaby's Black Cockatoo (CBC), Baudin's Black Cockatoo (BBC) (Hakea sp.).	High Value. Vegetation provides microhabitats under bark, fallen logs and in leaf litter. Residual seasonal moisture combined with leaf litter provides humid, microclimates.	9	1
Marri/jarrah on lower slopes	DL	D, DG, SW	Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) forests on lower slopes.	Provides suitable habitat for Chuditch, Quenda, South-western Brush-tailed Phascogale, Western Brush Wallaby, Woylie, Numbat, Red-tailed Phascogale, Western Ringtail Possum, CBC, Forest Red-tailed Black Cockatoo (FRTBC) and BBC.	High Value. Provide high value habitat as they contain suitable moisture and shade for SREs. Leaf litter at the base of trees and shrubs provide suitable microhabitats.	271	28
Jarrah/marri/ *Allocasuarina* (sheoak) woodlands on slopes and ridges.	JC	P, PS, PW, S, SP, ST	Open to closed forest/woodland of Jarrah/Marri with variable proportions of Allocasuarina on slopes.	Provides suitable habitat for Chuditch, Quenda, South-western Brush-tailed Phascogale, Western Brush Wallaby, Woylie, Numbat, Red-tailed Phascogale, Western False Pipistrelle,	Low Value. Provides limited value to SREs due to lack of shelter and limited microhabitats.	2552	242

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
				Western Ringtail Possum, CBC,FRTBC and BBC.			
Jarrah/marri woodlands on slopes	JM	E, H, H1, H2, HG, J, O, R, T, TS, Z	Open to closed forest/woodland of *Eucalyptus marginata* and *Corymbia calophylla* with admixtures of *E. wandoo, E. rudis, E. accedens, Allocasuarina fraseriana* and *A. humilis* over *Banksia grandis, B. littoralis, B. s. subsp. squarrosa, Persoonia longifolia, A. celastrifolia, A. alata, Trymalium ledifolium, Macrozamia riedlei, Hakea lissocarpha, H. undulata, H. prostrata, Petrophile striata, Daviesia decurrens, D. longifolia, D. rhombifolia, D. preissii, H. angustifolium, Hovea chorizemifolia, Adenanthos barbiger, Phyllanthus calycinus, Lepidosperma squamatum, Leucopogon*	Jarrah/Marri woodland provides a complex habitat structure with hollow-bearing trees, fallen logs and understorey cover essential for shelter, and contributed to prey availability. Chuditch, Quenda, South-western Brush-tailed Phascogale, Western Brush Wallaby, Woylie, Numbat, Red-tailed Phascogale, Western False Pipistrelle, Western Ringtail Possum, CBC, BBC and FRTBC.	Generally low value, except for south facing slopes which provide high value habitat as they contain suitable moisture and shade for SREs.	1385	189

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
			capitellatus, Grevillea bipinnatifida, Babingtonia camphorosmae, P. ellipticum, Lasiopetalum cardiophyllum and *Styphelia tenuiflora* on (seasonally moister) sandy-loam, sandy gravels and clay-loams on slopes and ridges overlying areas of shallow granite outcropping.				
Low eucalyptus woodland over low shrubs	ML	G4, G5	Mixed Eucalyptus woodlands (wet) on sands, clay-loam or sandygravel on lower slopes and valley floors.	Provides suitable habitat for Chuditch, Quenda, South-western Brush-tailed Phascogale, Western Brush Wallaby, Woylie, Quokka, Rakali, Red-tailed Phascogale, Western False Pipistrelle, Western Ringtail Possum, CBC, BBC and FRTBC.	High value. vegetation providing microhabitats under bark, fallen logs and in leaf litter.	5	0.0
Wandoo woodlands	WO	M, M2, MG, Y, YG	Open woodland of *Eucalyptus rudis* and *Eucalyptus wandoo* over *Acacia saligna, Hakea prostrata* and *Hypocalymma*	Provides suitable habitat for Chuditch, Quenda, South-western Brush-tailed Phascogale, WesternBrush Wallaby, Woylie, Numbat,Red-tailed	High Value. Taller vegetation providing microhabitats under bark, fallen logs and in leaf litter.	699	42

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
			angustifolium on clay-loams on valley floors.	Phascogale, Western False Pipistrelle, Western Ringtail Possum, CBC, FRTBC and BBC. Encompass a wide range of microhabitats for terrestrial vertebrate fauna, including tree hollows, leaf-litter, woody debris and minor drainage lines. Hollow bearing eucalypts and other microhabitats present within this habitat type provide important refugia for arboreal mammals and significant avifauna taxa, while woody debris provides foraging opportunities and shelter for non-volant mammal species.			
Heaths including perched heaths	PH	G, G1, G2, G3	Open heath-dominated assemblage of *Banksia squarrosa subsp. squarrosa, Hakea incrassata, H. undulata, H. trifurcata, Petrophile heterophylla, P. serruriae*	Mixed shrubland with scattered eucalypts offering a range middle and lower storey habitats. Heathland provides rocky (granitic) outcrops and dense vegetation that	High Value. Contain a complex and diverse set of microhabitats such as leaf litter, outcropping rocks and shrubs and trees which provide shade, moisture and protection.	39	2

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
			and *Synaphea damopsis* with occasional emergent mallee species including *Eucalyptus latens, E. drummondii, E. aspersa, E. longicornis, E. wandoo* with mixtures of *Allocasuarina humilis* and *A. huegeliana* on shallow clay-loam to loam soils over granite outcrops on slopes.	provide shelter and alternative denning/refuge sites for fauna. Provides suitable habitat for Chuditch, Quenda, Western Brush Wallaby, Woylie, as well as FRTBC, CBC and BBC (mostly foraging).			
Rehabilitation	RE	RE	Areas of regenerating native vegetation. Substrate previously ripped to promote growth. These areas are dense and lack mature, old-growth canopy.	May provide dispersal habitat Quenda, Western Brush Wallaby, as well as foraging habitat for BBC and CBC. Includes dense understory for protection and contributes to landscape connectivity, facilitating movement between key habitat areas and supporting long-term population stability.	Low value. Provides limited value to SREs due to low complexity, lack of shelter and limited microhabitats.	414	0.0
Plantations	PL	PL	Plantation and planted trees of pine and	Pine and eucalypt plantations and harvested areas. These areas provide	Low value. Provides limited value to SREs due to low	2396	923

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
			eucalypts on agricultural land.	foraging resources for FRTBC, BBC and CBC however, they are subject to regular harvesting and do not necessarily represent an ongoing foraging resource for these species.	complexity, lack of shelter and limited microhabitats.		
Dam	Dam	Dam	Artificial dams and water sources.	Potentially suitable habitat for Rakali. Dams provide a permanent source of water for the local fauna assemblage, supports prey diversity and richness, and contributes to overall ecosystem stability.	Low value. Provides limited value to SREs due to low complexity, lack of shelter and limited microhabitats.	163	0
Cleared lands	CL	CL	Areas cleared of almost all native vegetation. Land use consists of agricultural activities, vehicle tracks and associated infrastructure.	Not considered suitable habit for conservation significant fauna.	None. Not considered suitable habit for SRE.	5410	109

Habitat Type	Fauna Habitat Code	Site Vegetation Type Code(s)	Description	Value to significant fauna	Value to SRE invertebrate fauna	Extent within RDE (ha)	Extent within footprint required for this Proposal (ha)
Total area						**14,182**	**1560**
Total area of native fauna habitat							**528**

9.5 Significant vertebrate fauna

9.5.1 Conservation significant fauna

For the purposes of this assessment conservation significant fauna refers to fauna listed under the EPBC Act and BC Act Threatened and Priority.

Table 9-5 presents EPBC Act listed Threatened and Migratory and BC Act Threated and Priority species identified in a PMST and Threatened and Priority Fauna Database searches within 10 km.

A desktop likelihood of occurrence was completed by reviewing the following:

- Suitability and preference of fauna habitats known to exist within the RDE and the footprint required for this Proposal
- Distribution of previously recorded listed species
- Frequency of occurrence of listed species records in the Northern Jarrah Forest Region
- Detectability of listed species based on specific behavioural and ecological characteristics, and
- Temporal distribution of listed species records, taking previous surveys into consideration.

Listed conservation significant fauna were assigned likelihood of occurrence based on the categories shown in Table 9-4. In line with the precautionary principles, the level of available information was considered for each species to prevent the species been allocated a low likelihood due to lack of survey information.

Twenty five vertebrate species of significance have been recorded within the broader survey (BC Act/ EPBC Act/ DBCA conservation listing) (Table 9-5,Figure 9-4). Significant fauna species previously recorded within the RDE include:

- Woylie (EPBC Act Endangered, BC Act Critically Endangered)
- Numbat (EPBC and BC Act Endangered)
- Baudin's Black Cockatoo (EPBC and BC Act Endangered)
- Carnaby's Black Cockatoo (EPBC and BC Act Endangered)
- Forest Red-tailed Black Cockatoo (EPBC and BC Act Vulnerable)
- Chuditch (EPBC and BC Act Vulnerable)
- Western Rosella (inland species) (DBCA Priority 4)
- Quenda (DBCA Priority 4)
- Western Brush Wallaby (DBCA Priority 4)
- Rakali/ Water Rat (DBCA Priority 4)
- Dell's Skink (DBCA Priority 4)
- Brush-tailed Phascogale (BC Act – CD- Conservation Dependent).
- Red-tailed Phascogale (EPBC – Vulnerable- BC Act – CD- Conservation Dependent)
- Peregrine Falcon (BC Act – OS – otherwise in need of special protection)
- Blue-billed Duck (DBCA Priority 4), and
- Western False Pipistrelle (DBCA Priority 4).

Significant fauna species recorded in the RDE and their likelihood of occurrence within the footprint required for this Proposal are described in detail below.

A further ten significant fauna species were identified as possibly occurring from database searches. These species are considered to have a low likelihood of occurring within the RDE and are not discussed further.

Table 9-4 Likelihood of Occurrence Categories

Likelihood	Description
High	The species has been recorded near or in the project area in the recent past and preferred viable habitat is present
Moderate	The species has been recorded in the general area (i.e. Within the PMST search area) in the past and/or preferred viable habitat is present
Low	The species has not recorded in the general area (i.e. Within the PMST search area).
Unlikely	Preferred habitat for the species does not appear to be present, the species may be vagrant in the area
Extremely Unlikely	There is no suitable habitat present within the project area and the species is known to be locally extinct
Recorded	The species was observed during surveys

Table 9-5 Desktop likelihood assessment of conservation significant fauna in the RDE

Species	Common Name	Conservation Status		Likely Habitat Use within the RDE	Likelihood of Occurrence within the RDE
		EPBC Act	BC Act/ DBCA		
Birds					
Astrichornis clamosus	Noisy Scrub-bird	EN	EN	PH, BB, FG	Unlikely. Prefers dense heath and thickets which are rare in the RDE.
Botaurus poiciloptilus	Australasian Bittern	EN	EN	FG, MS, MW, Dam	Low to unlikely. Prefers permanent and ephemeral wetland which are rare in the RDE.
Calidris ferruginea	Curlew Sandpiper	CR, Mi	VU, Mi	BB, FG, MS, MW, PH, Dam	Low to unlikely. Shorebird species common in coastal mudflats.
Calyptorhynchus naso banksia	Forest Red-tailed Black Cockatoo	VU	VU	Breeding: DL, JM, JS, JC Foraging: DL, FG, PH, MS, JC, JM, WO, RE	High – Recorded. Known to feed in the RDE and breed in surrounding areas.
Falco peregrinus	Peregrine Falcon		OS	All	High. Wide-ranging species with large home ranges and diverse habitat use.
Leipoa ocellata	Malleefowl	VU	VU	FD, FG, DL, JC, JM, ML, WO	Low to unlikely. Not historically known from Jarrah Forest. Populations occur in lower rainfall areas.
Oxyura australis	Blue-billed Duck		P4	Dam	High. Present in wetlands and open water systems. Prefers deep water bodies.

Species	Common Name	Conservation Status		Likely Habitat Use within the RDE	Likelihood of Occurrence within the RDE
		EPBC Act	BC Act/ DBCA		
Numenius madagascariensis	Eastern Curlew	CR, Mi	VU, Mi	BB, FG, MS, MW, PH, Dam	Low to unlikely. Primarily marine species. Inhabits mudflats and sandflats.
Platycercus icterotis xanthagenys	Western Rosella (inland species)		P4	JC, JM, DL, WO	High – Recorded. Found in drier woodlands with a heath understorey.
Rostratula australis	Australian Painted Snipe	EN	EN	BB, FG, MS, MW, PH, Dam	Low to unlikely. Recorded in wetlands and lakes. May occur on Hotham River.
Zanda baudinii	Baudin's Black Cockatoo	EN	EN	Breeding: N/A Foraging: MS. FG. JC, JM, WO, RE	High – Recorded. Foraging habitat present in the RDE. Frequently recorded.
Zanda latirostris	Carnaby's Black Cockatoo	EN	EN	Breeding: FG, DL, BB, JC, JM, WO Foraging: FG, JC, JM, MS, WO, RE	High – Recorded. Known to feed in the RDE and breed in surrounding areas.
Mammals					
Bettongia ogilbyi	Woylie	EN	CR	WO, JC, JM	High- Recorded. Wide but patchy distribution in Jarrah Forest.
Dasyurus geoffroii	Chuditch	VU	VU	BB, FG, DL, JC, JM, WO	High – Recorded. Inhabits forest and woodland in the RDE.
Falsistrellus mackenziei	Western False Pipistrelle		P4	BB, DL, FG, JC, JM, MS, MW, PH, RE, WO	Moderate. Tends to occur further south. Commonly roost in tall, mature forests of high rainfall Jarrah, Karri and Tuart.

Species	Common Name	Conservation Status		Likely Habitat Use within the RDE	Likelihood of Occurrence within the RDE
		EPBC Act	BC Act/ DBCA		
Hydromys chrysogaster	Rakali (native water rat)		P4	BB, FG, JS, MS, MW, Dam	High – Recorded. Associated with riparian systems and permanent water. Recorded in the Hotham River.
Isoodon fusciventer	Quenda		P4	JC, JM, DL, BB, FG, MS, MW, PH, RE	High – Recorded. Not habitat specialists. Common in the RDE and surrounds.
Myrmecobius fasciatus	Numbat	EN	EN	WO, JM, JC, DL, ML	High – Recorded. Recorded from one scat and scratching to the south of RDA F1/F3. Records are patchy and are not considered to represent a resident population.
Notamacropus eugenii derbianus	Tammar Wallaby		P4	JC, JM, DL, WO	Low. Restricted to the South Coast and forest areas such as Dryandra. No recent records in RDE.
Notamacropus Irma	Western Brush Wallaby		P4	JC, JM, DL, BB, FG, MS, MW, PH, RE	High – Recorded. Common in woodland systems, heaths and rehabilitated areas.
Phascogale calura	Red-tailed Phascogale	VU	CD	JM, JC, WO, DL	Low. No records in immediate vicinity. Prefers long unburnt areas.
Phascogale tapoatafa wambenger	Brush-tailed Phascogale		CD	JC, WO, JM, DL	High – Recorded. Associated with Jarrah/Marri and Wandoo habitats in RDE.

Species	Common Name	Conservation Status		Likely Habitat Use within the RDE	Likelihood of Occurrence within the RDE
		EPBC Act	BC Act/ DBCA		
Pseudocheirus occidentalis	Western Ringtail Possum	CR	CR	BB, JC, JM	Unlikely. Drier Northern Jarrah Forest is not considered suitable habitat.
Setonix brachyurus	Quokka	VU	VU	BB, JC, JM	Unlikely. Not common to the east of the Darling Range.
Reptiles					
Ctenotus delli	Dell's Skink		P4	WO, JM, JC	High – Recorded. Occurs in jarrah and marri woodlands with a shrubby understorey.

435000 440000 445000 450000

6390000 6385000 6380000 6375000 6370000

Figure 9-4 Conservation Significant Fauna Records

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Fauna Records

- Baudin's Black Cockatoo (*Zanda baudinii*) - EN
- Carnaby's Black Cockatoo (*Zanda latirostris*) - EN
- Woylie (*Bettongia penicillata ogilbyi*) - EN
- Numbat (*Myrmecobius fasciatus*) - EN
- Chuditch (*Dasyurus geoffroii*) - VU
- Red-tailed Phascogale (*Phascogale calura*) - VU
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) - VU
- Rakali (*Hydromys chrysogaster*) - P4
- Dell's Skink (*Ctenotus delli*) - P4
- Western brush wallaby (*Notamacropus irma*) - P4
- Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) - CD
- Peregrine falcon (*Falco peregrinus*) - OS

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2025), Phoenix (2025), Ecologia (2022, 2023), BIOSTAT (2021)
Imagery Esri

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Woylie

Ecology, Habitat and Distribution: The Woylie (*Bettongia penicillata ogilbyi*) has been experiencing a population decline in the south-west region of Western Australia since European settlement. This has been attributed to the introduction of the fox and disease, but fox control measures have resulted in a slowdown in its decline (Woinarski et al. 2014).

The Woylie is a cryptic species that are often difficult to detect effectively, due in part to their patchy distribution in landscapes. However, they are also generally not trap-shy and are trapped relatively easily where they occur. The presence of Woylie in the RDE has been known from field surveys since 2012, where individuals were trapped from Newmont Boddington in Wandoo woodland habitats to the east of the mine pit (Ninox 2012a). The targeted survey in 2019 recorded this species in an area to the north of previous locations in jarrah/marri (JM) and jarrah/marri/Allocasuarina (JC) complexes (BIOSTAT 2021). These Woylie records are within 1 km of the Newmont Boddington Mine. Pre-clearance trapping for Newmont Boddington undertaken from January to March 2023 did not capture any Woylie (Ecologia 2023).

Woylie have been recorded within 0.5 km of the footprint required for this Proposal. The population at Newmont Boddington is believed to be a remnant of the reintroduction programme in the 1990s as part of Operation Foxglove. The key Woylie populations are the four distinct populations at Dryandra Woodland, Tutanning Nature Reserve, Perup and Kingston (DEC 2012a). Woylie populations also have also been established within fenced wildlife sanctuaries including Whiteman Park and Karakamia.

Studies by BIOSTAT (2021) indicate the Woylie has only been identified as a population in the area north of the Hotham River in contiguous forest habitat surrounding Newmont Boddington Mine. While preferred suitable habitat exists further south, the species is only likely to be present in a portion of this habitat.

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable denning, foraging and dispersal habitat (Table 9-5, Figure 9-5).

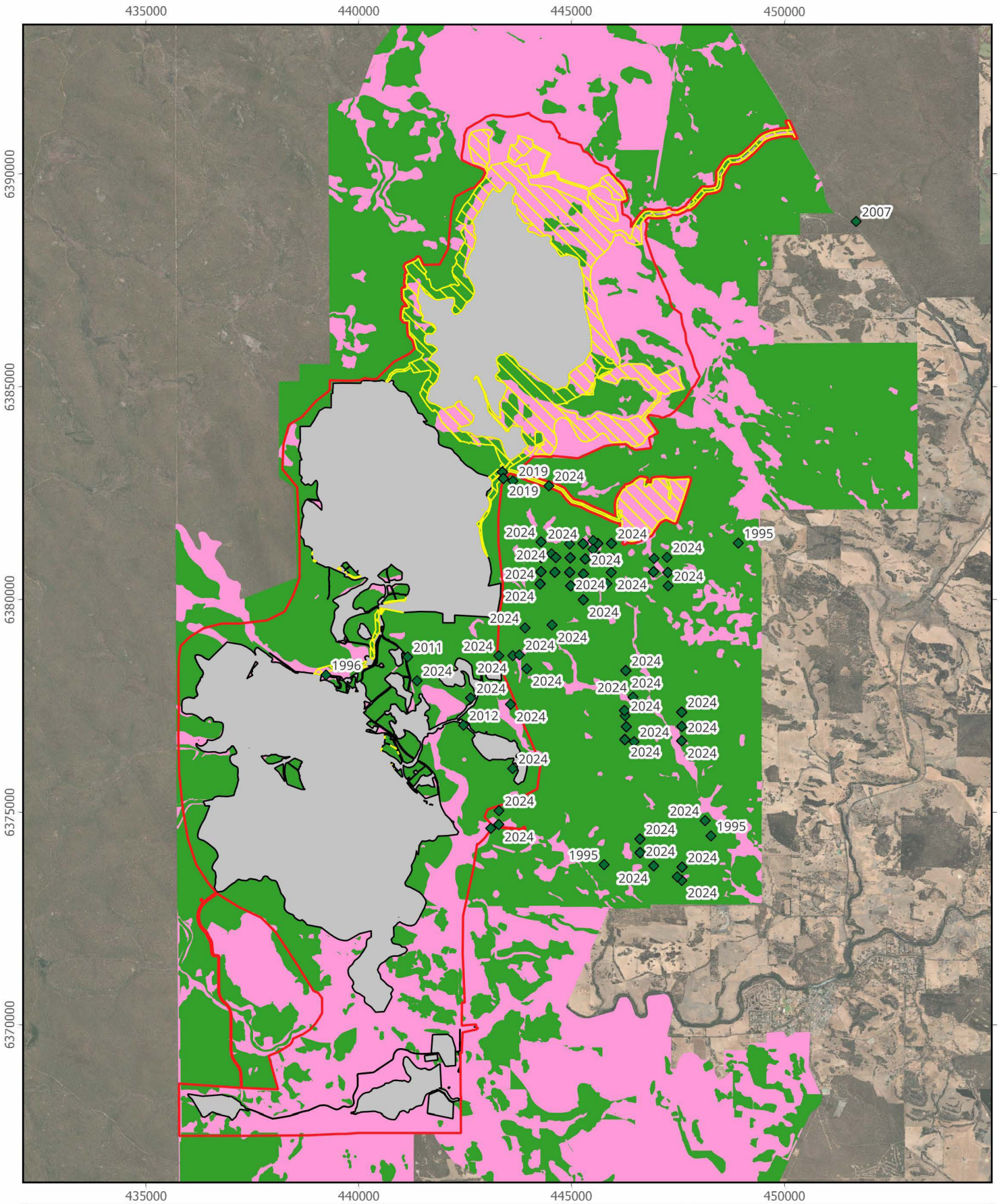


Figure 9-5 Woylie Habitat

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Woylie (*Bettongia penicillata ogilbyi*) - EN
- Potential Woylie Habitat
- Not Anticipated Woylie Habitat

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Ecologia (2021, 2022), BIOSTAT (2021)
Imagery ©Bing Aerial, Esri

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9.5.2 Black cockatoo species

Based on the known values within the RDE identified from previous surveys and mapped habitat areas by Mattiske (2024), the habitat scoring tool (DAWE 2022) to the extent possible, was used extrapolate these to the high and medium habitat.

Breeding habitat value determination was aligned to the methods implemented by Phoenix (2023a). This approach takes into account habitat vegetation structure (contains potential habitat trees) and whether confirmed records or evidence of breeding is present from the field survey, desktop results or state guidelines (DAWE 2022). Breeding habitat quality was rated as follows:

- High – vegetation complex/vegetation type or fauna habitat has been recorded within the Northern Jarrah Forest to contain trees with confirmed breeding trees, or trees with breeding evidence close to water and foraging habitat for that species.
- Medium – vegetation complex/vegetation type or fauna habitat has been recorded within the Northern Jarrah Forest to contain trees with breeding evidence, but no confirmed breeding.
- Low – contains trees (dominant or otherwise) known to be used by black cockatoos within the Northern Jarrah Forest for breeding outside the DAWE 2022 potential habitat tree criteria (> 300 mm for Wandoo /500 mm for other Eucalypts).
- None – vegetation complex/vegetation type or fauna habitat contains no trees known to support breeding.

Breeding habitat for the black cockatoo species is presented in Figure 9-6, Figure 9-7 and Figure 9-8.

Forest Red-tailed Black Cockatoo

Ecology, Habitat and Distribution: Occurs in dense Jarrah, Karri and Marri forests, mainly in the hilly interior, and a range of other forest and woodland types (DCCEEW 2024b). Habitat critical for survival and supporting viable populations of FRTBC comprises all Marri, Karri and Jarrah forests, and woodlands and remnants in the southwest of WA receiving more than 600 mm of annual average rainfall (DAWE 2022). FRTBC preferred foraging items include seeds of Jarrah and Marri and Allocasuarina cones (DAWE 2022).

Night roosting habitats for FRTBC are generally in tall trees (including non-native trees) in or near riparian environments or other permanent water sources (DAWE 2022). Roosting can occur in remnant patches of trees as well as in forest areas near water. There is potential for FRTBC to roost in the RDE, particularly near freshwater dams in the south (Figure 9-).

The FRTBC is known to breed within the RDE; however, in contrast to CBC, it is a more opportunistic breeding species. FRTBC has a broader breeding season with two peaks throughout the year in the Northern Jarrah Forest bioregion, once from April to June and again from August to December (DAWE 2022). It also has a larger known breeding range than the CBC.

Likelihood of Occurrence – Recorded: FRTBC has been allocated a high likelihood of occurrence due to the proximity of previous records and suitable foraging and breeding habitat existing in the RDE and footprint required for this Proposal (Table 9-5).

A total of 5,096 ha of foraging habitat and 4440 ha breeding habitat is present in the RDE. FRTBC habitat within the mapped extent of the footprint required for this Proposal includes foraging habitat (503 ha) and breeding habitat (479 ha) (Table 9-6, Figure 9).

Table 9-6 FRTBC foraging and breeding habitat value

Value	Foraging Habitat		Breeding Habitat	
	RDE (ha)	Footprint Area Required for this Proposal (ha)	RDE (ha)	Footprint Area Required for this Proposal (ha)
High	4603	467	4440	479
Medium	493	36	0.0	0.0
Total	**5096**	**503**	**4440**	**479**

Carnaby's Black Cockatoo

Ecology, Habitat and Distribution: CBC utilises a variety of forests, shrublands and banksia woodlands. The species uses native shrubland, kwongan heathland and proteaceous woodland, including banksia woodland for foraging (Phoenix 2023b). Roost sites are often associated with riparian vegetation, large trees such as pine trees or eucalypt trees with a closed canopy. Breeding habitat consists of woodland or forests that provide hollows in live or dead trees (any eucalypt species). Wandoo, tuart, jarrah, york gum, karri and marri are typical breeding trees (DAWE 2022). CBC often move up to 13 km a day with the greatest distances covered in the early morning and late evening.

Likelihood of Occurrence – Recorded: CBC has been assessed as having a high likelihood of occurrence in the RDE due to the presence of suitable breeding and foraging habitat. The species has also been recorded in the RDE (Phoenix 2025).

Most breeding records in the Northern Jarrah Forest are for CBC (Phoenix 2023b). The species has historically bred in the Wheatbelt, but extensive clearing in this area means it is likely the Jarrah Forest is becoming more important for CBC breeding (Phoenix 2023a).

Habitat Assessment – High quality CBC foraging habitat within the RDE and footprint required for this Proposal includes the Jarrah/Marri/Allocasuarina fauna habitat type, Melaleuca shrublands and areas of rehabilitation (JM, JC, FG, MS and RE) . A total of 4821 ha of foraging habitat is present in the RDE and 475 ha in the footprint required for this Proposal (Table 9-7).

CBC breeding has been recorded approximately 2 km southeast of the RDE (Phoenix 2023a). A total of 4821 ha of breeding habitat is present in the RDE and 475 ha in the footprint required for this Proposal (Table 9-7, Figure 9-7).

Table 9-7 CBC foraging and breeding habitat value

Value	Foraging Habitat		Breeding Habitat	
	RDE Area (ha)	Footprint Area Required for this Proposal (ha)	RDE Area (ha)	Footprint Area Required for this Proposal (ha)
High	2456	242	4512	447
Medium	2366	233	309	28
Total	**4821**	**475**	**4821**	**475**

Baudin's Black Cockatoo

Ecology, Habitat and Distribution: BBC primarily forage on Marri seeds and the seeds of *Banksia* and *Hakea* specie (DAWE. 2022).

Night roosting habitats for BBC are generally in tall trees in or near riparian environments or other permanent water source. Roosting can occur in remnant patches of trees as well as in forest areas near water. The majority of dams at Newmont Boddington Mine are located in the south of the RDE. Other waterbodies in the area are ephemeral but may represent roosting habitat during the winter months. The nearest record to the footprint required for this Proposal is approximately 0.5 km to the east in a cleared area (Figure 9-9).

BBC is not known to breed in the Boddington area and the RDE and footprint required for this Proposal is outside the predicted breeding range (DAWE 2022).

Likelihood of Occurrence – Recorded: BBC has been allocated a high likelihood of occurrence because suitable foraging habitat occurs across the RDE and the footprint required for this Proposal and the species has been recently recorded outside the RDE in the proposed Habitat Protect Offset (Phoenix, 2025).

Habitat Assessment – High quality foraging habitat includes Jarrah/Marri complexes, *E. rudis* riparian communities and *Melaleuca* shrubland (Phoenix 2023b). Estimated high quality foraging habitat includes 4821 ha in the RDE and 475 ha in the footprint required for this Proposal (Table 9-8, Figure 9-8). As well as native foraging habitat (habitat codes MS. FG. JC, JM, WO, RE), the footprint required for this Proposal contains pine plantation. New growth on pine trees offers a potential food source for BBC. However, this food source is not reliable as the pines are subject to regular harvesting. Consequently, these areas have not been included as foraging habitat.

Table 9-8 BBC foraging habitat value

Value	Foraging Habitat		Breeding Habitat	
	RDE Area (ha)	Footprint Area Required for this Proposal (ha)	RDE Area (ha)	Footprint Area Required for this Proposal (ha)
High	4512	447	0	0
Medium	309	28	0	0
Total	4821	475	0	0

Figure 9-6 Forest Red-tailed Black Cockatoo Habitat

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus naso banksii*)

Forest Red-tailed Black Cockatoo Breeding Habitat

- High Quality

Forest Red-tailed Black Cockatoo Habitat

- High Quality
- Medium Quality
- No/Low Quality

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont (2024), Phoenix (2025), Ecologia (2022, 2023), BIOSTAT (2021)
Imagery Esri Satellite

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Figure 9-7 Carnaby's Black Cockatoo Habitat

LEGEND

- Revised Development Envelope
- Proposal Footprint
- Approved Disturbance Footprint
- Carnaby's Black Cockatoo (*Zanda latirostris*)

Carnaby's Black Cockatoo Breeding Habitat

- High Quality
- Medium Quality

Carnaby's Black Cockatoo Foraging Habitat

- High Quality
- Medium Quality
- No/Low Quality

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2025), Phoenix (2025), Ecologia (2022, 2023), BIOSTAT (2021)
Imagery Esri Satellite

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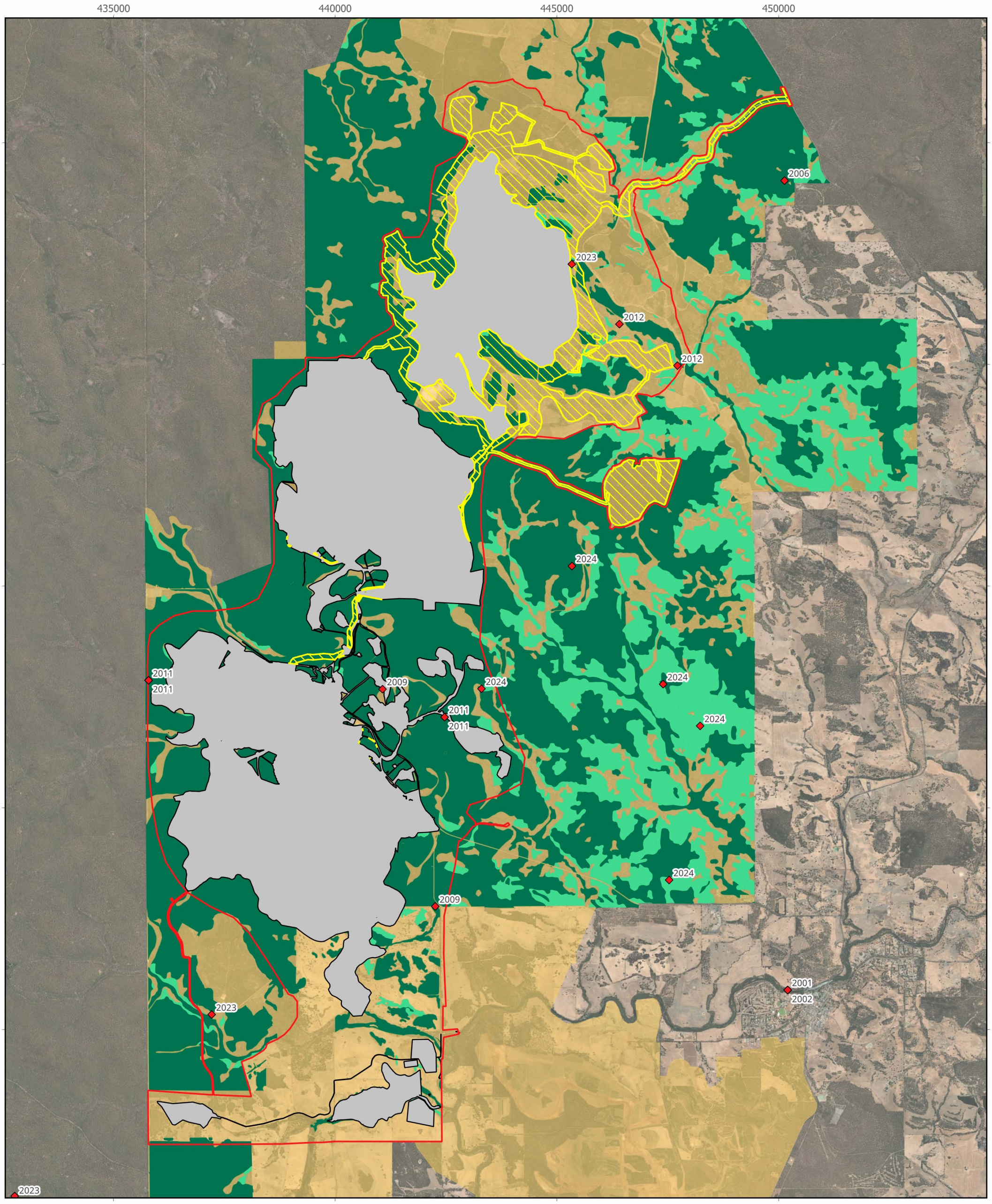


Figure 9-8 Baudin's Black Cockatoo Habitat

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Baudin's Black Cockatoo (*Zanda baudinii*)

Baudin's Black Cockatoo Foraging Habitat

- High Quality
- Medium Quality
- No/Low Quality

N

0 1 2 km

Scale @A3 1: 80000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont (2024), Mattiske (2024), Phoenix (2025), Ecologia (2022, 2023), BIOSTAT (2021)
Imagery Esri Satellite

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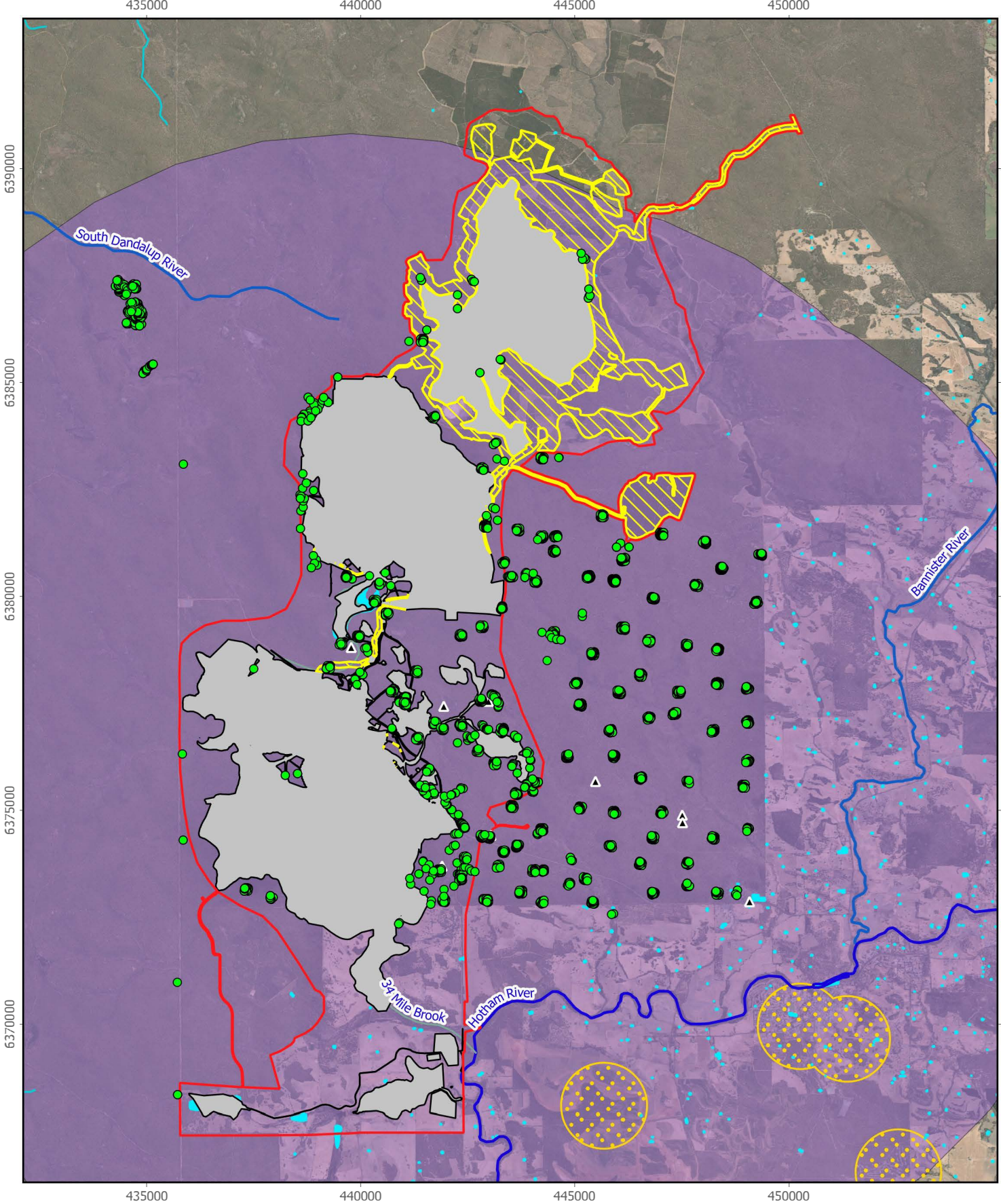


Figure 9-9 Black Cockatoo Potential Habitat Trees and Water Sources

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Watercourses

- Mainstream
- Major River
- Significant Stream
- Major Trib
- Minor Trib

- ▲ Natural Nesting Hollows
- O Potential Habitat Trees
- Carnaby's Cockatoo Confirmed Breeding Areas
- Black Cockatoo Roosting Sites
- Water Sources

0 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Phoenix (2023), DPIRD (2023), DBCA (2018)
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Chuditch

Ecology, Habitat and Distribution: Chuditch are important for rebalancing local ecosystems in favour of native species, acting as an umbrella species to improve ecosystem function for the benefit of other native species (DCCEEW 2024c). They require extensive areas of structurally diverse habitat, typically occupying dry sclerophyll forests, woodlands, and riparian zones with dense ground cover for shelter (DEC 2012b). Habitat critical to the survival of Chuditch is defined as areas of natural vegetation where they breed, forage, use as movement corridors, and additionally areas which are currently occupied or may be potentially occupied by Chuditch (DEC 2012b). Key niche characteristics include adequate denning resources (hollow logs, burrows or rock crevices), adequate prey resources (particularly large invertebrates) and sizeable areas (>20,000 ha.) (DEC 2012b).

Regular surveying since the 1990s has documented a variable but consistent population of the species within and adjacent the RDE. Targeted surveys in 2019 (BIOSTAT 2021) resulted in live and camera captures of Chuditch at Newmont Boddington Mine. The relatively high numbers of Chuditch captures at Newmont Boddington Mine in 2019 are likely due to multiple visits to the same camera station by the same individuals. The species was recorded in a variety of habitats including Wandoo woodlands and Jarrah/Marri complexes. Pre-clearing trapping undertaken by Ecologia (Jan-Mar 2023) captured four Chuditch in the native vegetation to the south of the mine (Figure 9-9). This confirmed the persistence of this species within the Newmont Boddington Mine, despite the changing and disruptive environment.

All forest and woodland areas and rehabilitation areas are considered potentially suitable habitat for the species (Figure 9-10).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable denning, foraging and dispersal habitat (Table 9-5).

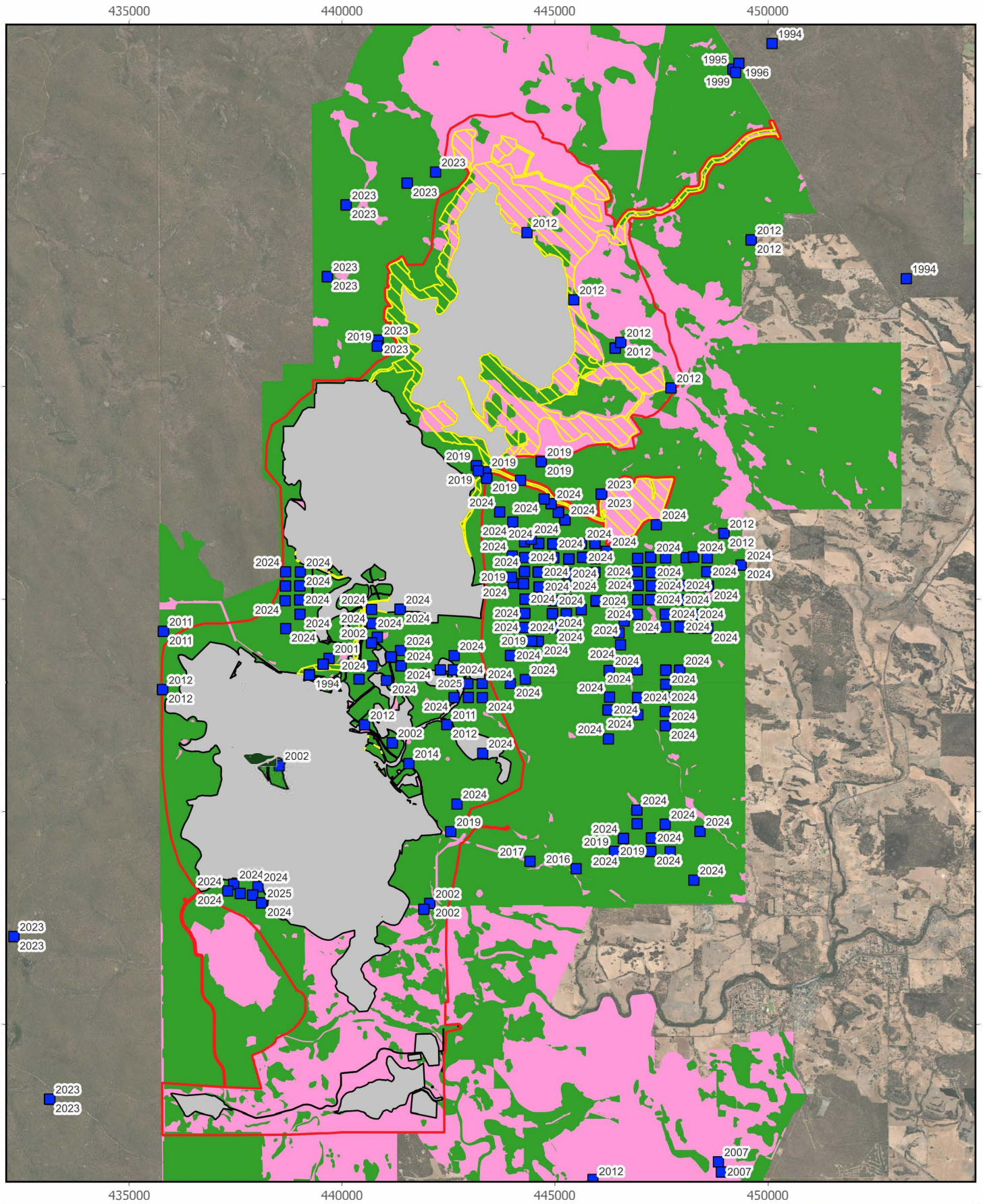


Figure 9-10 Chuditch Habitat

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Chuditch (*Dasyurus geoffroii fortis*) - VU
- Potential Chuditch Habitat
- Not Anticipated Chuditch Habitat

N

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Ecologia (2022, 2023), BIOSTAT (2021)
Imagery ©Bing Aerial, Esri

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9.5.3 Priority and conservation dependent species

Brush-tailed Phascogale

Ecology, Habitat and Distribution: The Brush-tailed Phascogale (*Phascogale tapoatafa wambenger),* occurs between Perth and Albany. Home ranges of females typically span 20 to 40 ha and can be as small as 5 ha in high quality habitat while male home ranges are often greater than 100 ha and can expand ten-fold during the breeding season (Soderquist and Rhind, 2008).It is most commonly associated with Jarrah/Marri habitats (JC, JM, DL) and wandoo woodlands (WO) (Ecologica 2024a).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records in the RDE and potential to provide suitable denning, foraging and dispersal habitat (Table 9-5).

Peregrine Falcon

Ecology, Habitat and Distribution: The Peregrine Falcon (*Falco peregrinus)* is a wide-ranging species that is recorded over much of the Australian mainland and offshore islands, including Newmont Boddington (BIOSTAT 2021). The species is largely aerial and utilises a diverse range of habitats, including woodlands, heath and forests. Because of the lack of habitat specialisation, all areas (including farmland) are considered habitat for the species (BIOSTAT 2021). The species nests in cliff faces, tall structures and tall trees. There are no records of Peregrine Falcon breeding at Newmont Boddington (BIOSTAT 2021).

Likelihood of Occurrence – High: This species has been allocated a high likelihood of occurrence due to potential to provide suitable nesting and dispersal habitat (Table 9-5).

Blue-billed Duck

Ecology, Habitat and Distribution: The Blue-billed Duck (*Oxyura australis*) tends to be found in temperate wetlands in southern Australia and, as is almost wholly aquatic, being rarely seen on land. The ducks breed and often in densely vegetated wetland or riparian areas DCBA 2024. Suitable habitat for the species is predominantly considered to occur in the Hotham River and dams in the south of the RDE – i.e. the Dam habitat unit.

Likelihood of Occurrence – High: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable dispersal habitat (Table 9-5).

Western Rosella

Ecology, Habitat and Distribution: The Western Rosella occurs on the Swan Coastal Plain and South West between Jurien Bay and Albany (DBCA 2024. It utilises eucalypt forests and woodlands but will also forage on seeds of pasture plants. Data base search results did not identify any Western Rosella (*Platycercus icterotis icterotis*– Priority 4) records within 10 km of the RDE; however, the species is known to occur within the local area and small flocks were recorded during a 2023 survey in the RDE (Ecologia 2024a). Jarrah/Marri Forest and Wandoo Woodland habitat provide breeding, roosting and foraging habitat for the Western Rosella (Ecologia 2024a).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records (Table 9-5).

Rakali

Ecology, Habitat and Distribution: The Rakali (*Hydromys chysogaster*) is a water loving marsupial that is widely distributed in Australia and Papua New Guinea. It occupies habitats in the vicinity of permanent water of any quality. It prefers areas with good water quality, riparian vegetation and habitat complexity in the form of woody debris and wetland island (DEC 2012c). A Rakali was observed during fish monitoring surveys of the Hotham River in 2017 (SLR 2024a). A fauna report form was submitted by Newmont to DBCA. There are no suitable permanent water bodies for Ralkai in the footprint required for this Proposal (Ecologia 2024a).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records (Table 9-5)**.**

Quenda

Ecology, Habitat and Distribution: The Quenda (*Isoodon fusciventer*) has been recorded in the RDE. The species is common in southwestern Australia from Guilderton to Esperance. This species is a habitat generalist and may occur within all habitat types present within the 2023 fauna survey areas at Newmont Boddington, utilises the Jarrah/Marri habitats (BIOSTAT 2021).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable foraging and dispersal habitat (Table 9-5)

Western Brush Wallaby

Ecology, Habitat and Distribution: The Western Brush-Wallaby (*Notamacropus Irma*) is distributed across the South West from north of Kalbarri to Cape Arid (DBCA 2024). Its habitat preferences are for open forest or woodland, particularly open seasonally wet floats with low grasses and thickets. The species has been recorded in the RDE. It is likely to occur in all habitats except plantations, dams and cleared areas (BIOSTAT 2021).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable foraging and dispersal habitat (Table 9-5).

Dell's Skink

Ecology, Habitat and Distribution: Dell's Skink (*Ctenotus delli*) has been recorded in the RDE on three separate surveys by Ninox (2003, 2012a, 2012b). The species is endemic to the Darling Range and occurs in Jarrah and Marri woodlands with a shrubby understorey (Ecologica 2024a). The species is known to inhabit areas associated with granite outcrops in JM and JC at Newmont Boddington (BIOSTAT 2021).

Likelihood of Occurrence – Recorded: This species has been allocated a high likelihood of occurrence due to the previous records and potential to provide suitable foraging and dispersal habitat (Table 9-5).

9.5.4 Short Range Endemic Fauna

The WAM Invertebrate Database search identified a total of 218 potential SRE species in the region surrounding the Proposal. The list is comprised of mygalomorph spiders, harvestmen, pseudoscorpions, centipedes, millipedes, slaters, gastropods, and onychophorans (WAM 2024).

Given the high number or records and level of taxonomic uncertainty within the SRE Groups, only the known (i.e., described) species were categorised using the SRE categorisation system. This resulted in seven Confirmed SRE species, six Likely Potential SRE species, eleven Unlikely Potential SRE species, one Data Deficient Potential SRE species, 54 Widespread species, and four invasive or introduced species. The seven Confirmed SREs include:

- The mygalomorphs
  - *Euoplos inornatus*- Priority 3
  - *Idiosoma jarrah*
  - *Idiosoma schoknechtorum*
  - *Idiosoma sigillatum*- Priority 3
- Millipede - *Dinocambala ingens*
- Land snail - *Epinicium restifer*
- Onychophoran - *Occiperipatoides gilesii.*

Four priority SRE were recovered from the desktop assessment including G*lacidorbis occidentalis, Euoplos inornatus, Idiosoma schoknechtorum*, and *Idiosoma sigillatum.*

Phoenix (2023c) completed four phase SRE survey over parts of the RDE and other nearby premises (Worsley). A series of Level 2 SRE surveys were completed and the combination of these has been described as the largest SRE survey of the Northern Jarrah Forest bioregion. The study found a diverse assemblage of

taxa with a total of 134 taxa from the desktop and field survey, comprising of 92 (68%) SRE taxa and 45 (32%) non-SRE taxa. Many new and Potential SRE taxa were recorded. SRE have also been reported in more widespread habitats in groups with low dispersal capabilities, such as mygalomorph spiders and millipedes (Phoenix 2023c).

For the three most common classes, Mygalomorphae (trapdoor spiders), Diplopoda (Millipedes) and Isopoda (slaters), the maximum distance between two species records was <20 km for approximately 50% of all recorded SRE taxa. Very few species have a distribution greater than 100 km. Few taxa were common to survey areas in the north and south, indicating a north-south and possibly east-west partitioning or gradation of SRE taxa, in the order of 20 km (Phoenix 2023c).

Recent detailed field survey within with the Approved Proposal and in areas adjacent to the footprint required for this Proposal recorded two Confirmed SREs, three Likely Potential SREs, thirteen Unlikely Potential SREs, 11 Data Deficient Potential SREs, and 20 are Widespread (Bennelongia 2024a). These species are described in Table 9-9 with locations shown in Figure 9-11.

Of the 49 SRE Group species recovered from this survey, 21 (or 43%) correspond to described species or species that have been previously recognised in scientific publications and are waiting description. The proportion of undescribed species in the survey is relatively high, which might be indicative of the high species richness within the bioregion. Out of the total number of species identified from the survey, three are considered likely to have restricted distributions, and another two are Confirmed SREs known to have restricted distributions, all of which have been found within the Approved Proposal and RDE (Bennelongia 2024a).

The three Likely Potential SREs are undescribed species only recorded from this survey: *Urodacus `BSCO090`*, *Aurecocrypta `BMYG225`*, and *Pseudolaureola `BIS550`*. Their categorisation as Likely Potential SREs is consistent with restricted distribution patterns within the genus, along with seemingly habitat specificity. The two Confirmed SRE species, *Occiperipatoides gilesii* and Idiosoma jarrah, are species known to occur throughout the Jarrah Forest bioregion, and it has been suggested that their known range is likely underestimated due to limited sampling in the area (Bennelongia 2024a).

None of the SRE taxa recorded during this survey, are listed as Threatened fauna under the EPBC Act or BC Act or listed as Priority fauna by DBCA.

Table 9-9 SRE species

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
Stylommatophora				
Punctidae				
Westralaoma aprica	Widespread	2	Yes	
Westralaoma expicta	Widespread	1	Yes	
Onychophora				
Peripatopsidae				
*Occiperipatoides gilesii**	Confirmed SRE	1	Yes	Species known to occur between Yanchep and East of Harvey. ALA (2024) reports a

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
				known range distribution of approximately 5,000 km2.
Opiliones				
Neopilionidae			Yes	
*Ballarra longipalpus**	Widespread	1	Yes	
Triaenonychidae				
*Dingupa `BOP023`**	Data Deficient Potential SRE	1	Yes	This species has also been recorded from the Hotham Farm survey area, approximately 20 km NE. The species has been collected from eucalyptus woodlands, and it is unlikely it will be restricted to the Project area.
*Nunciella `BOP016`**	*Unlikely Potential SRE*	10	Yes	The species is also known from approximately 160 km N, near Yanchep National Park. Given its linear range it is not expected to have a restricted distribution.
Nunciella `BOP024`*	Unlikely Potential SRE	4		This species has been collected from eucalyptus woodlands with abundant Banksia and Acacia trees, and from isolated granite outcrops. Given that it has been collected from multiple habitats, it is not expected that it will have a restricted distribution.
Pseudoscorpiones				
Atemnidae				
*Oratemnus `BPS555`**	Data Deficient Potential SRE	1	Yes	Singleton specimen. Little is known about its actual distribution or habitat requirements, other than it was collected from eucalyptus leaf litter.
*Oratemnus curtus**	Widespread	2	Yes	

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
Cheliferidae				
Cheliferidae sp.	Data Deficient Potential SRE	1	Yes	Damaged specimen identified to high order level given diagnostic features were damaged. Given it is the sole representative of its family, it is considered as an individual species.
Chthoniidae				
*Austrochthonius `BPS538`**	Unlikely Potential SRE	18	Yes	This species has been collected abundantly from eucalyptus leaf litter. It has also been recorded from Hotham Farm. It is not expected to have a restricted distribution.
*Austrochthonius `BPS539`**	Unlikely Potential SRE	9	Yes	This species has been collected abundantly from eucalyptus leaf litter. It has also been recorded from Hotham Farm. It is not expected to have a restricted distribution.
*Austrochthonius `BPS541`**	Unlikely Potential SRE	21	Yes	This species has been collected abundantly from eucalyptus leaf litter. It has also been recorded from Hotham Farm. It is not expected to have a restricted distribution.
Geogarypidae				
Geogarypus taylori	Widespread	1	Yes	
Scorpiones				
Bothriuridae				
Cercophonius sulcatus	Widespread	3	Yes	
Buthidae				
Lychas `splendens`	Widespread	1	Yes	
Buthidae sp.		1	Yes	Unidentified species collected from a moult. Not all characters are visible, but

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
				enough to identify to family level. Likely to belong to the species above.
Urodacidae				
Urodacus `BSCO090`*	Likely Potential SRE	3	Yes	Most of the records for the species were collected from isolated outcrop areas, although one specimen was collected from sandy soils just next to the outcrops. Given the apparent habitat specificity of the species with granite outcrops, it categorised as a Likely Potential SRE.
Araneae				
Anamidae				
Proshermacha `MYG485`*	Widespread	1	Yes	This undescribed species has also been recorded from the Fitzgerald River National Park, near Ravensthorpe, and approximately 350 km S-SE from the Project area.
Barychelidae				
Aurecocrypta `BMYG225`*	Likely Potential SRE	1	Yes	The species is only known from this, and Hotham Farm survey areas where it has been collected from burrows within eucalyptus leaf litter or under logs. Given that some species within the family Barychelidae appear to have restricted distributions, this species has been categorised as a Likely Potential SRE under a precautionary approach.
Idiopidae				
Gaius cooperi	Widespread	5	Yes	
Idiosoma jarrah*	Confirmed SRE	2	Yes	The species has a known distribution range between 4,000 km2 and 6,035 km2. This

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
				range may be an underestimation as a result of isolated sampling.
Isopoda				
Armadillidae				
Buddelundia `BIS548`*	Data Deficient Potential SRE	2	Yes	Little is known about the species actual distribution and habitats requirements other than it has been collected from under eucalyptus bark.
Buddelundia `species 4 (judd 2002)`*	Unlikely Potential SRE	1	Yes	The species shows a range of microhabitat utilization and a broad distribution in the Jarrah Forest (Judd 2004).
*Buddelundia albomaculata**	Widespread	4	Yes	
Pseudolaureola `BIS550`*	Likely Potential SRE	3	Yes	It has been suggested that species of *Pseudolaureola* can have short ranged within the Jarrah Forest Bioregion (Judd 2004). This species has been collected only from eucalyptus leaf litter at 3 different sites (Hotham Farm and Future Tailings).
Spherillo `species 5 (judd 2002)`*	Widespread	23	Yes	The species is considered a widespread generalist (Judd 2004).
Philosciidae				
Laevophiloscia `BIS549`*	Unlikely Potential SRE	7	Yes	This species has been identified from different habitats, including tree farms, reason why it is suspected the species is easily adapted to habitat changes and therefore, unlikely to have a restricted distribution.
Laevophiloscia `species 2 (judd 2002)`*	Widespread	17	Yes	Associated to moister leaf litter areas, but with a widespread distribution (Judd 2004).
Styloniscidae			Yes	

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
Styloniscus `species 1 (judd 2002)`*	Widespread	22	Yes	Known throughout the Jarrah Forest and the Warren Bioregions (Judd 2004).
Styloniscus `species 2 (judd 2002)`*	Unlikely Potential SRE	1	Yes	The species is known from few localities along the Jarrah Forest Bioregion. However, these are approximately 250 km apart and specimens are known to occur within distinct microhabitats such as under rocks, under logs, and in leaf litter (Judd 2004). It is therefore, not expected to have a restricted distribution.
Chilopoda				
Scolopendrida				
Cryptopidae				
*Cryptops australis**	Widespread	19	Yes	
Cryptops nr hortensis	Widespread	3	Yes	
Cryptops sp.		1	Yes	Damaged specimen unable to be identified. It is likely it belongs to either of the species above.
Scolopendridae				
Cormocephalus `BSCOL103`*	Unlikely Potential SRE	1	Yes	The species has also been collected from Tutunup, near Busselton, approximately 135 km S-SW from the Project area.
Cormocephalus similis	Widespread	2	Yes	
Scolopendra morsitans	Widespread	1	Yes	
Otostigminae sp.	Data Deficient Potential SRE	1	Yes	High order ID. Given it is the sole representative of the subfamily, it is considered an individual species.
Geophilida				
Chilenophilidae				

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
Sepedonophilus `BGE082`*	Unlikely Potential SRE	2	Yes	The species is known from three localities and from different microhabitats such as eucalyptus leaf litter, under rocks at outcrop sites, and under logs. It is not expected the species will have a restricted distribution.
Mecistocephalidae				
Mecistocephalus `BGE079`	Unlikely Potential SRE	3	Yes	The species has only been collected from few localities (Hotham Farm and Approved Proposal), all of which are eucalyptus woodland. It is suspected the species might be restricted to forested areas.
Mecistocephalus `BGE080`	Data Deficient Potential SRE	1	Yes	Singleton specimen. Nothing is known about the actual distribution or habitat requirements other than it has been collected from eucalyptus leaf litter.
Mecistocephalus sp.		1	Yes	Juvenile specimens unable to be identified further. Likely to belong to any of the species above.
Schendylidae				
*Australoschendyla albanyensi**	Unlikely Potential SRE	2	Yes	The specimen was identified through morphological and molecular methods, and matches the species originally described from near Albany, approximately 300 km S-SE from the Project area. It is not expected the species will have a restricted distribution.
Lithobiomorpha				
Henicopidae				
Dichelobius `BLITH004`*	Unlikely Potential SRE	4	Yes	The species is known from both Hotham Farm and the

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
				Approved Proposal. It has been collected from eucalyptus woodlands, isolated outcrops, and tree farms. It is not expected to have a restricted distribution.
Henicops `BSCOL106`*	Data Deficient Potential SRE	3	Yes	The three specimens have been collected from a distance of approximately 3 linear km. Little is known about its actual distribution or habitat requirements other than has been collected from eucalyptus leaf litter and bark peel.
Henicopidae sp.		1	Yes	High order ID juvenile specimens unable to be identified further. Likely to belong to any of the species above.
Lithobiomorpha sp.		2	Yes	High order ID juvenile specimens unable to be identified further. Likely to belong to any of the species above.
Cephalostigmata				
Scutigerellidae				
Hanseniella sp.	Data Deficient Potential SRE	8	Yes	High order ID. Given it is the sole representative of the subfamily, it is considered an individual species.
Scutigeromorpha				
Scutigeromorphasp.	Data Deficient Potential SRE	2	Yes	High order ID. Given it is the sole representative of the subfamily, it is considered an individual species.
Diplopoda				
Polyxenida				
Polyxenidae				

Low Order Identification	SRE Status	Records within Approved Proposal Survey Area[1]	Recorded location within RDE	Species comments and Linear Distribution
Unixenus sp.	Widespread	4	Yes	The genus is considered widespread and unlikely that species will have restricted distributions (Short and Huynh 2011).
Julida				
Julidae				
*Ommatoiulus moreleti**	Widespread	3	Yes	Invasive species with a widespread distribution.
Polydesmida				
Paradoxosomatidae				
*Antichiropus variabilis**	Widespread	3	Yes	One of the few widespread species within the genus (Car and Harvey 2013)
Antichiropus sp.		39	Yes	Unidentified juvenile specimens likely to belong to any of the species above.
Polyzoniida				
Siphonotidae				
Siphonotidae sp. `BDI082`*	Data Deficient Potential SRE	1	Yes	Singleton specimen. Little is known about its actual distribution or habitat requirements, other than it was collected from eucalyptus leaf litter.
Spirostreptida				
Spirostreptida `BDI083`*	Data Deficient Potential SRE	5	Yes	Species is known from only two localities. Little is known about the species actual distribution and habitats requirements other than it has been collected from eucalyptus leaf litter.
Spirostreptida sp.		8	Yes	Unidentified juvenile specimens likely to belong to any of the species above.

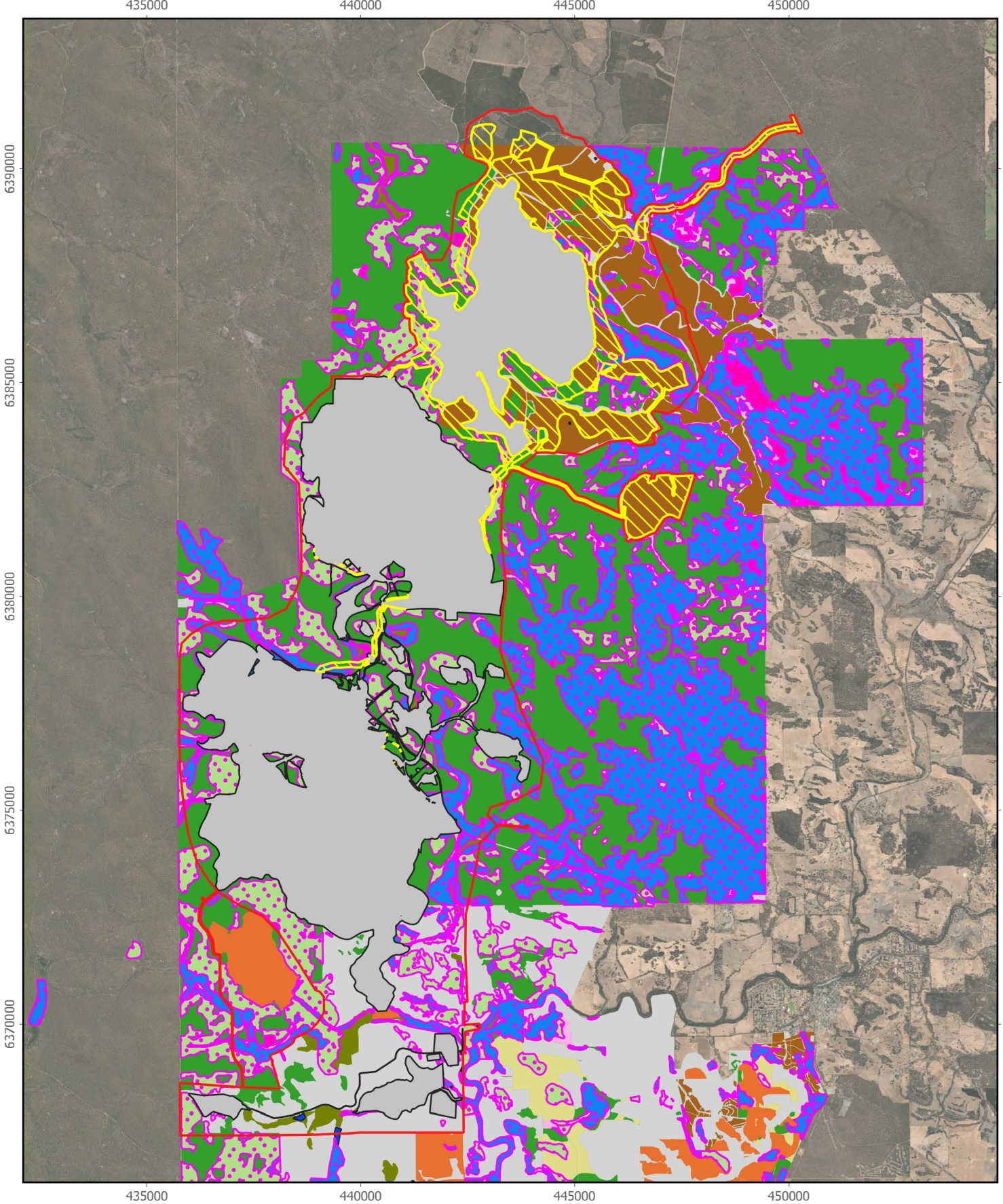


Figure 9-11 Short Range Endemic High Potential Habitat Ratings

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint

Short Range Endemic Habitat Types

- Disturbed
- Eucalyptus forest on sandy soils
- Eucalyptus open woodland
- Melaleuca open woodland
- Open forest on gravel/sand
- Open forest on slopes
- Open heath on granite outcrops
- Open heath on shallow soils
- Plantations
- Rehab
- Shrubland
- Water body (dam)

Habitat Rating

- High Potential SRE Habitat

0 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), Bennelongia Environmental Consultants (2023)
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability orresponsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: oostveenperrylj Date: 21 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Fauna_250107.qgz

9.5.5 Aquatic fauna

The aquatic fauna values within the RDE and regional areas in proximity to the RDE including Gringer Creek, Boggy Brook and Hotham River are described below.

Gringer Creek

A diverse range of aquatic fauna has been recorded within Gringer Creek including 72 macroinvertebrate taxa. A number of south-west endemic species including Gondwanan damselflies *Archiargiolestes* sp., several endemic beetles, stoneflies (Plectoptera) *Leptoperla australica* and several leptocerid and hydroptilid caddisflies (Trichoptera). Altogether, the macroinvertebrate community of Gringer Creek featured a moderately diverse assemblage of taxa, of which at least a quarter are known endemic species, including species of Plecoptera and Trichoptera, known to be sensitive to changes in water quality (SLR 2024c).

A total of 275 fish of three endemic species were captured and released from Gringer Creek, including the nightfish *Bostockia porosa*, western minnow *Galaxias occidentalis* and the western pygmy perch *Nannoperca vittata*. All three species were recorded in the 2011 survey, and there were no introduced fish detected. Several gravid females of the western minnow and nightfish were recorded in the upper reaches of Gringer Creek, particularly GRCK01 – 04 (SLR 2024c, WRM 2012b). Both species are known to undergo annual breeding migrations in winter and spring, entering small tributary creeks and moving to the upper reaches to spawn (Pen & Potter 1990; 1991). During the 2011 baseline studies (conducted slightly later in October) the native fish catch was dominated by juvenile size classes. Evidently, Gringer Creek is being used by local fish populations (of the Bannister River, and potentially the Hotham River) as spawning and nursery habitat, therefore continued connectivity between Bannister River/Hotham River and this breeding habitat in the headwaters should be maintained (SLR 2024c, WRM 2012b).

None of the invertebrate or vertebrate aquatic fauna recorded at Gringer Creek are listed under the EPBC Act or BC Act, or listed as Priority fauna by DBCA.

Boggy Brook

The aquatic faunal assemblage at Boggy Brook had low species richness, dominated by taxa with adaptations to an ephemeral hydroregime. A total of 18 invertebrate taxa were identified from Boggy Brook including eight taxa (microcrustacean groups), with similar richness recorded during the 2011 surveys (WRM 2012c). Fish were not present during the 2023 survey (likewise no fish were present in 2011 (WRM 2012c). The native crayfish *Cherax preissii* (koonacs) was recorded at one location (SLR 2024b).

None of the invertebrate or vertebrate aquatic fauna recorded at Boggy Brook are listed under the EPBC Act or BC Act, or listed as Priority fauna by DBCA (SLR 2024b).

Hotham River

A total of 51 macroinvertebrate taxa were recorded from Hotham River, upstream of Lions Weir in a 2019-2020 study (Hotham River upstream of Lion's Weir; Morgan & Beatty 2004). Macroinvertebrate assemblages were characterised by salt tolerant species. Diptera (two-winged flies) dominated the fauna, in particular chironomids (non-biting midges), which were common and abundant across all sites. Chironomid species *Cladopelma curtivalva*, *Dicrotendipes* sp., *Paratanytarsus* sp., *Tanytarsus* sp. and *Procladius paludicola and* the soldierfly *Stratiomyidae sp*. were particularly abundant. Other common taxa included the south west WA endemic amphipod *Austrochiltonia subtenuis* and larvae of the diving beetle *Necterosoma* sp. Bunn & Davies (1992) and WRM (2011) have previously recorded similar dominance of *Tanytarsus* species in Hotham River and also the salinised Thirty Four Mile Brook. Bunn & Davies (1992) concluded the high densities and relatively low species richness and diversity of the fauna in general were a direct consequence of poor water quality, in particular high EC.

A number of species were considered south-west endemics, or likely south-west endemics, including dragonfly *Procordulia affinis* (south-west endemic) and *Necterosoma darwini* (Western Australian endemic beetle). Other species recorded near the study area include the ancient south-west endemic damselfly *Archiargiolestes pusillus*, the diving beetle *Megaporus solidus*, the caddis-fly *Oecetis* sp. and the WA endemic

tanypod *Paramerina levidensis*, and the WA endemic, salinity-tolerant caddisfly *Symphitoneuria wheeleri* which is unusual among a group of taxa that are typically sensitive to high salinity.

None of the invertebrate aquatic fauna recorded during surveys of the Hotham River are listed under the EPBC Act or BC Act, or listed as Priority fauna by DBCA (SLR 2024a, WRM 2020).

Fish and Crayfish

All the native freshwater fish and crayfish in south west WA are endemic to the region, including the four native fish species frequently recorded from the Hotham: the western minnow (*Galaxias occidentalis*), western pygmy perch (*Nannoperca vittata*), nightfish (*Bostockia porosa*), freshwater cobbler (*Tandanus bostocki*), and three crayfish species gilgie (*Cherax quinquecarinatus*), koonac (*Cherax pressii*) and smooth marron (*Cherax cainii*). In addition, the Swan River goby (*Pseudogobius olorum*) and the Southwestern goby (*Afurcagobius suppositus*) are typically estuarine, but are halotolerant and can be found considerable distances inland where rivers are affected by secondary salinisation. Anecdotally, increases in their abundances have been detected in the Hotham in years where rainfall is below average, suggesting reduced flushing and flow velocities may favour these species locally (SLR 2024d).

None of the fish and crayfish species recorded during aquatic surveys of the Hotham River are listed under the EPBC Act or BC Act, or listed as Priority fauna by DBCA (SLR 2024a).

Mussels

Mussel records in the Hotham River include the estuarine species, *Fluviolanatus subtorta*, which was been found during studies in 2019 and 2020 (WRM 2019; WRM 2020). This species is not currently listed as conservation significant. It has a relatively widespread distribution in estuarine coastal environments, and the range expansion inland to the Hotham River is understood to be an extensive migration upstream from known populations near Mandurah (ALA 2024).

The freshwater mussel *Westralunio carteri* is endemic to south west WA and is listed as Vulnerable under the EPBC Act , BC Act 2016 and IUCN Redlist of Threatened Species 2024. There is anecdotal evidence of local *W. carteri* occurring in the Hotham River (Streamtec 1995), but there have been no recent records most likely due to high salinity. Carter's mussel is almost never found where salinity is greater than 1.6 g/L^{-1} (EC 2,900 µS/cm), with an acute salinity tolerance LC_{50} of 3.0 g/L^{-1} (approximately 4,600 µS/cm; Klunzinger et al., 2015). The estuarine species *Fluviolanatus subtorta* is known to colonise waterways that have become too saline for *W. carteri* (Kendrick 1976; Pen 1999) and its presence suggests the freshwater species no longer resides there. Moreover, the background EC of the Hotham River is well in excess of the known LC_{50} therefore extant populations are improbable (SLR 2024a).

South-western snake-necked turtle

One species of freshwater turtle is known from the study area; the southwestern snake-necked turtle, or long-necked turtle*, Chelodina oblonga* (Shea et al. 2020). This species is endemic to southwest WA. It is not currently listed under the EPBC Act or BC Act, but appears on the IUCN Redlist of Threatened Species as Near Threatened (IUCN 2024). They are frequently encountered at the Hotham River (SLR 2024d), including sub-adult individuals, suggesting successful recruitment in the local population.

9.6 Potential environmental impacts

Newmont Boddington has considered the potential impacts outlined in the EPA's Terrestrial Fauna Guideline (2016d) and considers those relevant to the Proposal include:

Direct impacts

- Loss of fauna habitat and/or fauna individuals/species records from native vegetation clearing
- Fragmentation of fauna habitats, and
- Mortality or injury from vehicle strike or interactions with machinery.

Indirect impacts

- Alterations to fauna behaviour as a result of increased light spill, noise, dust and/or vibration
- Habitat degradation from the following:
    - Introduction or spread of dieback
    - Establishment or spread of weed species / populations
    - Altered surface water regimes
- Increased predation or competition from feral animal.

Newmont Boddington has focused the discussion of potential direct impacts of the Proposal within the footprint required for this Proposal and the RDE, where impacts that have not previously been assessed could occur. Indirect impacts have also been discussed and assessed (where relevant). Newmont Boddington has also outlined the potential combined effects of the Revised Proposal on the environment. Information about impacts associated with the Approved Proposal have been provided for context but have not been reassessed. The cumulative impacts with other operations are discussed in Section 16.

Unless otherwise specified, potential impacts discussed in this section are unmitigated (i.e. potential impacts before mitigation and management measures are applied, if required).

9.6.1 Loss of fauna habitat and/or fauna individuals/species records from clearing

A total of 528 ha of fauna habitat will be cleared within the native vegetation of the RDE for this Proposal which comprises 5,799 ha (Table 9-10).

The fauna habitats that will be subject to the greatest amount of clearing for this Proposal include Jarrah/marri/Allocasuarina (sheoak) woodlands on slopes and ridges and Jarrah/marri woodlands on slopes. Both habitat types extend beyond the boundaries of this Proposal land are generally well represented in the Northern Jarrah forest Bioregion (Table 9-10).

Table 9-10 Terrestrial Fauna - potential impacts to fauna habitat types

	Area within the mapped extent of the Wider Survey Area[1]	Area mapped within the RDE	Approved Proposal[2]	Proposed additional clearing within footprint required for this Proposal		Total Revised Proposal[3] Clearing	
Habitat Type	**(ha)[1]**	**(ha)**	**(ha)**	**(ha)**	**% of habitat mapped in Wider Survey Area**	**(ha)**	**% of habitat mapped in the Wider Survey Area**
Blackbutt woodlands on lower slopes	1640	66	10	8	8	18	1
Flooded gum woodlands riparian community	1516	480	130	9	1	139	9
Melaleuca woodland/shrubland on seasonally wet or water-logged clays and clay-loams on valley floors.	670	293	120	8	3	120	17
Melaleuca, E. rudis Woodlands on seasonally wet valley floors	1640	9	0.5	1	29	2	9
Marri/jarrah on lower slopes	1516	271	81	28		109	5
Jarrah/marri/*Allocasuarina* (sheoak) woodlands on slopes and ridges.	670	2552	256	242	3	498	6
Jarrah/marri woodlands on slopes	1640	1385	366	189	2	555	0
Low eucalyptus woodland over low shrubs	1516	5	0	0	3	0	3
Wandoo woodlands	670	699	225	42	0	267	9
Heaths including perched heaths	1640	39	2.5	2	1	4	1
Total (Rounded)	**33,964**	**5,799**	**1,189**	**528**	**2**	**1,718**	**5**

1 Data sourced from Response to Submissions (RtS) (South32 2024)
2 Area of native vegetation remaining in the Approved Proposal Footprint
3.Total area to be cleared in the RDE for the Approved Proposal plus area proposed for clearing within footprint required for this Proposal.

The Proposal includes clearing of supporting habitat for significant fauna including (Table 9-11):

- 475 ha of foraging habitat for BBC
- 475 ha of breeding habitat for CBC and 475 ha of foraging habitat
- 479 ha of breeding habitat and 503 ha of foraging habitat for FRTBC
- 517 ha of Chuditch habitat, and
- 500 ha low value Numbat habitat.

Table 9-11 Clearing of Conservation Significant Fauna Habitat for Proposal

Species	Habitat in RDE (ha)	Footprint Required for this Proposal clearing (ha)
Woylie	4635	472
Numbat	3984	500
CBC foraging habitat	2456	475
CBC breeding	4512	475
BBC foraging	4512	475
FRTBC foraging	4603	503
FRTBC breeding	4440	479
Chuditch	5453	517

In line with the TFMP (Appendix H), dedicated fauna spotters will be present during clearing activities. Trapping and translocation of conservation significant fauna will occur in areas of native vegetation prior to clearing. In the event that significant fauna species are observed within the clearing area, they will be trapped and relocated.

Potential black cockatoo nesting hollows will be inspected prior to commencement of clearing activities. Where active nesting sites are found, trees (with an appropriate buffer) will not be cleared until young have fledged as required by the BCMP (Appendix I).

The majority of conservation significant fauna are generally considered to be highly mobile, and therefore are likely to move into adjacent areas of native vegetation during clearing works; without direct mortality of individuals. Impacts to species records are usually limited to individuals and are not expected to affect populations at a regional or local level and are therefore not expected to be significant.

The South-western Brush-tailed Phascogale, Quenda, Western Brush Wallaby, Western False Pipistrelle, Dell's skink, Peregrine Falcon and Western Rosella have either been recorded regularly in the RDE and surrounding areas or are expected to occur across the RDE, albeit at varying densities due to fragmentation. The Rakali has been recorded from along the Hotham River.

Species-specific impacts associated with clearing are discussed in further detail below.

Black Cockatoos

The footprint required for this Proposal includes:

- 475 ha of foraging habitat for BBC
- 475 ha of breeding habitat for CBC and 475 ha of foraging habitat, and
- 479ha of breeding habitat and 503 ha of foraging habitat for FRTBC.

Within the RDE 9043 ha for FRTBC, 6968 ha for CBC and 4512 ha for BBC of high value breeding and/or foraging habitat has been mapped in the RDE (Table 9-6, Table 9-7,Table 9-8), in addition to the extensive habitat in the wider survey area (Table 9-10).

The DBCA breeding areas dataset indicates that the footprint required for this Proposal does not intersects confirmed CBC breeding area. The footprint required for this Proposal does not intersect any recognised black cockatoo roosting sites (Phoenix 2025).

As part of the assessment of the regional significance of the clearing, the extent of footprint required for this Proposal has been compared with the mapped regional extent of remaining remnant native vegetation within a Wider Survey Area of the Proposal. The extent of remaining vegetation surrounding the Proposal remains relatively high in the vicinity of the Proposal. It is acknowledged that a portion of the remaining remnant vegetation would be high value black cockatoo foraging and breeding habitat and it provides context of the likely proportion of habitat that may remain in the surrounding area (Table 9-10).

The clearing of habitat will be progressive, therefore there will be areas of foraging habitat that will be retained as construction works progress. Based on the information provided above, it is likely that the Proposal will progressively remove foraging and potential breeding habitat, and there will be some time before suitable species grow in rehabilitation toa level suitable to once again support breeding and foraging by this species. This loss is unlikely to result in significant impacts to local and regional populations (given the large areas of remaining breeding and foraging habitat in the area. Newmont Boddington acknowledges that habitat loss is a key contributor to the decline of these species in Western Australia and therefore it is likely that the Proposal will result in a significant impact on black cockatoos. Further studies will be conducted to confirm the significance of this impact and results will be presented in the ERD.

Chuditch

Recovery of Chuditch is guided by the DEC (2012b) document Chuditch National Recovery Plan. The DEC (2012b) identify the key threats to Chuditch include land clearing and habitat alteration, predation by introduced fauna (principally by fox and cats), and deliberate/accidental injury or death (including vehicle collision); threats which DEC (2012b) identify to be continuing/ongoing. The DEC (2012b) identifies the priorities for future actions to maintain and improve the Chuditch population include maintained/enhanced broad-scale introduced predator fauna control and the re-introduction of individuals of into habitat areas within its former range. Introduced fauna, in particular by fox, are thought to supress the Chuditch population through competition for food and predation

Recent biological survey in areas in the RDE recorded multiple detections of Chuditch individuals from physical captures in cage, Elliot traps and camera images. Pre-clearing trapping undertaken from January to March 2023 captured four Chuditch in the native vegetation although it was likely some records for Chuditch may be multiple records of the same individuals due to the high mobility of this taxon, however, the multiple records indicate that Chuditch are widely distributed within the local area.

Breeding, dens may be present (unidentified) given home range extents, the extent of area surveyed in the RDE and Wider Survey Area, and dens being cryptic and therefore may be difficult to identify.

For the Proposal, clearing of 517 ha of Chuditch habitat is proposed. Chuditch can be expected to utilise the fauna habitats of Jarrah/Marri woodland, Jarrah/Marri/Allocasuarina woodland and Wandoo woodland foraging, denning and dispersal. These fauna habitats extend broadly beyond the RDE and are not considered to be locally restricted.

Chuditch are generally considered to be highly mobile, and therefore can be expected to move into adjacent areas of native vegetation during clearing works; without a direct mortality of individuals.

Whilst habitat loss from the Proposal is unlikely to result in significant impacts to regional populations, there is potential for decline to the local population recorded and therefore it is likely that the Proposal will result in a significant impact on Chuditch. Further studies will be conducted to confirm the significance of this impact and results will be presented in the ERD.

Numbat

The remaining known natural populations of numbat occur at Dryandra and Upper Warren (DPaW 2017b). Numbat was not detected during recent surveys in areas surrounding the RDE, but previous records occur nearby. Targeted searches did not identify signs of presence despite recent records in in the Boddington Townsite in 2021 (Biologic 2023; DBCA 2024; Phoenix 2025b). An individual was subsequently confirmed at this location by camera trap footage and visual observations from March to September 2021 indicating it resided in the area (Biologic 2023). However, subsequent survey work in October 2022 recorded a second numbat location in vegetation between the Newmont Boddington pit and current residue disposal area (Biologic 2023).

Clearing for the Proposal includes clearing up to 500 ha of supporting habitat for Numbat (Table 9-11**,** Figure 9-12). On a localised scale, five habitat types have the general features to support Numbat for foraging, breeding, and predator protection, and are considered of High Suitability; Marri/jarrah on lower slopes, Jarrah/Marri/Allocasuarina woodlands on slopes and ridges, Jarrah/Marri woodlands on slopes, wandoo woodlands, and low Eucalyptus woodland over low shrubs. This is also a function of the greater level of connectivity, of the footprint required for this Proposal to contiguous native vegetation in adjacent State Forest area (Biologic 2023).

The limited information on the local abundance and density of Numbat limits a consideration of the potential consequence at the taxon level (i.e. the significance of impact to representation, diversity, viability or ecological function). As a result, assessment of potential consequence of the Proposal to Numbat has used the extent of available fauna habitat.

In this context, and in consideration of its distribution, it is likely that the Proposal will result in a significant impact on potential Numbat habitat. Further studies will be conducted to confirm the significance of this impact and results will be presented in the ERD.

Woylie

Recovery of Woylie is guided by the DEC (2012a) document Woylie National Recovery Plan. The DEC (2012a) identify the key threats to Woylie include land clearing and habitat alteration, predation by introduced fauna (principally by fox and cats).

The Proposal will include clearing up to 472 ha of Woylie habitat. Woylies are considered to be highly mobile and therefore can be expected to move into adjacent areas of native vegetation during clearing works; without direct mortality of individuals.

Despite their mobility, habitat fragmentation can restrict their movement, making habitat connectivity crucial to viability of local populations. Habitat areas surrounding the footprint required for this Proposal is more fragmented due to the level of historical disturbance for mining and agriculture. Whilst habitat loss from the Proposal is unlikely to result in significant impacts to regional populations, there is potential for decline to the local population recorded and therefore it is likely that the Proposal will result in a significant impact on Woylie. Further studies will be conducted to confirm the significance of this impact, and results will be presented in the ERD.

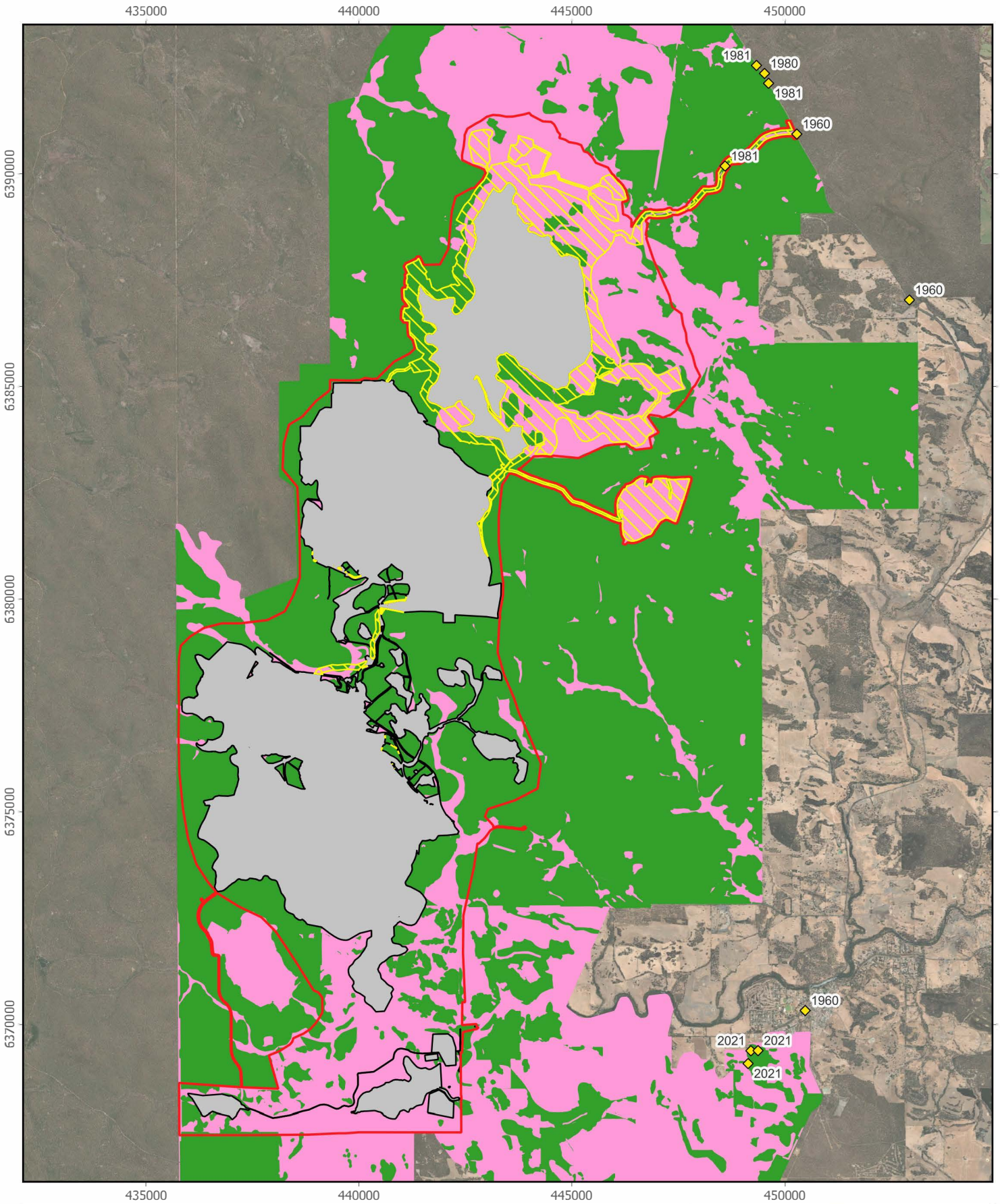


Figure 9-12 Numbat Habitat

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Numbat (*Myrmecobius fasciatus*) - EN
- Potential Numbat Habitat
- Not Anticipated Numbat Habitat

0 1 2 km

Scale @A4 1: 120000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024), Ecologia (2022, 2023), (BIOSTAT, 2021)
Imagery ©Bing Aerial, Esri

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SRE Fauna

Fragmentation of SRE habitat leads to reduced SRE genetic diversity due to a lower dispersion of species and isolation increases amongst species. This isolation can lead to vulnerability to diseases and environmental changes as a limited gene flow increases inbreeding and reduction in fitness and adaptability (Bennelongia 2024a).

There is some taxonomic uncertainty in the identifications of the records captured in the desktop search, and it is possible that this results in elevation of the species numbers. However, a diverse community of potentially restricted species occurs within the broad region of the Proposal, and the RDE almost certainly contain at least some SRE species.

The Proposal has been designed to avoid areas of high value habitat features such as granite outcrops, and impacts to SREs and, as a result, impacts of the Proposal on SRE are unlikely to be significant. Notwithstanding this, additional survey work is required to confirm what SRE species are present and to support the conclusion that the Proposal does not pose a significant impact to the conservation of SRE invertebrates. To address this, a detailed SRE survey is planned within the footprint required for the Proposal and results will be presented in the ERD.

9.6.2 Fragmentation of fauna habitats

Habitat fragmentation can cause division and isolation of local populations of animals through disruption of movement patterns, increased competition for resources, reduced species richness and habitat degradation. Species most likely to experience such isolation would be those inhabiting continuous stretches of habitat, those with less mobility such as SRE invertebrate fauna and small mammal fauna.

The RDE still facilitates connectivity across the area so it is unlikely to lead to population fragmentation on a local scale. The habitat surrounding is continuous and includes Jarrah/Marri and Wandoo communities that connect to State Forest to the west and privately owned native vegetation to the south and east that will continue to allow for movement of fauna.

9.6.3 Mortality or injury from vehicle strike or interactions with machinery

Terrestrial fauna may be displaced and struck by vehicles and machinery during construction and operations. This risk primarily occurs during the clearing phase. Road mortalities are undesirable for both fauna welfare and vehicle safety. Fauna taxa with greatest risk of vehicle collision are those with more limited mobility (e.g., reptiles, frogs, small mammals, dependent young or nocturnal species), and those which may actively bask on roads (reptiles) or forage on roadsides (e.g., birds).

As the Proposal will be implemented as part of current operations the movement of vehicles around the site are not expected to increase significantly. Direct mortality is anticipated to be low as vehicle access and speeds will be limited to manage other potential impacts such as dust emissions.

Although many fauna taxa are likely to avoid human activities there is potential risk that some fauna may enter areas of the operations and become trapped in open-ground excavations and/or water storage structures. Steep sided or slippery structures may prevent fauna escape, resulting in mortality. Consistent with standard operational controls, ground excavations will have sloped sides where practicable to allow for fauna escape, and water storage structures will include fauna egress mating to assist in fauna escape.

Activities will be undertaken in accordance with measures identified in the TFMP (Appendix H) and BCMP (Appendix I). Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to conservation significant fauna habitat from vehicle strike are unlikely to be significant.

9.6.4 Indirect impacts

Dust, Noise, Vibration and Light

The Proposal will result in an increase in dust, noise, vibration and/or light, due to vegetation clearing, earthworks and installation of infrastructure associated with the Proposal during construction. During operation, there will be noise and vibration emissions due to vehicle movements.

Dust emissions from operational activities and vehicle movements will continue throughout the life of the Proposal. During the clearing of vegetation the disturbance may increase the production of dust around the area. The Boddington area experiences windy conditions typified by strong, dry easterly winds from the interior during summer months. This likely contributes to increased background airborne dust levels. Rainfall is likely to remove deposited dust from vegetation, reducing the opportunity for any substantial effects over the long-term. Dust emissions from vehicle movements will not be significant as the Proposal will be incorporated in current operations. The dust emissions produced will be managed through the ongoing implementation of measures outlines in Table 11-8.

The spatial extent of any such indirect impacts is likely to be both spatially limited (to immediate edge of the construction activities) and time-limited (duration of construction activities); such that a significant indirect impact to fauna taxa from general disturbance is unlikely.

Further discussion of the impacts of dust, noise and vibration are addressed in Section 11.10.2.

Increased Competition or Predation by Introduced Species

The Proposal has the potential to introduce additional feral animal species or increase the population of existing introduced species, through the following vectors:

- Inappropriate management of food scrap generation and other wastes may provide additional food sources.
- Clearing/disturbance may result in increased predation opportunities (loss of vegetative cover) or an increased prevalence of flora species (e.g. grasses) more favoured to introduced species.
- Introduction of permanent and semi-permanent water sources may attract and concentrate fauna, increasing predation potential and a dependence on a short-term water source.

Introduced fauna currently known from the RDE include rabbit, cats, pigs and red foxes. These introduced fauna species may affect native fauna through direct predation, competition for food and shelter, habitat degradation through vegetation trampling.

Potential impacts from feral species will be managed by the TFMP (Appendix H) and BCMP (Appendix I) that includes the following specific measures to manage feral species:

- Implementation of control programmes for feral species observed to be significantly impacting native fauna, rehabilitation or operations.
- Feral cat trapping in response to reported sightings.
- Banning of domestic animals onsite.

Given the above mitigation measures that will be put in place, the risk of feral species impacting conservation significant fauna is unlikely to be significant.

Habitat degradation due to dieback and weeds

Dieback

Vegetation clearing and infrastructure construction associated with the Proposal, all have the potential to introduce and/or spread dieback. Dieback can alter the condition of terrestrial fauna habitat through changes in vegetation structure, health, and composition, changes in native fauna species composition, diversity or abundance, or result in increased fire frequency or intensity.

The *P. cinnamomi* occurrence assessments of the Approved Proposal footprint completed by Glevan Consulting (2024) and the RDE by Terratree (2022) throughout the life of operations have recorded the presence of *P. cinnamomi* from several places in the RDE. Infested areas were found mainly alongside major

roads and mining operation areas. Uninfested areas were found throughout the assessment area, with the major areas of uninfested vegetation existing within forest areas to the east. Some areas of the uninfested forest vegetation to the west were also found. Uninterpretable areas were mainly limited to gullies; however, some small pockets of Allocasuarina vegetation were also found to be uninterpretable. Some temporarily uninterpretable areas of vegetation close to the main mining operation areas were found. Dieback occurrence within the RDE is shown in Figure 8-10.

The Proposal is likely to result in the spread of dieback into areas of proposed new disturbance (mainly via vehicle and equipment movement). The footprint required for this Proposal is largely within pine plantation and areas of existing disturbance and nearby existing operations.

Newmont Boddington will undertake Phytophthora dieback surveys of the RDE and footprint required for this Proposal and existing hygiene management measures will be implemented. The Proposal will adopt the dieback hygiene measures outlined in the WFMMP (Appendix G) to reduce the risk of introduction and spread of dieback as well as protect adjacent vegetation that is likely uninfested. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to conservation significant fauna habitat from dieback are unlikely to be significant.

Weeds

Two weed species listed as declared under the BAM Act *(*Cape Tulip (*Moraea flaccida)* and Cotton Bush (*Gomphocarpus fruticosus)* (Mattiikse 2024). No weed species are listed as Weed of National Significance (DCCEEW 2024d).

The Proposal is likely to result in the spread of weeds into areas of proposed new disturbance (mainly via vehicle and equipment movement). The Proposal is largely within pine plantation and areas of existing disturbance and nearby existing operations.

Indirect impacts of weeds are managed the implementation of the WFMMP (Appendix G). The implementation of the WFMMP prevents the realisation of additional indirect impacts by not increasing existing areas of infestation and by actively reducing weed infestations through weed control program.

The Proposal will adopt the controls outlined in the WFMMP to reduce the risk of introduction and spread of weeds. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to conservation significant fauna habitat from weeds is unlikely to be significant.

Changes to fauna habitat from changes to surface water regimes

The Proposal includes surplus water discharge into the Hotham River, potentially affecting surface water regimes by altering water quality, quantity, flow rates, and ecological attributes. These changes could lead to habitat modification, degradation, or loss for significant aquatic species.

Indirect impacts on riparian vegetation and associated fauna habitats may occur due to inundation or a dependency on temporary surface water flow, potentially affecting vegetation health, extent, and composition. Changes in surface water quality from surplus water discharge could also degrade fauna habitats.

A preliminary investigation by SLR (2024a) identified two potential analytes of concern including Cobalt (toxicant) and Nitrite/nitrate-N (stressor).

Distributions of freshwater fish in the Hotham River have been monitored biennially by WRM (now SLR) in accordance with conditions for Newmont Boddington's abstraction licence. Generally, population demographics of western minnow, nightfish and Swan River goby are shaped in accordance with inter-annual variability in rainfall, which controls variation in flow regime and connectivity of tributary creeks (SLR 2024d).

Limited information exists on the following habitat preferences, life histories, and water quality tolerances of south-west endemic macroinvertebrates (e.g., Davis et al., 2014; Pennifold, 2018). predicting direct effects of altered water quality on Hotham River aquatic biota is not possible. It was noted that fauna displayed

modification and adaption to increased salinity and further increases is likely to result in additional reductions in diversity (SLR 2024a).

There is limited knowledge of cobbler populations in the Hotham River, as catches have been low and sporadic. Cobbler are likely to reside in deeper pools and migrate under specific cues (Beatty et al., 2010; Beesley et al., 2019). Given the knowledge gap, predicting direct impacts is difficult. If stable populations exist, cobbler (and other species) likely depend on deeper permanent refuge pools during summer when flows are low and disconnection occurs. During these periods, populations may be prone to changes in water quality (SLR 2024a).

As described in Section 10.5, a water balance model has been developed and discharge is proposed to only occur during the wet season months (June to October), when flows are above the median recorded at the Hotham Weir.

Potential impacts on riparian fauna habitat from surface water flow and quality are unlikely and therefore not discussed further. Additional studies, including ecotoxicity testing for cobalt on various south-west species across different trophic levels are planned to confirm the significance of this conclusion. The results will be presented in the ERD.

9.6.5 Cumulative Impacts

The most significant cumulative impact on terrestrial fauna arising from the Proposal is the loss of fauna habitat from clearing. The Revised Proposal will result in loss of up to 1,717 ha of native vegetation including 1,189 ha from Approved Proposal and 528 ha from the Proposal. Clearing for the Revised Proposal represents 5% of fauna habitats mapped regionally in an area defined by the Wider Survey Area (Table 9-10).

The fauna habitats that will be subject to the greatest amount of clearing for this Revised Proposal include Marri/jarrah on lower slopes, Jarrah/marri/Allocasuarina (sheoak) woodlands on slopes and ridges and Jarrah/marri woodlands on slopes. These habitats provide supporting habitat for the Chuditch, Woylie and Numbat, breeding and foraging habitat for FRTBC and CBC and foraging habitat for BBC.

The combined effect of the Revised Proposal is unlikely to result in significant fragmentation of fauna habitats. The RDE still facilitates connectivity across the area so is considered unlikely to lead to population fragmentation on a local scale. The habitat surrounding is continuous and includes Jarrah/Marri and Wandoo communities that connect to State Forest to the west and privately owned native vegetation to the east that will continue to allow for movement of fauna.

The Proposal is likely to result in an increase in risk of vehicle strike or interactions with machinery/infrastructure. The Proposal infrastructure aligns with existing tracks and roads and is adjacent to existing operations.

The Proposal will adopt the measures identified in the Terrestrial Fauna Management Plan (TFMP) (Appendix H) and Black Cockatoo Management Plan (BCMP) (Appendix I). Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to conservation significant fauna habitat from vehicle strike from the Revised Proposal are unlikely to be significant.

The presence of dieback within the RDE has the potential to impact on the condition and structure of native vegetation present, with construction and operational activity potentially increasing the occurrence and spread of dieback. The current distribution of dieback within the RDE largely reflect this, with higher dieback occurrences present along drainage areas and existing infrastructure.

The Proposal is likely to result in the spread of dieback into areas of proposed new disturbance (mainly via vehicle and equipment movement). The footprint required for this Proposal is largely within pine plantation and areas of existing disturbance and nearby existing operations.

The Proposal will adopt the dieback hygiene measures outlined in the WFMMP (Appendix G) to reduce the risk of introduction and spread of dieback as well as protect adjacent vegetation that may be uninfected. Given that these controls have been implemented for the Approved Proposal since operations commenced, potential impacts to vegetation from dieback from the Revised Proposal are unlikely to be significant.

Increasing vehicular access combined with disturbance such as clearing for infrastructure, has the potential to introduce and/or spread weeds. The occurrence of weeds within the RDE reflects this, with higher weed occurrences recorded along drainage areas and existing infrastructure.

The footprint required for this Proposal is largely within existing pine plantation, or within areas of existing disturbance and adjacent existing operations, and therefore is not likely to significantly increase the occurrence of weeds within the RDE.

Indirect impacts of weeds are managed by the implementation of the WFMMP (Appendix G). The implementation of the WFMMP prevents the realisation of additional indirect impacts by not increasing existing areas of infestation and by actively reducing weed infestations through weed control program.

The Proposal will adopt the controls outlined in the WFMMP to reduce the risk of introduction and spread of weeds. Given that these have been implemented for the Approved Proposal since operations commenced, potential impacts to conservation significant habitat from weeds from the Revised Proposal is unlikely to be significant.

The combined effect of the Revised Proposal will be an increase in dust, noise, vibration and light in areas extending beyond the boundaries of the Approved Proposal footprint. The majority of the footprint required for this Proposal occurs within plantation, cleared land and adjacent operational areas and therefore potential impacts to conservation significant fauna from dust, noise, vibration and light from the Revised Proposal is unlikely to be significant.

There is no discharge of surplus water to Hotham River from the Approved Proposal and therefore, the combined effect of potential changes to aquatic fauna habitats is the same as described for the Proposal in Section 9.6.4.

9.7 Mitigation

Newmont Boddington has mitigated the potential impacts to Terrestrial Fauna factor according to the mitigation hierarchy; avoid, minimise, rehabilitate and offset. To limit the potential impacts on terrestrial fauna, management actions will be implemented in line with the TFMP (Appendix H) and BCMP (Appendix I). These actions are outlined in Table 9-12.

Newmont Boddington will continue to implement the TFMP and BCMP which have been updated to include the Proposal. The TFMP and BCMP outline the operational management and monitoring to minimise and control the environmental impact of the Proposal to fauna values including:

- Environment inductions for site personal
- Dedicated fauna spotters to be present during clearing activities
- Pre-clearance hollow checks and significant fauna trapping and translocation
- Adaptive management approach through ‘trigger’ and ‘threshold’ criteria
- Environmental monitoring
- Reporting, and
- Ongoing stakeholder consultation.

9.7.1 Other statutory decision-making processes

Newmont Boddington considers that there is no other statutory decision-making process to mitigate the potential environmental impacts of the Proposal on Terrestrial Fauna, considering the EPA’s *Taking decision making processes into account in EIA: Interim Guidance* (EPA 2021b).

Dust emissions regulated under Part V licence can assist in managing potential impacts to Terrestrial Fauna habitats. Additional management, as outlined in Table 9-12 is required to ensure that ecological integrity is maintained.

9.7.2 Assessment and significance of residual impacts

Newmont Boddington has considered the significance and relevant issues outlined in Terrestrial Fauna Guideline in assessing the significance of the impacts to terrestrial fauna. The assessment of potential impacts discussed in Table 9-12 are following the application of mitigation.

Table 9-12 Proposed Management Measures for Potential Impacts to Terrestrial Fauna

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
Direct Impacts			
Loss of fauna habitat and/or fauna individuals/species records from native vegetation clearing	**Avoid** Surveys within and surrounding the RDE have been utilised to conduct infrastructure and road design. This avoidance process resulted in the final boundaries of the footprint required for the Proposal presented in this Proposal, specifically modifications made to avoid the following values identified during the surveys: ▪ High value habitat features for confirmed SRE including granite outcrops. ▪ Riparian vegetation and fauna habitat on Gringer Creek **Minimise** The Proposal has been designed to minimise clearing and fragmentation of fauna habitats by designing infrastructure within existing disturbed areas or plantation. The majority of the stockpiles, infrastructure and roads are in pine plantation that is fallow. Newmont Boddington will continue to work with Worsley on planned future clearing footprints and share information Implement the TFMP which includes the following commitments to minimise impacts to fauna habitat to conservation significant fauna: ▪ Clearing for the Proposal will be limited to a maximum extent of 528	No more than 528 ha of native vegetation will be cleared within the footprint required for this Proposal as an authorised limit additional to what has previously been approved as part of the Approved Proposal (5,435 ha). Assessment of residual impacts to conservation significant fauna from the Proposal are described in Section 9.8.	Newmont Boddington considers that there will be significant residual impacts to terrestrial fauna associated with clearing of supporting habitat for conservation significant fauna.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
	ha native vegetation to minimise impacts to fauna habitats. Vegetation clearing will be managed through internal site disturbance procedures. ▪ Requirements for dedicated fauna spotters to be present during clearing activities that hold a licence from DBCA under the BC Act for handling of fauna (relocation) and have access to a care facility if dealing with injured fauna. ▪ Trapping and translocation of conservation significant fauna will occur in areas of native vegetation prior to clearing. In the event that significant fauna species are observed within the clearing area, they will be trapped and relocated. ▪ Maintenance of fauna corridors communicated by Worsley. ▪ All incidents involving conservation significant fauna will be reported and recorded in the incident reporting system. Implement BCMP which includes the following commitments to minimise impacts to FRTBC, CBC and BBC including: ▪ Clearing for the Proposal will be limited to a maximum extent of 528 ha native vegetation to minimise impacts to FRTBC, CBC and BBC. Vegetation clearing will be managed		

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
	through internal site disturbance procedures. ▪ Requirements for dedicated fauna spotters to be present during clearing activities ▪ Completion of pre-clearing checks of known black cockatoo breeding hollow. Active nest hollows are not removed until chicks have naturally fledged. ▪ Monitoring of known natural nest hollows and existing artificial nest hollows. **Rehabilitate** ▪ A MCP will be developed and implemented in accordance with the *Statutory Guidelines for Mine Closure Plans* (Department of Mines, Industry Regulation and Safety (DMIRS), 2020b) for the Proposal. Management approaches relating to terrestrial fauna for the Proposal, include (but are not limited to): ▪ Suitable foraging habitat species for FRTBC, CBC and BBC and other conservation significant species will be included in rehabilitation seed mixes. ▪ Mulch - where native vegetation mulch is utilised, the vegetation type of the mulch sourced is matched with the target vegetation group in the rehabilitation area (where possible). Logs and wood material not required		

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
	as mulch to be distributed in rehabilitation areas to provide habitat for fauna.		
Mortality or injury from vehicle strike or interactions with machinery	**Minimise** Implement the TFMP and BCMP which includes the following management actions: ▪ Signs will be installed on internal roads warning of the potential for fauna to be mobile in the area. ▪ Appropriate speed limits will be imposed on access roads and construction areas to minimise the risk of vehicle strike or fauna interactions with machinery. ▪ Staff and contractor induction training to include information on significant fauna species ▪ All incidents involving conservation significant fauna will be reported and recorded in the incident reporting system.	Existing public roads and tracks are present within the footprint required for this Proposal and therefore any potential impacts on fauna are expected to be minimal. Whilst some individuals may be injured or killed due to the temporary increase in traffic and vehicle/machinery activity during construction any impacts would be highly localised and unlikely to affect any species at a local or regional level. The TFMP and BCMP include imposing appropriate speed limits on access roads and construction areas to minimise interactions with fauna that would result in injury or mortality.	Potential impacts on conservation significant fauna due to increased risk of vehicle strike or from interactions with machinery or infrastructure as a result of either the Proposal alone or the Revised Proposal are unlikely to be significant.
Fragmentation of fauna habitats due to native vegetation clearing	**Minimise** Implement TFMP and BCMP which includes the following management action: ▪ Maintenance of ecological corridors communicated by Worsley	Fragmentation of fauna habitats will occur due to additional vegetation clearing and the placement of infrastructure which can create a barrier to movement; however, this would not be expected to limit movement for most conservation significant fauna species. The RDE still facilitates connectivity across the area so is considered unlikely to lead to population fragmentation on a local scale. The habitat surrounding is	Newmont Boddington considers residual impacts of habitat fragmentation from the Proposal or Revised Proposal are unlikely to be significant.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
		continuous and includes Jarrah/Marri and Wandoo communities that connect to State Forest to the west and privately owned native vegetation to the east that will continue to allow for movement of fauna. Additional survey work is currently being undertaken to further understand SRE invertebrate fauna values within the footprint required for this Proposal. Given the Proposal will not fragment any highly prospective habitat features for SREs such as granite outcrops, impacts to SREs as a result of the Proposal are considered unlikely to be significant.	
Indirect Impacts			
Alterations to fauna behaviour as a result of increased light spill, noise, vibration and dust	**Minimise** Implement the TFMP and BCMP which includes the following management actions: ▪ Lighting limited to levels required to maintain a safe work environment during construction and operation ▪ Education of personnel as part of inductions to ensure staff are familiar with the fauna of the area and how to avoid negative impacts	Whilst disturbances associated with an increase in light, noise, vibrations and dust are expected as a result of the Proposal, these will be highly localised. Given that activities for the Proposal will take place mostly within pine plantation, existing cleared areas and adjacent operational areas or areas with existing roads and tracks impacts from the Revised Proposal are not expected to be greater than is already present for the Approved Proposal.	Following mitigation, it is unlikely that any impacts associated with increased dust, noise, vibration or light from the Proposal or Revised Proposal are significant.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
Increased competition or predation from feral animals	**Minimise** Implement the TFMP and BCMP which includes the following management actions: ▪ Food scraps and other waste will be disposed of in covered waste facilities. ▪ Prohibiting keeping of domestic pets on site. ▪ Opportunistic feral fauna sightings will be recorded. ▪ Implementation of feral animal control measures (baiting and trapping) will be implemented in collaboration with DBCA, Peel Harvey Catchment Council (PHCC) and Shire of Boddington.	Vegetation clearing and construction activities associated with the Proposal have the potential to increase feral animals such as pigs, foxes and cats. The placement of infrastructure can enhance the ability of feral animals to move through the landscape. Infrastructure placement within the footprint required for this Proposal has been designed mostly in plantation and cleared land and would therefore not be expected to result in a significant increase in feral animals.	Given the level of existing disturbance within the footprint required for this Proposal and feral animal control measures, the potential impacts on conservation significant fauna due introduction or spread of feral animals from the either the Proposal or Revised Proposal are unlikely to be significant.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impact
Habitat degradation as a result of: ▪ Introduction or spread of dieback ▪ Establishment or spread of weed species / populations	**Minimise** Implement the revised WFMMP to minimise potential risks of habitat degradation from dieback and weeds including: ▪ Vehicles, machinery and personnel will be restricted to designated areas. ▪ Vehicles/machinery to be clean of soil and vegetation upon entry and exit from site. ▪ Vehicles to pass through hygiene wash bay and inspection completed ▪ Dieback surveys of the footprint required for this Proposal and RDE. A currency of 12 months is required for areas to be cleared. ▪ Demarcation of infested areas including installation of signage and flagging tape. ▪ Weed surveys of the RDE are undertaken and where weeds are identified, weed spraying and/or removal is completed. **Rehabilitate** Materials used for rehabilitation (such as topsoil) are assessed for likelihood to contain weeds and dieback. Materials that are likely to contain this material will not be used to rehabilitate weed and dieback free areas.	The Proposal has potential to spread weeds or dieback into areas of proposed new disturbance (mainly via vehicle/machinery movement). Weed species that are declared under the BAM Act include Cotton Bush and Cape Tulip have been recorded in the RDE. Dieback assessment surveys have been conducted throughout the life of the Approval Proposal and have recorded the presence of *P. cinnamomi* from several places in the RDE. The current distribution of dieback and weeds within the RDE largely reflect this, with higher dieback and weed occurrences present along drainage areas and existing infrastructure. Given the above, Newmont Boddington has strict hygiene measures in place as part of the Approved Proposal which will continue to be implemented for the Proposal.	Neither the Proposal alone or the Revised Proposal would be likely to result in the introduction or spread of invasive weed species and dieback that would have a significant impact on terrestrial fauna habitat given the proposed management measures in the WFMMP such as hygiene management and weed control measures.

9.8 Significant residual impacts

Following the application of the mitigation hierarchy and the Residual Impact Significance Model in the WA Offsets Guidelines (Government of Western Australia 2014), Newmont Boddington considers that there will be significant residual impacts to terrestrial fauna associated with clearing of habitat for conservation significant fauna.

After the implementation of avoidance, minimisation and rehabilitation mitigation measures, it is predicted that the Proposal will have an unavoidable significant residual impact on FRTBC, CBC, BBC, Chuditch, Woylie and Numbat. This includes loss of the following habitat:

- 475 ha of foraging habitat for BBC
- 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat.
- 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC
- 472 ha for Woylie
- 500 ha for Numbat, and
- 517 ha for Chuditch.

Additional survey work is currently being undertaken to further understand conservation significant fauna and SRE invertebrate fauna values within the footprint required for this Proposal. Results of these surveys will be presented in the ERD.

Newmont Boddington acknowledges that habitat loss is a key contributor to the decline of FRTBC, CBC, BBC, Chuditch, Woylie and Numbat in Western Australia. Taking this into consideration, the preliminary assessment of offsets is discussed in Section 13 including how the proposed offsets will counterbalance the significant residual impact on conservation significant fauna values.

9.9 Predicted Environmental Outcomes

The EPA's environmental objective for this factor is to "protect terrestrial fauna so that biological diversity and ecological integrity are maintained". In the context of this objective: "ecological integrity" is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements (EPA 2016d)

The footprint required for this Proposal lies predominantly in cleared and pine and eucalypt plantation areas, which have limited and short term value to the native fauna which inhabit the broader Boddington area. Directly west of the footprint required for this Proposal, large areas of terrestrial fauna habitat remain largely un-impacted from mining or forestry operations and form part of the Dwellingup State Forest. To the south and east lies native vegetation managed by Newmont Boddington.

Targeted conservation significant fauna surveys have been conducted in areas surrounding the RDE. Baseline surveys found several species of significance present in and around Newmont Boddington Mine. This included three threatened species of black cockatoos present in the south west of WA, Chuditch, Numbat, Woylie and Red-tailed Phascogale. Two of the three black cockatoo species (CBC and FRTBC) are known to breed in the vicinity.

Additional surveys will be undertaken to address information gaps in un-surveyed areas of the footprint required for this Proposal and confirm predicted outcomes consistent with the commitment to protect terrestrial fauna so that biological diversity and ecological integrity are maintained (Table 9-13).

Table 9-13 Proposed surveys for terrestrial fauna and SRE

Proposed Survey	Survey Scope	Commencement date
Detailed terrestrial fauna survey	Detailed survey within the footprint required for this Proposal for significant species within previously unsurveyed area	H2 2025
Targeted terrestrial fauna survey	Targeted terrestrial fauna survey within the Habitat Preservation Offset for conservation significant fauna species previously identified in the Wider Survey Area.	H2 2025
Targeted SRE fauna Survey	SRE survey within previously unsurveyed area of the footprint required for this Proposal.	H2 2025

After the implementation of avoidance, minimisation and rehabilitation mitigation measures, the significant residual impacts to FRTBC, CBC, BBC, Chuditch, Woylie and Numbat include loss of the following habitat:

- 475 ha of foraging habitat for BBC
- 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat
- 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC
- 472 ha for Woylie
- 500 ha for Numbat, and
- 517 ha for Chuditch.

These are proposed to be counterbalanced by offsets to ensure that the EPA objective can be met (Section 13). The proposed offsets take advantage of similar habitat in very good to excellent condition in close proximity and provides connectivity to the Proposal.

If the Proposal is approved, the Ministerial Statement for the Revised Proposal is likely to contain conditions requiring the development and implementation of an Offset Management Plan. The offset measures will be reviewed and refined in the Offset Management Plan and will be informed by discussions with DBCA, DCCEEW and EPA Services to ensure they adequately counterbalance the residual impacts.

Table 9-14 identifies the proposed environmental outcomes. This includes how the proposed environmental outcomes are consistent with the EPA's objective for Terrestrial Fauna and whether (and if so how) a proposed environmental outcome can be assured by a limit on the extent of a proposal element/s and/or other condition, or another statutory decision-making process which can mitigate the specific potential impacts of the proposal on Terrestrial Fauna.

As required by the EPA's *ERD Instructions for Significant Amendments* (EPA 2024b), Newmont Boddington considers that the EPA should review the Approved Proposal implementation conditions related to Terrestrial Fauna under section 40AA(3). This review could be incorporated into the EPA's assessment report under section 44, as part of the Proposal's evaluation under section 40. The goal is to modernize these conditions to align with the EPA's contemporary approach to condition setting, which has been reflected in EPA Reports and MS since early 2023.

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Table 9-14 Terrestrial Environmental outcomes and proposed assurance and monitoring

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
Clearing of habitat for significant fauna including : • 475 ha of foraging habitat for BBC • 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat. • 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC • 472 ha for Woylie • 500 ha for Numbat, and • 517 ha for Chuditch.	Clearing of foraging, breeding and dispersal habitat for conservation significant fauna in the Northern Jarrah Forest IBRA region.	**Condition A1:** Limit on extent of Revised Proposal element: Up to 5963 ha of native vegetation clearing within the Revised Development Envelope. Clearing of no more than 528 ha for the Proposal. **B2 Terrestrial Fauna** **B2-1** The Proponent must ensure the implementation of the proposal achieves the following environmental outcomes: Disturb no more than the following environmental values: • 475 ha of foraging habitat for BBC • 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat • 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC • 472 ha for Woylie • 500 ha for Numbat, and • 517 ha for Chuditch.	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance ▪ Annual land disturbance reporting against approved limits/extents	The potential significant residual impact of the proposed clearing of breeding and foraging habitat for CBC, FRTBC, foraging habitat for BBC and supporting habitat for Woylie, Numbat and Chuditch can be counterbalanced by offsets outlined in Section 13 so that the environmental outcome is consistent with EPA's objective.
		Condition B4 Offsets: (1) The Proponent must implement offsets to counterbalance the significant residual impacts of the	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance	The potential significant residual impact of the proposed clearing to habitat for conservation significant fauna habitat can be counterbalanced

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
		proposal on the following environmental values: • Breeding and foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) • Foraging habitat for Baudin's Black Cockatoo (*Zanda baudinii*) • Habitat for Woylie, Chutdich and Numbat (2) Offset Environmental Management Plan The Proponent must review and revise the Offset Environmental Management that demonstrates how the environmental outcomes and objectives in condition B4-1 will be achieved, and how this achievement will be substantiated, and submit it to the CEO.	▪ Annual land disturbance reporting against approved limits/extents	by offsets outlined in Section 13, so that the environmental outcome is consistent with EPA's objective.
Injury, mortality or displacement of fauna due to vehicles and machinery strike.	Minimise direct impacts to conservation significant fauna related to vehicle/machinery strike.	**B2-2** Prior to ground disturbing activities, the Proponent must undertake the following: Using a suitably trained and licensed fauna handler, remove ground-dwelling fauna from the disturbance footprint and re-locate the fauna to adjacent vegetated areas. **B2-3** During construction, the Proponent must undertake the following actions:	Standard management practices: ▪ Internal site disturbance permit process to manage ground disturbance. ▪ TFMP and BCMP	The biological diversity and ecological integrity of significant fauna values will be maintained, which is consistent with the EPA's objective for Terrestrial Fauna.

Residual Impact	Outcome	Condition or other statutory decision-making process	Proposed Monitoring	Consistency with EPA objective
		(1) Ensure the presence of fauna handlers during clearing activities; (2) Using a fauna handler with experience in surveying for black cockatoos, inspect all suitable nesting hollows within the footprint required for this Proposal to determine if any hollows are being used for nesting by black cockatoos; (2) if any hollows are in use by black cockatoos, the Proponent shall not disturb the nesting tree, until after the black cockatoos have naturally completed nesting (young have fledged and dispersed) and a fauna handler has confirmed that the hollow(s) are no longer being used by black cockatoos; (3) Clear trapped vertebrate fauna from within open trenches using a fauna handler.		

10 Inland Waters

10.1 EPA Objectives

The objective for Inland Waters (EPA is:

'To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected'.

There is a fundamental link between the environmental values supported by or dependent on the hydrological regimes and water quality of inland waters (EPA, 2018a). Inland waters include the hydrogeology or groundwater, and hydrology or surface water. These aspects are described within the RDE and, where appropriate, beyond this extent. An assessment of potential impact on associated values is then discussed along with proposed mitigation measures and the predicted outcome for this key environmental factor.

10.2 Policy and Guidance

Table 10-1 describes the policies and guidance relevant to the inland waters environmental factor and how these have been considered as part of this referral.

Table 10-1 Inland Waters - policy and guidance

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors and Objectives (EPA 2023a)	This assessment has been conducted based on the EPA's objective for flora and vegetation. The referral considers the EIA goals, evaluates the significance of impacts, and application of the required mitigation hierarchy.
Environmental Factor Guideline - Inland Waters (EPA 2018a)	Newmont Boddington completed the following items in relation to the Proposal: • Considered the links with other environmental factors • Applied the relevant considerations for environmental impact assessment • Considered the environmental values supported by or dependent on Inland Waters, and their significance • Undertook investigations and studies consistent with the information required for Environmental Impact Assessment (EIA)
Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2024e)	This have been considered in planning for the Part IV approval process and has been used to inform the preparation of this referral.
Instructions on how to prepare an Environmental Review Document (EPA 2024b)	Forms the basis of the referral headings and content to be provided in future ERD submission. Considered in the drafting of this referral for preliminary impact assessment.
Referral of a proposal under section 38 of the Environmental Protection Act 1986: Instructions (EPA 2024d)	

Policy or Guidance	How the Policy and Guidance has been considered
Other State or Commonwealth	
Western Australian Water in Mining Guidelines (DoW 2013)	Undertook the following steps consistent with the guideline • Considered options for surplus water discharge to the Hotham River and potential impacts, including cumulative impacts Discharge of surplus water to the Hotham River is subject to the DWER Water in Mining guideline (DoW 2013) and licence requirements.
Water Quality Protection Notes (DOW, various)	A number of the Water Quality Protection Notes published by the WA Govt are very relevant to the Proposal and have been used to inform the impact assessment and well as mitigation approaches.
Use of operating strategies in the water licencing process (DWER 2020)	This policy identifies which water licence applicants may have to develop operating strategies. Newmont Boddington describes how these strategies may form part of the conditions in a water licence, how licencees must abide by the commitments within them and how to amend, renew and transfer them.
National Water Quality Management Strategy (NWQMS) (Australia Government 2018)	Australia's National Water Quality Management Strategy provides guidance on the management of water quality in Australia and New Zealand. This guidance has been used in consideration of surface water management and setting appropriate water quality targets
Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC & ARMCANZ 2000)	The Water Quality Guidelines provide authoritative guidance on the management of water quality for natural and semi-natural water resources in Australia and New Zealand.
Guidelines for Groundwater Quality Protection in Australia (DAWE 2013b)	These guidelines are designed to support the overall objective of the NWQMS, focusing on protecting and enhancing groundwater quality to support the nominated environmental values and preventing groundwater contamination. The desired outcome of these guidelines is a consistent, high-level approach to groundwater quality protection across Australia, with the assignment of environmental values for all groundwater.
Assessing and managing water quality in temporary waters Technical Report (DAWE 2020)	This document provides guidance for the application of the ANZG (2018) Water Quality Management Framework (**WQMF**) for assessing water and/or sediment quality of temporary waters. It assumes that the normal WQMF process is applied but provides specific consideration for temporary waters.

10.3 Receiving Environment

10.3.1 Inland Waters Studies

Several studies have been undertaken as a result of this Proposal which include, but not limited to, ongoing baseline surface water monitoring of Boggy Brook, Gringer Creek and Hotham River, groundwater conceptualisation and monitoring and flood modelling for the existing (pre-development) and conceptual tailings dam facilities. These studies have built on the works completed to date by Newmont Boddington to better understand the local inland waters which surround the Newmont Boddington Mine.

Newmont Boddington has an extensive surface and groundwater monitoring program which covers areas close to its operations to monitor for early detection of changes but also long-term monitoring of more distant, background conditions. Triggers are established in the monitoring database to alert the Newmont Boddington Mine to potential changes in water quality or groundwater levels, and data is analysed annually by an external SME to assess changes and compliance against the Part V licence L8306/2008/3 (BigDog, 2025c).

Groundwater dependent vegetation is discussed in Section 8.9.

Surveys and studies to support the Inland Waters assessment for the Proposal are summarised in Table 10-2.

Table 10-2 Inland Waters studies and surveys

Author and Year	Title	Summary
Surface Water		
Piteau 2025	Newmont Boddington Gold Boddington RDA2 Stage 2B Study: Water balance and water quality assessment	Describes the application of a site-wide probabilistic water balance and chemical mass balance model to determine an appropriate water management strategy for the period of operation of RDA2.
SLR Consulting Australia (SLR) 2024a	Draft Hotham River Aquatic Survey and Site Specific Guideline Values Desktop Review and Risk Assessment of Modelled Discharge	SLR reviewed aquatic fauna values of the Hotham River, described baseline water quality, develop site-specific guideline values (SSGVs) protective of resident aquatic fauna values, and assess likelihood of exceedances of SSGVs occurring under discharge of current modelled discharge water quality, to identify potential analytes of concern (PAoC).
SLR Consulting Australia (SLR) 2024b	Boggy Brook Baseline Aquatic Fauna Survey and Interim Site-Specific Guideline Values	Document and assess the aquatic ecological values of Boggy Brook. Long-term data from five locations on Boggy Brook were analysed to examine background concentrations of analytes for Boggy Brook, and to propose interim **SSGV**.
SLR Consulting Australia (SLR) 2024c	Gringer Creek Aquatic Fauna Survey and Interim Site-Specific Guideline Values	SLR completed the following: ▪ A brief desktop review of aquatic ecosystem values of Gringer Creek and nearby creeks and rivers ▪ A baseline field survey, documenting water quality, habitat, and aquatic fauna, and ▪ Analysis of long-term water quality monitoring data and assessment against default guideline values (**DGV**) (ANZG 2018), and derivation of interim SSGVs.
SLR Consulting Australia (SLR) 2024d	Hotham River Abstraction & Flows Review of EWR performance & SDL	Assessed whether abstraction under site water licence (SWL 60668(6)) has adversely affected the frequency or duration of the key ecological water requirement flow thresholds identified by WRM (2011), compared to their frequency and duration if abstraction was not occurring. Related the sustainable diversion limit to the current licence total annual volume and to the total catchment allocation.

Author and Year	Title	Summary
SLR Consulting Australia (SLR) 2024e	Hotham River: Monitoring Fish Populations Under Increased Abstraction, Annual and Biennial Surveys 2015-2023	This study included the following: ▪ Comparison of fish and crayfish species richness and abundance upstream and downstream of the abstraction point (the reach between and including the Tullis Bridge pumping station and the old Alcoa pumping station) using standard catch per unit effort ▪ (CPUE) methods ▪ Comparison of size composition (population age-class structure) of the most abundant fish species upstream and downstream of the abstraction point, and ▪ Comparison of fish species movement (upstream/downstream migratory patterns) upstream and downstream of the abstraction point.
Groundwater Resource Management (GRM) 2021	Report on the Gringer Creek Catchment Runoff Reduction Caused by the Development of the Residue Disposal Area No2.	Summarises the results of the hydrological assessment of the Gringer Creek catchment and describes the estimated reduction of surface runoff caused by the development of Disposal Area No 2 (RDA2)
Wetland Research and Management (WRM) 2012d	Thirty-Four Mile Brook Ecological Monitoring	This study included the following: ▪ Systematic sampling of fish, crayfish, macroinvertebrates and water quality of Thirty-Four Mile Brook in early spring 2010 and 2011 ▪ Assessment of the conservation status of aquatic fauna recorded ▪ Comparison of water quality data against ANZECC/ARMCANZ (2000) guidelines for protection of aquatic ecosystems. This included a review of NBG water quality data from sites on Thirty-Four Mile Brook ▪ Statistical analysis of species assemblage data to compare sites upstream and downstream of the Mine, and ▪ Recommendations for ongoing monitoring program to evaluate any impact due to mine expansion.
WRM 2012a	Hotham Farm Water Quality and Aquatic Fauna Survey	Baseline study of aquatic fauna in Hotham River including: ▪ Systematic sampling of water quality, benthic macroinvertebrates, crayfish and fish ▪ Comparison of water quality data against ANZECC/ARMCANZ (2000) guidelines for protection of aquatic ecosystems ▪ Assessment of the conservation status of aquatic fauna recorded, and

Author and Year	Title	Summary
		▪ Statistical analysis of species assemblage data.
WRM 2012b	Gringer Creek Baseline Aquatic Fauna Sampling	Baseline study of aquatic fauna in Gringer Creek including: ▪ Systematic sampling of water quality, benthic macroinvertebrates, crayfish and fish of the Gringer Creek in early spring 2011. ▪ Comparison of water quality data against ANZECC/ARMCANZ (2000) guidelines for protection of aquatic ecosystems. ▪ Assessment of the conservation status of aquatic fauna recorded. ▪ Statistical analysis of species assemblage data.
WRM 2012c	Acquired Lands Ecological Monitoring, Baseline Aquatic Fauna Sampling	This study included the following: ▪ Systematic sampling of aquatic fauna (crayfish, fish and macroinvertebrates) and water quality (ions, nutrients, metals) at six locations on creeklines in the Acquired Lands in winter/early spring 2011 ▪ Assessment of the conservation status of aquatic fauna recorded ▪ Comparison of water quality data against ANZECC/ARMCANZ (2000) guidelines for protection of aquatic ecosystems. This included a review of water quality data from two sites in the Acquired Lands ▪ Statistical analysis of species assemblage data to compare sites, and ▪ Recommendations for on-going monitoring program to evaluate any affects, if any, of development of the Acquired Land.
WRM 2011	Hotham River - Ecological Water Requirements and Ecological Sustainable Yield Downstream of Tullis Bridge	Key objectives of this study included: ▪ Determine EWRs at defined cross sections of the Hotham River downstream of Tullis Bridge ▪ Design a flow regime with appropriate spatial and temporal variability to sustain the values at a low level of risk, and ▪ Define an ecologically sustainable yield to operations for the abstraction licence.
Groundwater		
Big Dog Hydrogeology (BDH) 2025a	Newmont Boddington Baseline Hydrological Assessment for RDA2	Key objectives for the baseline hydrological assessment was to: ▪ Describe the groundwater and surface water systems present at RDA2 in the absence of mining influences and to characterise the interactions between these systems

Author and Year	Title	Summary
		▪ Identify potential mechanisms for environmental harm associated with the operation of RDA2 ▪ Provide recommendations for groundwater and surface water monitoring during construction and operation of RDA2 which will 1) meet the likely, requirements of L8306; and 2) provide early warning of the potential for environmental harm and any requirement for mitigation.
BDH 2025b	Assessment of Mining Influences on Groundwater	Key objectives for the assessment of mining influences on groundwater was to: ▪ Update the conceptualisation of the regional groundwater system using investigations and monitoring data collected to 2025 ▪ Determine whether the model predictions of future drawdown extent (Golder 2019) remain valid, or whether the predictions underestimate or overestimate regional drawdown ▪ Develop simplified groundwater monitoring triggers which can easily and routinely be applied to three monthly groundwater monitoring results in the GGDVMMP ▪ Ensure that the triggers nominated for use in the GGDVMMP are suitably protective of the receiving environment, while not being prone to false triggering due to natural seasonal and background trends ▪ Outline the investigations which would be required to be undertaken if triggered by the groundwater monitoring undertaken as part of the GGDVMMP ▪ Provide a complete description of mining influences on groundwater using all monitoring data collected to 2025, and ▪ Outline the potential influences of RDA2 on groundwater to guide the design studies for this facility.
BDH 2025c	Boddington Gold Mine, 2024 Annual Hydrological Review	Annual review of compliance surface water and groundwater data against licence monitoring conditions under L8306/2008/3.
BDH 2024	Boddington Gold Mine – RDA Groundwater Management Plan	Groundwater management plan for current RDA. Key objectives include: ▪ Provide a standalone summary of potential seepage influences on the receiving environment without the requirement to reference the multiple detailed investigation reports

Author and Year	Title	Summary
		▪ Formalise the existing monitoring and management of groundwater and vegetation around the RDAs ▪ including the definition of triggers, required actions and timeframes ▪ Describe management and monitoring associated with expansion of the F1/F3 RDA from 600 MT to 750 MT, and ▪ Ensure that RDA GMP is suitably structured to be applied to any new RDAs constructed in alternative locations in future.
Golder and Associates (Golder 2019)	Boddington Hydrogeological Investigation, Numerical Groundwater Flow Model Update	Developed regional groundwater flow model. The key objective was to further understanding of hydrogeological system of the 34 Mile Brook catchment based on conceptual understanding of the site developed by BDH (2018).
BDH 2018	Newmont Boddington Gold 2018 Update of Groundwater Conditions and Regional Groundwater Management Plan.	Key objectives of this study include: ▪ Update the conceptualisation of the regional groundwater system using investigations and monitoring data collected from 2016 to 2018. ▪ Expand the domain of the groundwater management plan to include an assessment of conditions in the environment around the RDAs. ▪ Identify potential pathways and mechanisms by which mine related drawdowns may be transmitted into the receiving environment, and potential resulting influences, including a more detailed assessment of groundwater interactions with the Hotham River. ▪ Ensure that the current groundwater monitoring regime is suitably designed to identify the influences of all mine facilities, including mine dewatering and the operation of regional bores for raw water supply. ▪ Generate conceptual maps of depth to groundwater below topographic surface, for both current and future conditions, for input to prioritising investigations for regional vegetation management.

10.3.2 Surface Water

All rivers and creeks within and surrounding Newmont Boddington Mine experience ephemeral flow primarily in response to precipitation between the months of May to October. The current operations are located within the surface water catchments of 34Mile Brook, Boggy Brook and House Brook, all of which eventually report to the Hotham River (BDH 2025a) (Figure 10-1). The RDA2 facility, which forms part of the Approved Proposal under MS971, will be constructed in the Gringer Creek catchment, to the northeast of the current Newmont Boddington Mine operations. Gringer Creek flows into the Bannister River, which in turn reports to the Hotham River, just upstream of where the Hotham passes the main Boddington township.

The natural topography of the local region slopes from around 340 m above Australian Height Datum (**mAHD**) to the north of the operations, down to 200 mAHD at the Hotham River in the south. The Hotham River retains pools during the summer period, and regional groundwater investigations indicate these pools are supported by groundwater discharge (BDH 2025b).Similar summer pools have been observed in Gringer Creek, suggesting these are also supported by groundwater discharge (BDH 2025b).

Surface water quality ranges across the local ephemeral creeks with water quality generally considered good in the forested catchment areas, becoming more saline in downstream reaches adjacent to farmland (e.g. Boggy Brook, SLR, 2024b). The water quality of Gringer Creek is generally good with TDS, EC and sulphate being reduced during high flow conditions, and higher in low flow conditions due to influences from groundwater and evapoconcentration (SLR 2024b).

Hotham River

The Hotham River is the primary permanent surface water feature in the Boddington region. Generally, waterways in the vicinity of Hotham River have been characterised by varying degrees of legacy impacts from clearing of native vegetation for agriculture and forestry (SLR 2024a). The Hotham River is a major sub-catchment of the Murray River with a catchment area of 3,938 km^2 (Red Creek 2017). The sub-catchment is predominantly cleared, being part of the Wheatbelt region, and water quality is affected by secondary salinisation (SLR 2024a). Total annual flow in the Hotham River since 2015 has varied between 10 and 254 gigalitres per year (**GL/yr**) with an average flow of 61.5 GL/yr (SLR 2024d).

Winter flows in the Hotham River are related to catchment-scale rainfall events, while summer flows are considered to result from groundwater baseflow throughout the catchment (BDH 2025c).Monitoring of the groundwater systems adjacent to the Hotham River has identified groundwater elevations in the weathered and fractured upper bedrock closely mimic elevations within shallow gravels and mimic the river elevations, indicating that hydraulic connection is present between the regional groundwater system and surface water flows in the Hotham River (BDH 2025b).

Due to the brackish water quality of the Hotham River, it is not suitable for agriculture and farmers tend to rely on surface water run-off into paddock dams for water supply. The main community uses for the Hotham River are fishing and recreation. Whilst generally saline to hypersaline (depending on the season) Hotham River water quality is generally good (SLR 2024a) with most analyte concentrations below the Australian and New Zealand DGV (2018) for 95% species protection. This is applicable to moderately disturbed systems with the exception of cobalt (SLR 2024a). Most toxicants and stressors were also below the DGVs apart from EC, nitrite/nitrate-N (N_NOx) and total nitrogen (SLR 2024a).

Newmont Boddington has a Licence (60668) under the WA RIWI Act to abstract surface water from the Hotham River. The licence allows for abstraction of up to 15 GL/yr under conditions related to high flow periods which are typically experienced in the winter months. Water abstraction can only occur when the river flow is greater than 342 kilolitres per hour (**kL/h**) and abstraction is not allowed to cause the river to fall below 342 kL/h as measured at Marradong Road Bridge gauging station.

Newmont Boddington conducted a study to increase the understanding of the Ecological Water Requirements (**EWRs**) and Ecologically Sustainable Yield (**ESY**) for the section of the Hotham River downstream of Tullis Bridge to Marradong Bridge Gauging Station (GS614224) (WRM 2011). This study considered ecologically critical flow rates to satisfy requirements for baseflow, summer and winter riffle inundation, small and large fish passage, connectivity with 34-Mile Brook for fish passage, active

channel, top of bank, floodplain and wetland sumps and inundate reed/rush band on the outer floodplain. Whilst this study determined Newmont's abstraction was not impacting this stretch of the Hotham River, it also suggested additional water could be abstracted, and at lower flow rates in the river, without impacting the ESY of the Hotham River. At the time of the study Newmont Boddington's abstraction licence was restricted to 10 GL/annum. The licence was increased to 15 GL/annum following this assessment but the flow rate restrictions have remained.

Thirty Four Mile Brook

Thirty Four Mile Brook is ephemeral, only flowing during between July and September if seasonal rainfall has been sufficient. The Brook contributed approximately 0.4% of the water to the Hotham River prior to mining (Strategen 2013). Thirty Four Mile Brook was previously diverted by Hedges Gold Pty Ltd and more recently by Newmont Boddington to prevent contamination of Thirty Four Mile Brook by seepage or runoff from WRDs (BDH 2025b)

Much of the upper catchment flow is dammed by the D1 water storage dam or F1/F3 RDA. The only section of Thirty Four Mile Brook that flows into Hotham River is the section south of the mine footprint. A potential expansion of the access road between the mine and existing RDAs may occur in order to transport waste rock material to the RDA2. In addition, allowance has been made in this Proposal for the future installation of a closure spillway from F1/F3 RDA to D1 water storage dam. This is not anticipated for installation until at least 2035, following decommissioning and closure cover establishment on F1/F3 RDA. No works are proposed in the southern section of Thirty Four Mile Brook below the dam.

Gringer Creek

The majority of the activities under this Proposal are located within the Gringer Creek catchment. The Gringer Creek catchment is situated on the Darling Plateau which comprises mainly native Jarrah forests. The Saddleback Treefarm covers about 40% of this catchment, 7.6% has been cleared for farmland and the remaining catchment is native vegetation (GRM 2021). The approved footprint of the RDA2 facility is planned for placement over two ephemeral creeks (Gordon's and Horseyard) which feed into Gringer Creek.

Gringer Creek is highly seasonal with flows commencing in late May/early June and usually ceasing by late November or December (SLR 2024c). Summer rainfall tends to generate only short-lived flow events, if at all (SLR 2024c). Total yearly streamflow from Gringer Creek has been recorded between 0.8 and 7.6 GL/yr (GRM 2021).

The Gringer Creek water quality is characterised by high electrical conductivity, circum-neutral pH, dissolved oxygen at around 100% saturation and low concentrations of metal analytes, with exception of local elevations of iron, cobalt and manganese which were detected at one site in both the 2011 and 2023 aquatic fauna assessment (SLR 2024c. These concentrations are higher in low flow conditions, suggesting they are influenced by a groundwater source (BDH 2025b).

Boggy Brook

Water quality in Boggy Brook is generally good, however a salinity gradient occurs between the upstream forested reach (fresh) and downstream reaches adjacent to farmland (brackish) (SLR 2024b).

Water quality in both upper and lower reaches had circum-neutral pH, low turbidity and total suspended solids (TSS), low concentration of nutrients and most dissolved metals, with exception of aluminium and copper (SLR, 2024a). The salinity gradient identified between forested reaches and reaches adjacent to farmland is indicative of secondary salinisation in the lower reaches. Aluminium and copper were elevated in the farmland sites, however it is unknown the proportion of which was bioavailable (SLR 2024b).

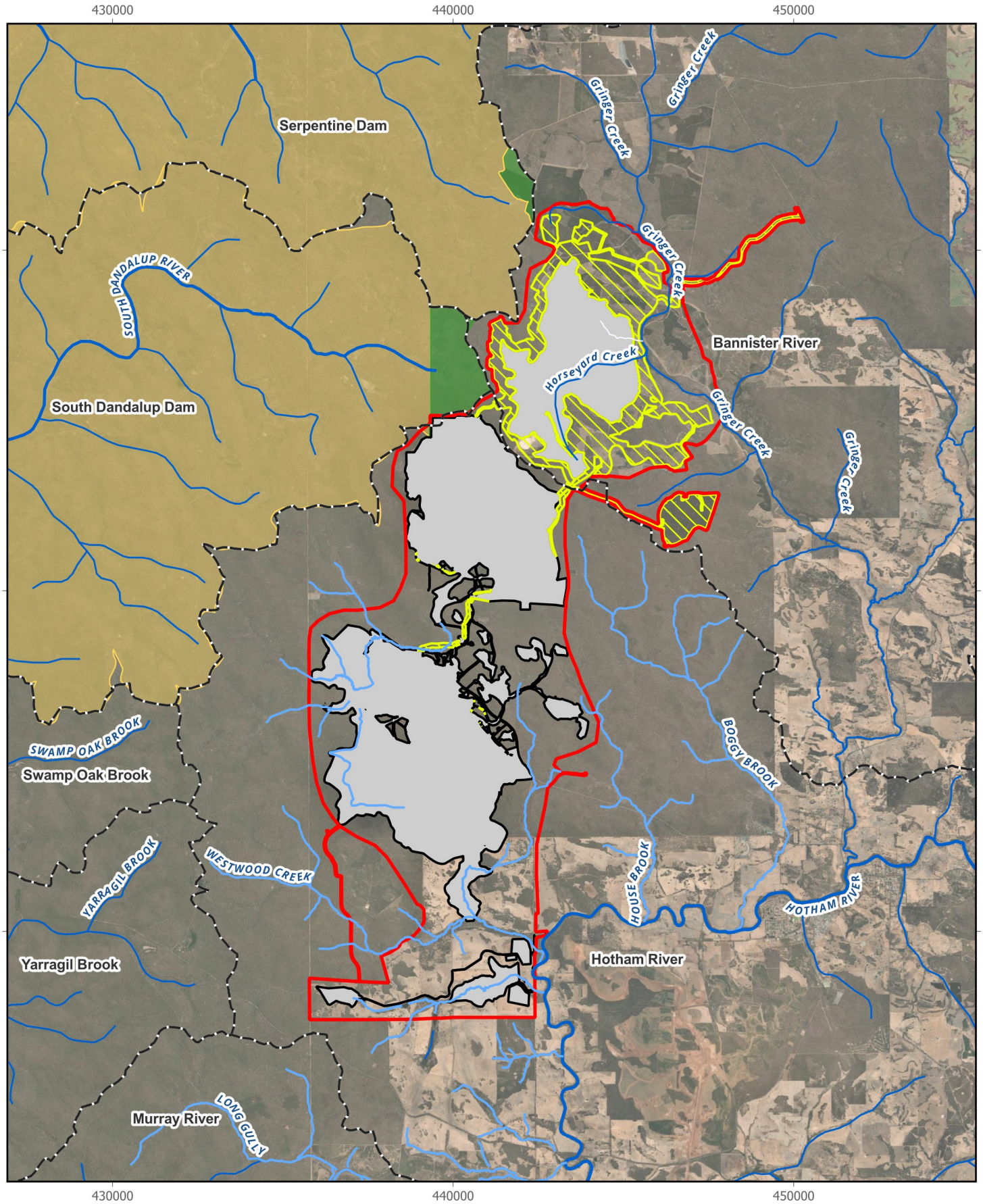


Figure 10-1: Local Surface Water Catchments

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Subcatchments

Watercourses

- Major
- Minor
- Brook

Public Drinking Water Source Areas

- Priority 1
- Priority 2

N

0 1 2 km

Scale @A4 1: 150000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024), DWER (2018), DWER (2024),
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: oostveenperrylj Date: 26 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Inland Waters_250110.qgz

Public Drinking Water Source Areas

The western edge of the Proposal is adjacent to the South Dandalup and Serpentine Dam Public Drinking Water Source Areas (PDWSA Priority 1 (P1) and Priority 2 (P2)) which lie approximately 50 m west of the western extent of the footprint required by this Proposal, across a catchment divide (Figure 10-1).

The P1 protection areas are defined and managed to ensure there is no degradation of the water resource in these areas. This is the highest level of protection for the water source and normally applies to land owned by the State. These areas are normally characterised by low-intensity and low-risk land use, such as forestry.

The P2 protection areas are defined to ensure there is no increased risk of pollution to the water source. P2 areas are declared over land where low-risk development already exists. Protecting public water supply sources is a high priority in these areas, and they are managed with the principle of risk minimisation.

The footprint required for this Proposal sits in the Gringer Creek catchment with natural topography sloping from around 340 m above mAHD to the north of the RDAs, down to 200 mAHD at the Hotham River. Surface water flows in the 34-Mile Brook, Gringer and Boggy Brook catchments flows south, south-west towards the Hotham River. PDWSA (Figure 10-1). The Proposal will consequently not impact upon the PDWSA.

10.3.3 Groundwater and Hydrogeology

Groundwater Elevation – Existing Operations

Groundwater investigation programs undertaken since the oxide mining period have consistently identified the following hydrogeological units in the region of Newmont Boddington's mining operations comprising (BDH 2025a, 2025b, 2025c):

- The seasonal shallow groundwater system (**SSGS**) which occurs at surface and comprises a mix of clays with laterite gravel and cemented laterite hardcap or in low elevation locations near creek lines where there is alluvial gravels and sands. The SSGS occurs as discrete, isolated lenses and is not regionally continuous or consistently saturated. Large changes in thickness may occur through this system and depending on the landscape elevation, the SSGS can be dry through summer in higher elevations and permanently saturated along rivers and creeklines. Many of the monitoring bores screened in this formation are dry in summer and contain water for some portions of the winter months. In some locations, significant precipitation events saturate this zone and form perched aquifers above the underlying oxide clay
- The oxide unit comprises highly weathered bedrock material and occurs in the zone beneath the SSGS and above the interface with the weathered and fractured bedrock groundwater system (**WFBGS**). Although this unit is not interpreted to act as a regional groundwater transmitting unit, it is interpreted to store groundwater and has been thought to act as a control on the vertical movement of recharge and groundwater within the regional system. Based on groundwater bores present in the region, the thickness ranges from 0-6 m near the Hotham River and up to 100 m closer to the mining operation. On average the oxide has a thickness of 29 m across the current mining operation
- The WFBGS is the major regional groundwater system at Boddington occurring at the interface at the base of the oxide material. Transmission from the oxide unit occurs through fracture zones at the surface of the unweathered bedrock with the primary storage and transmission of groundwater inferred to occur in the saprock zone at the interface with the upper bedrock surface. The fracturing, veining and mineralisation is highly variable across the unit. In general, there is a relatively low hydraulic conductivity in the WFBGS. Based on monitoring data from the region, there appears to be a seasonal recharge to this unit. However, it is also able to transmit natural recharge and seepage from mine facilities, and

- The deep fractured bedrock groundwater system (**DFBGS**) comprises zones of open fracturing occurring at depths of 100 metres below ground level (**mBGL**) to 200 mBGL. Groundwater transmission and storage in the DFBGS is controlled by the intensity and openness of the fracture zones present in the unweathered bedrock.

The conceptual hydrogeological units and interconnections are shown in Figure 10-2.

There are 264 monitoring locations across Newmont Boddington Mine's operations, providing good definition of groundwater transmitting systems (BigDog 2025b; Appendix D5). Bores proximal to the operations are positioned to measure groundwater elevations and quality to monitor potential impacts. Bores at distance to the mine (inclusive of the bores in the Gringer Creek catchment) are monitoring background and baseline conditions. All regional bores demonstrate long term declines in groundwater elevation of around 0.5 m/yr which is attributed to long term reductions in precipitation (BDH 2025a). Open pit dewatering and operation of production bores has caused local drawdown in the WFBGS (BDH 2025a). In some locations (such as under Pillow, Round and Boomerang Swamps) this has had no effect on the SSGS, while in other locations (such as near the Westwood production bores) drawdown in both the WFBGS and the SSGS has been observed (BDH 2025a). Pit dewatering activities seem to primarily impact the deep and fractured groundwater system and, in general outside the depressurisation zone at the open pits groundwater flow occurs downslope in response to the prevailing hydraulic gradients, in a south, south-west direction and towards the Hotham River (BigDog, 2025b).

Mining related drawdown remains at least one kilometre distant from the Hotham River. Significant monitoring efforts are maintained to ensure no impact to the Hotham River or to phreatophytic vegetation due to dewatering activities. Triggers are monitored at various groundwater monitoring bores between the operations and the Hotham River, as described in the GGDVMMP (conditioned under MS 971). Vegetation condition assessment also forms part of the GGDVMMP.

BDH(2025b) has assessed the influences of the Approved Proposal on local groundwater. This was developed primarily to support a review of the GGDVMMP, however, is provided as Appendix D4 as it discusses potential impacts of the future RDA2 (Approved Proposal) and provides context for infrastructure which will be required for impact mitigation which is included as part of this Proposal.

F1/F3 RDA is the only active tailings storage facility at Newmont Boddington. The R4 RDA last received tailings in 2001 and has been used as a water transfer point during this current mining period. Despite seepage mitigation measures, operation of the F1/F3 and R4 RDAs has resulted in significant local changes in groundwater elevations and small changes in localised groundwater chemistry (BDH 2025b). By 2019, groundwater had shallowed by up to 25 m immediately adjacent to the F1/F3 RDA in the north and east, where it has reached surface and is being controlled by interception sumps (BDH 2025b). Despite these changes in groundwater elevations, changes in groundwater chemistry have been relatively small, primarily as the hydrochemistry of seepage is in a similar range to the background groundwater hydrochemistry for many parameters and because of geochemical attenuation for parameters such as cyanide (BDH 2025b).

The primary impact observed because of the presence of permanently shallow groundwater immediately adjacent to the current RDAs, has been the potential to impact on vegetation which is not adapted to permanent saturation of the root zone (BDH 2025b). Further, there is potential that groundwater mounding in the WFBGS may drive groundwater flow across the natural catchment boundaries into the South Dandalup catchment. However, no change in groundwater chemistry has been detected this distance from the current facilities and mitigations are in place via the RDA Groundwater Management Plan (BDH 2024). This Plan specifies the monitoring of groundwater conditions and vegetation health around the current and future RDAs and was defined based on observations of groundwater changes and observed changes in vegetation health (BDH 2025b).

The current extent of mine influences on groundwater elevations at Newmont Boddington Mine is shown in Figure 10-3 (reproduced from BDH 2025b). The boundaries of the different influences have been estimated based on reductions of more than 2 m in 2025, from the measured levels in 2006 and increased elevations around the RDAs. Two meters is considered the minimum change that can be

discerned, given that background seasonal variation is greater than this in most locations, and due to the difficulty in resolving long term background declining trends from mining drawdown.

Groundwater Elevation – Gringer Creek Catchment

The approved footprint for RDA2, and the majority of the footprint for this Proposal, will be located in the Gringer Creek catchment to the north-east of the current approved operation. Groundwater elevations in the Gringer Creek catchment, are predominately less than 20 mBGL and less than 5 mBGL in the lower elevations near Gringer Creek (BDH 2025a; Appendix D4). Seasonal changes in groundwater elevations of 2 m to 3 m occur in most bores, driven by winter recharge, which is consistent with monitoring in all other catchments at Newmont Boddington Mine (BDH 2025a). Two main differences seen in the groundwater units in Gringer Creek, when compared to 34 Mile Brook include:

- In the Gringer Creek area, the SSGS appears to be thinner (when compared to the 34 Mile Brook catchment) with hardcap and lateritic gravels less common, and clayey horizons more common, and
- In the Gringer Creek area, the oxide is thinner, with an average thickness of 15.7 m. It is particularly thin to the east of the approved RDA2 area.

The approved footprint of RDA2 lies at least 5 km from the zone of pit dewatering and is outside of the current modelled zone of drawdown associated with this activity. Impacts on groundwater dependent vegetation due to dewatering drawdown are highly unlikely in the Gringer Creek catchment (BDH 2025b). Similarly, impacts due to drawdown from existing production bores is highly unlikely.

Groundwater Quality

Groundwater sampling is undertaken from bores in the Gringer Creek catchment shown in Figure 10-4. Results of the monitoring are presented in Table 10-3. In summary:

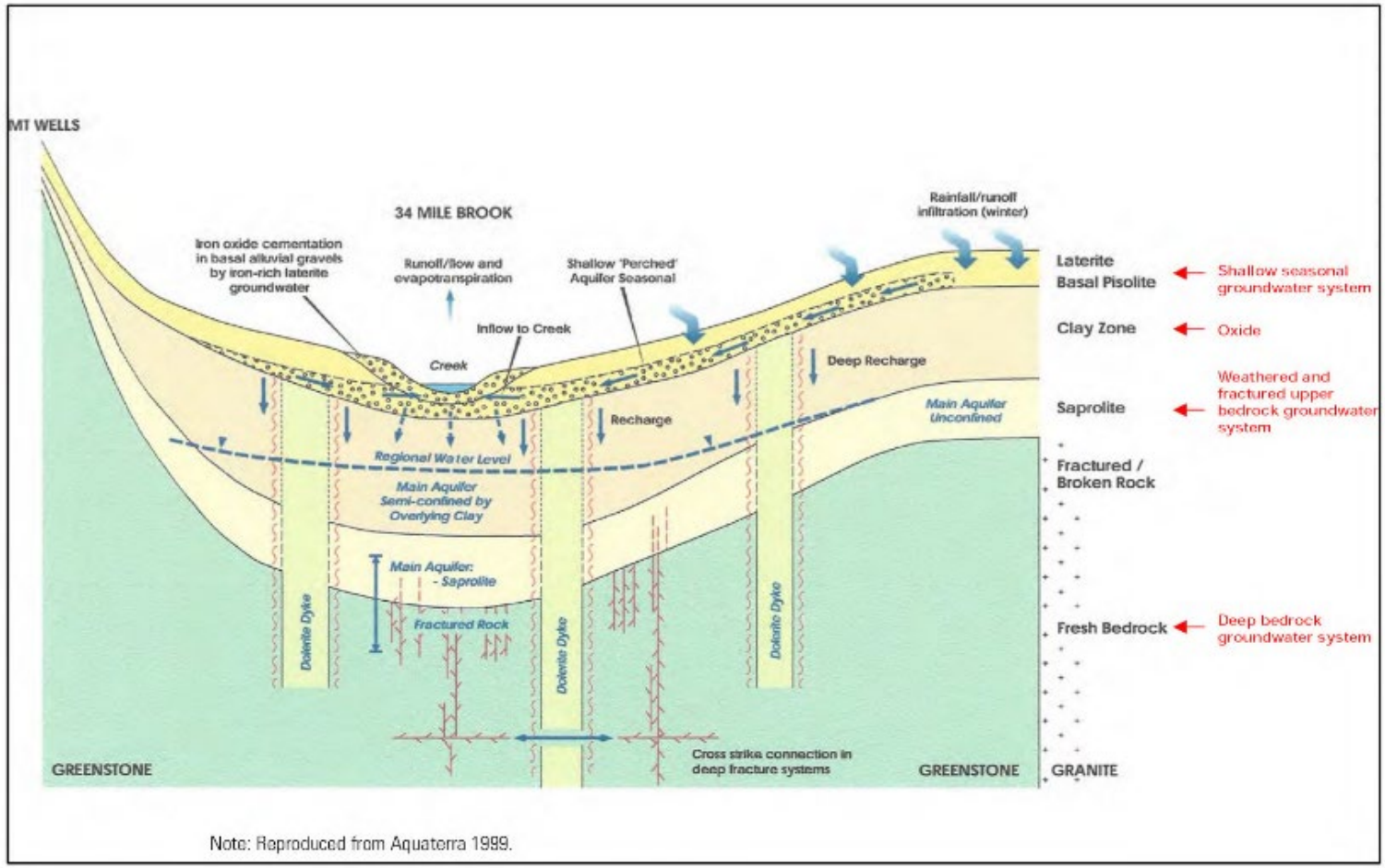
- Groundwater ranged from acidic (due to naturally occurring ferrolysis reactions) to slightly basic, and
- Baseline electrical conductivity ranged from 827 µS/cm (microsiemens per centimetre) to 19,000 µS/cm indicating fresh to saline conditions with brackish conditions on average.

Results indicate the local geology is elevated in various minerals which is not considered unusual for the local area given the presence of gold, copper and bauxite mining.

Table 10-3 Groundwater quality

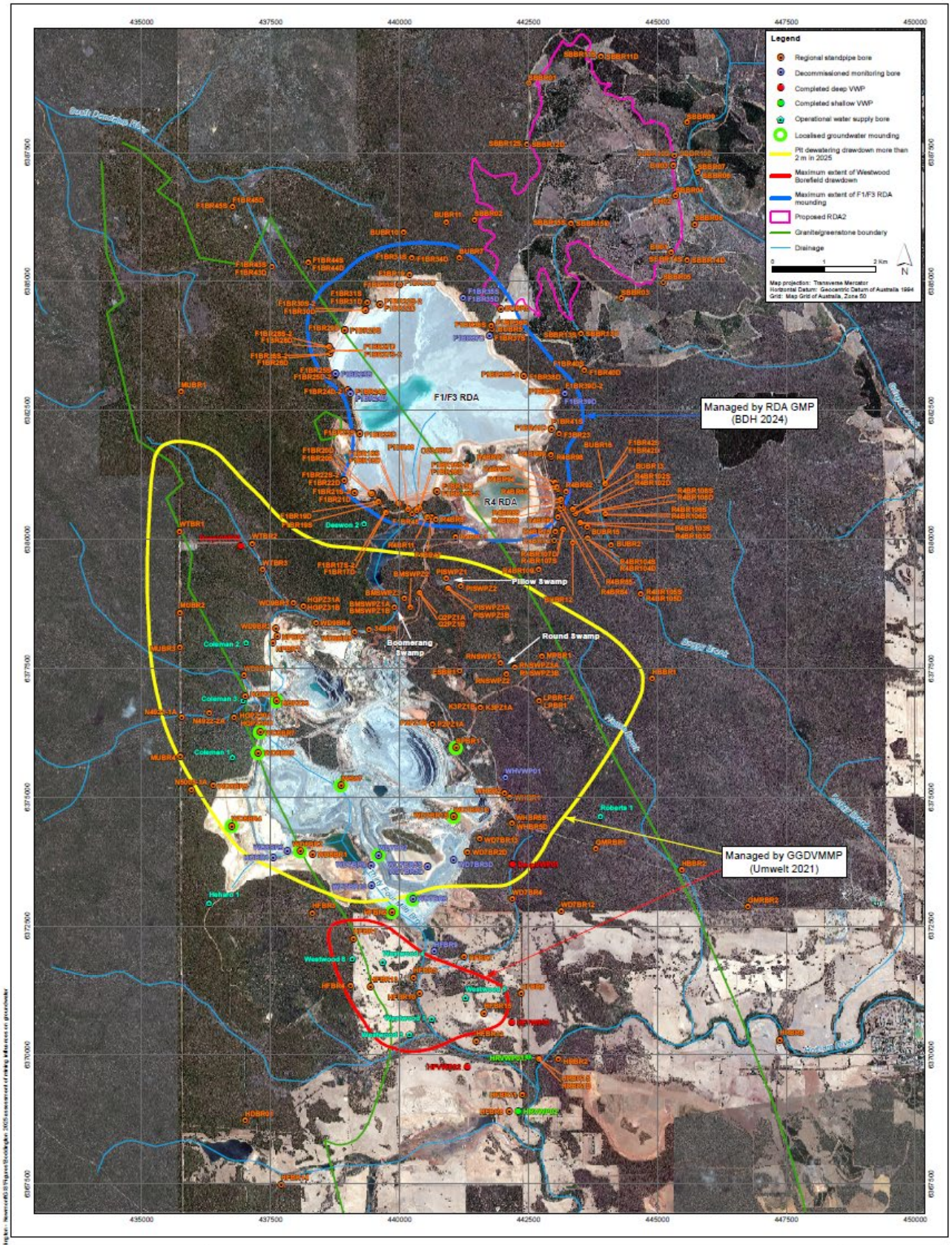
Analyte	Range	Mean
pH (pH units)	3.60-8.17	6.24
Electrical conductivity (µS/cm)	827-19,000	8,561
Aluminium – Filterable	<0.01-44.2	6.61
Cadmium - Filterable	<0.0001-0.0019	0.0004
Cobalt - Filterable	<0.001-0.092	0.027
Chromium - Filterable	<0.001-0.006	0.002
Copper - Filterable	<0.001-0.132	0.012
Manganese - Filterable	<0.06-8.19	2.17
Molybdenum - Filterable	<0.001-0.006	0.002
Nickel - Filterable	<0.001-0.062	0.017
Lead - Filterable	<0.001-0.302	0.093
Zinc	<0.005-0.808	0.095

All values are in mg/L unless stated



Note: Reproduced from Aquaterra 1999.

Figure 10-2 Conceptual hydrogeology



BIG DOG HYDROGEOLOGY

Mine influences on groundwater elevations in 2025

Figure 56
Date: May 2025
Report: Boddington 2025 assessment of mining influences on groundwater

Figure 10-3 Mine influences on groundwater (from BigDog, 2025b; Appendix D5)

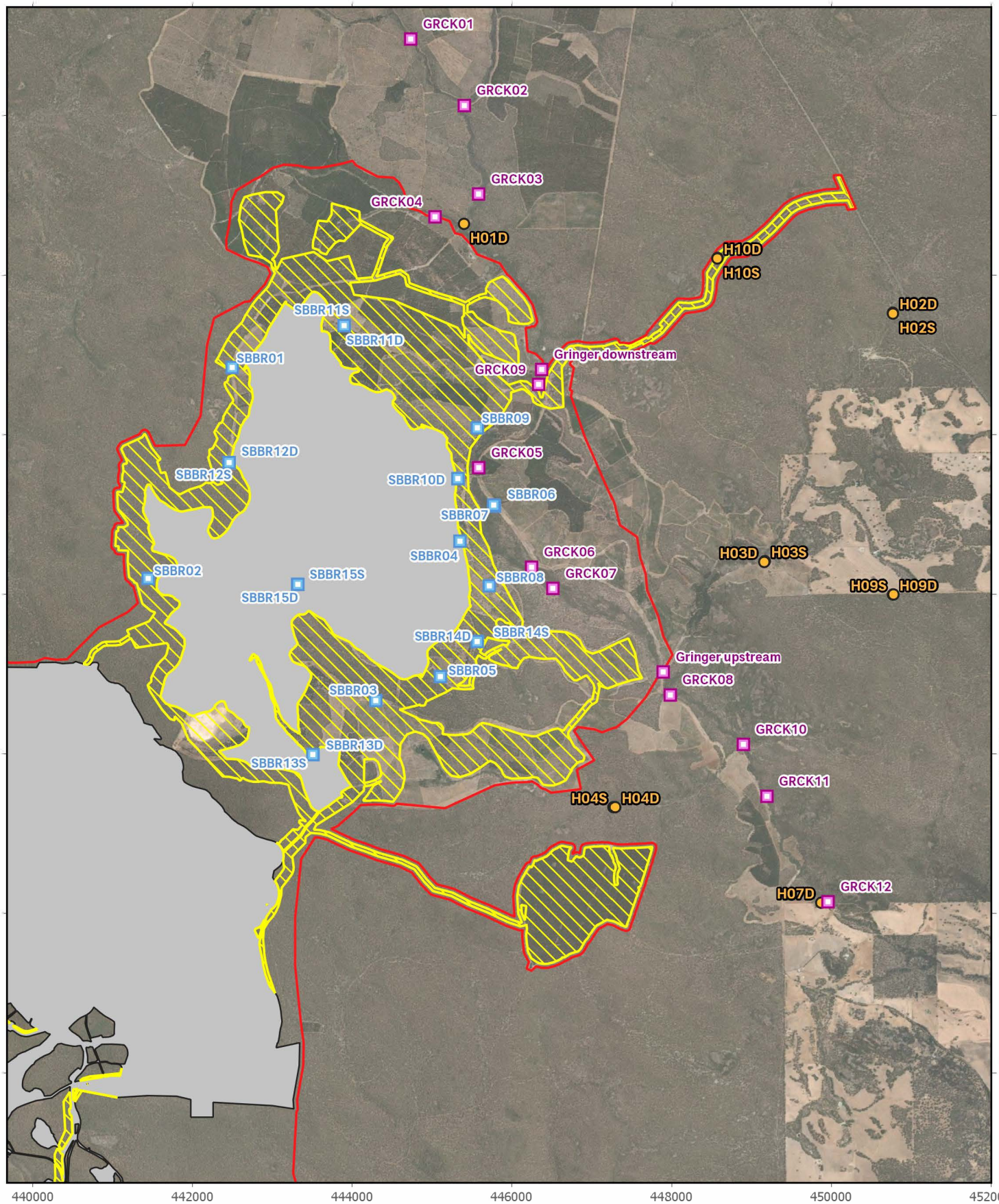


Figure 10-4 Surface Water and Groundwater Monitoring Locations

LEGEND

- Proposal Footprint
- Approved Disturbance Footprint
- Revised Development Envelope
- Surface Water Monitoring Sites
- Groundwater Monitoring Sites
- South32 Groundwater Monitoring Sites

N

0 1 2 km

Scale @A4 1: 65000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024)
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability orresponsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: oostveenperrylj Date: 23 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington 13052025 - LM_GW Monitoring Sites.qgz

10.3.4 Mine Water Use

Water for the Approved Proposal at Newmont Boddington Mine is primarily sourced from:

- Rainfall runoff within the operational footprint
- Groundwater inflow into the pits
- Abstraction from the Hotham River (licensed under the RIWI Act, Surface Water Licence 60668), and
- Abstraction from a small number of groundwater abstraction bores as required.

As part of the Approved Proposal, water is stored in a series of water holding dams which are located around the approved footprint. The operation tends to have a surplus of water in winter when rainfall is high and the river is flowing allowing abstraction, and this is stored on site to ensure continued operations through the dry summer period. Water is utilised primarily for ore processing, with small amounts used for dust suppression and to supply potable water to the accommodation village, site offices and gold room. Water is also reclaimed from the F1/F3 RDA decant pond and re-used through the processing plant. The mine currently uses up to 29 GL/yr of water.

Newmont Boddington does not hold authorisations permitting active discharge of water to the environment. However, in extreme rainfall events, available storage volume may exceed onsite storage capacity resulting in overflow from the water storage dams. Under these circumstances, overflow to the environment could occur at the water control point south of the waste rock dump expansion (to 34-Mile Brook) and from D6 dam (to Junglen Gully). This water would report to the Hotham River.

Newmont Boddington Mine is not located in a Proclaimed Groundwater Area and therefore bores do not need to be licenced under the RIWI Act. However, many groundwater bores are registered monitoring sites licenced through the DWER Part V licence L8306/2008/3.

10.4 Potential Environmental Impacts

Implementation of this Proposal has the potential to result in the following direct impacts on inland waters:

- Alteration to surface water catchments flow and quality
- Alteration to hydrological regimes of surface water systems should discharge of treated water from the operation occur, and
- Alteration to local groundwater aquifers from clearing of vegetation for this Proposal and placement of the approved RDA2.

10.4.1 Alteration to surface water catchment flow and quality

No changes to surface water regimes are anticipated in the 34-Mile Brook or Boggy Brook catchments because of this Proposal. No impact to surface water quantity or quality in the South Dandalup and Serpentine Dam PDWSAs is expected as works will not be undertaken in these areas.

Potential impacts to the Gringer Creek catchment may include reduction of surface flows to Gringer Creek as a result of the footprint required for this Proposal and the Approved Proposal. Precipitation which falls on operational footprints (inclusive of roads, workshops, pipeline corridors etc) shall be captured on site and not permitted to flow to the environment, unless under extreme rainfall events. Consistent with the greater region, catchment runoff is a factor of the amount of rainfall that occurs for any given year and, this is highly variable for the Gringer Creek catchment (GRM 2021).

A surface runoff model was applied over the Gringer Creek catchment to ascertain an estimate of the reduction in flow into Gringer Creek as a result of the construction of the approved RDA2 (GRM, 2021). Streamflow runoff depends significantly on the prevailing moisture conditions within the catchment with lower runoff occurring during summer, early winter and during below-average rainfall years. The median yearly rainfall runoff to Gringer Creek is projected to decrease from 0.75 GL to 0.6 GL when the area of the catchment upstream of RDA2 is diverted to Gringer Creek, and 1.35 GL to 1.10 GL where upstream catchments are not diverted (GRM 2021). The design for RDA2 (which is part of the Approved Proposal) allows for a portion of the upgradient catchment to be diverted around the north of the facility and discharge to Gringer Creek. The infrastructure for this diversion forms part of this Proposal.

The Gringer Creek catchment represents approximately 0.04% of the 3,938 km^2 Hotham River catchment. GRM (2021) estimated the RDA2 development would result in less than 2% reduction in the flow volume reporting to the Hotham River. The small change in the area of Gringer Creek Catchment is not anticipated to result in a significant impact to flow volumes to the Hotham River.

Uncontrolled surface water flows from cleared areas during construction have potential to increase sedimentation entering Gringer Creek, resulting in increased turbidity and localised build-up of sediment in the creek. Water quality could also be impacted through the carriage of contaminants such as hydrocarbons from potential spillage events or acidic material from disturbance of acid sulphate soils (**ASS**). ASS have potential to impact on water quality as well as localised impacts to aquatic fauna. Management and mitigation measures to reduce the potential for impacts to surface water are discussed in Section 10.5.

10.4.2 Discharge to Hotham River

Under current approvals, Newmont Boddington does not actively discharge water to any local surface catchment. However, revision of the site-wide probabilistic water balance to fully integrate the construction and operation of RDA2 under the Revised Proposal, indicates there may be a period of time where the operation's water balance (while implementing the Revised Proposal) is net-positive to the point of requiring discharge of water to the environment (Piteau 2025). This net-positive period could occur due to a number of coinciding factors such as:

- A large additional cleared footprint for construction of the approved RDA2 and this Proposal

- Approved RDA2 inundation footprint extent is currently designed to be lined with HDPE, thus capturing all rainfall which falls directly onto the footprint
- Management of the F1/F3 RDA footprint after operations cease and the rehabilitation and closure phase commences
- Reduction in water volume on R4 RDA to enable the harvesting of oxide material for closure of the F1/F3 RDA. Continued active management of intercepted seepage from all RDAs, acknowledging this stream also consists of natural groundwater from the mounding in areas around F1/F3 RDA. This water currently reports to the F1/F3 RDA and R4 RDA and will need to be diverted elsewhere given the above closure scenario, and
- Pit dewatering is projected to exceed the raw water requirement of the process plant during the period of operation of RDA2 and closure of F1/F3 RDA. Under the water management system, water is prioritised for use from the RDAs in order to manage the size of the decant pond. This is vital to ensure geotechnical stability of these facilities.

Should the above factors align as currently predicted in the revised site-water balance, there will be a period of time during the Revised Proposal where water abstraction from the Hotham River will be reduced and winter discharge of treated water from the operation may be required. The potential impacts of discharging could result in changes to water quality or flows impacting aquatic fauna in the Hotham River if not adequately managed. Given the probabilistic nature of the water balance, this situation will also be dependent on seasonal rainfall. Mitigations under consideration for this potential impact are discussed in Section 10.5.

10.4.3 Alterations to Local Groundwater Aquifers

Based on the updated characterisation of groundwater conditions and the observed responses to operation of the operational RDAs, the potential impacts of this Proposal on local groundwater systems are discussed in this section as a cumulative impact resulting from the implementation of the Revised Proposal. This is considered relevant as the Proposal includes infrastructure to assist in the management of the potential impacts of RDA2 which forms part of the Approved Proposal. The following are considered feasible impacts to the localised groundwater systems because of implementation of the Revised Proposal (BigDog 2025a):

- There are areas along Gringer Creek where groundwater is close to surface and where it naturally discharges to the surface water system. Changes to groundwater levels or chemistry resulting from mounding or seepage have the potential to affect the surface water receiving environment
- The southwest portion of the approved footprint of RDA2 and the fringing Proposed Footprint overlaps with existing elevated groundwater levels around the F1/F3 RDA. If seepage from RDA2 should occur, there is potential for interactions between the mounding and for this issue to be exacerbated in this location, and
- Potential for impacts to native vegetation fringing the footprint required for this Proposal due to groundwater mounding, where the vegetation is not adapted to saturated conditions.

Planned management and mitigations planned for these potential impacts are discussed in Section 10.5.

10.4.4 Cumulative Impacts

The impacts of the Revised Proposal on inland waters are primarily considered to be related to potential impacts to the local groundwater system and this is discussed in Section 10.4.3. It should be noted a previous change to the Approved Proposal was a modification of the RDA2 footprint. The main embankment wall (eastern extent of RDA2) was shifted west to prevent direct impact to Gringer Creek. The 2014 original approval saw RDA2 extend over Gringer Creek requiring a 2 km diversion of this system around the eastern extent of the facility (Strategen 2013).

Cumulative impacts on a regional scale, and considering other mining and agricultural impacts of the Hotham, Murray and Peel-Harvey Catchments, are discussed in Section 16.

10.5 Mitigation

Newmont Boddington has approached mitigation of potential impacts to the Inland Waters environmental factor according to the mitigation hierarchy; avoid, minimise and rehabilitate. To limit the potential impacts on inland waters , management actions will be implemented as outlined below and as per the GGDVMMP which is currently under review. These actions are outlined in Table 10-5.

Newmont Boddington will continue to implement the approved GGDVMMP until such time as a new version, or newly conditioned management plan is approved. Mitigation measures will continue to be informed by surface and groundwater monitoring and ongoing studies are being completed in order to finalise this preliminary assessment

10.5.1 Other statutory decision-making processes

Newmont Boddington considers other statutory decision-making processes are present to regulate to mitigate potential impact to inland waters. These processes include:

- *Mining Act* related approvals inclusive of Mine Closure Plans and Mining Proposals (noting Mining Proposals are soon to be replaced by Mining Development and Closure Proposals (**MCDPs**)), and
- Works Approval and Licence processes under Part V of the *Environmental Protection Act* 1986. The RDA2 facility will be deemed a prescribed premises under Schedule 2 of the *EP Act* and therefore will be required to be regulated under these instruments.

Impact mitigation such as seepage control and adequate geotechnical engineering controls will be requirements of these regulatory instruments as well as monitoring of surface and groundwater systems.

Both DEMIRS and DWER have been consulted on the RDA2 study and this referral via the six-monthly BGMEMLG meeting and direct engagement by Newmont Boddington.

Other statutory decision-making processes that can mitigate potential environmental impacts of the Proposal on Inland Waters are summarized in Table 10-4. This list considers the EPA's *Interim Guidance on Taking Decision-Making Processes into Account in EIA* (EPA 2021c) and provides reasons for how these processes address the following:

- EP Act's objectives and principles
- EPA's objective for Inland Waters, and
- Specific potential impacts of the Proposal.

Table 10-4 Inland Waters – other statutory decision-making processes

Potential impact	Statutory decision-making process can mitigate impacts on the environment?	Reasons
Changes to groundwater regimes from mounding	Yes	*EP Act Part V licence* Licence is likely to contain outcomes-based conditions that can maintain the hydrological regimes of groundwater water to protect environmental values to meet the EPA's objective for Inland Waters.
Changes surface water regimes from discharge of surplus water	Yes	*EP Act Part V licence*

Potential impact	Statutory decision-making process can mitigate impacts on the environment?	Reasons
Changes to water quality from discharge of surplus water		Licence will specify location of surplus discharge, discharge rate limit, monitoring locations and parameters, triggers, reporting and compliance requirements.
Changes to water quality from discharge of surplus water	Yes	*Mining Act* Mine closure and rehabilitation is regulated under Mining Act. MCP will be developed for the Proposal and will address the potential impacts on surrounding landscape and rehabilitation of mine landforms. Impact mitigation such as seepage control measures and adequate geotechnical engineering controls will be requirements the MCP as well as monitoring of surface and groundwater systems.

10.5.2 Assessment and significance of residual impacts

Newmont Boddington has considered the significance and relevant issues outlined in the Inland Waters Guideline in assessing the significance of the impacts to this environmental factor. The assessment of potential impacts discussed in Table 10-5 are following the application of mitigation.

Table 10-5 Proposed Management Measures for Potential Impacts to Inland Waters

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
Direct Impacts			
Alteration to surface water catchment flow and quality	**Avoid** ▪ The clearing footprint has been minimised as far as practicable with only critical infrastructure in native vegetation ▪ Maintain a buffer of vegetation between disturbance footprint and Gringer Creek to prevent impacts to the creek. **Minimise** ▪ Perimeter drainage and water management structures constructed to control water movement to the environment to minimise potential discharge of sediment-laden water downstream of the Proposal and, to divert catchment upstream of the Proposal to minimise reduced flows to Gringer Creek ▪ Obtain and comply with Works Approval and Licence issued under Part V of the EP Act including implementation of monitoring programs ▪ Chemical and hydrocarbon storage to be managed in accordance with Newmont Standards, the project Environmental Management Plan (under development) during construction and operational	This Proposal and the Revised Proposal may result in reduced annual surface flow volume into Gringer Creek based on placement of infrastructure in the catchment, and retainment of precipitation which falls into the operational footprint. This Proposal and the Revised Proposal may result in minor changes to surface water quality in the Gringer Creek catchment, should seepage and water management infrastructure be insufficient. Monitoring will occur in accordance with management plans and EP Act Part V approvals.	Given the proposed management measures, neither the Proposal alone or the Revised Proposal would be expected to result in a significant impact to local surface water catchment flow or quality.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	Management Plans during operation inclusive of spill response ▪ Routinely inspect condition and performance of pipelines, containment systems and internal drainage structures, to ensure they are in acceptable condition and / or operating appropriately ▪ Where stockpiles of rehabilitation materials are to remain in place for some time, implement surface stabilisation protocols to reduce sediment in stormwater runoff from the stockpiles ▪ Management of stormwater runoff from disturbed areas via a system of bunds and sumps ▪ Complete investigation into potential acid sulphate soils (ASS) to support development of construction environmental management plan. Details of this assessment and any additional mitigation requirements will be detailed in the ERD. **Rehabilitate** ▪ Action progressive rehabilitation opportunities as they arise ▪ The Proponent will prepare and implement a Closure Plan in accordance with the DEMIRS Statutory Guidelines for Mine Closure Plans (DEMIRS 2020b) for the Proposal.		

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
Alteration to hydrological regimes of surface water systems should discharge of treated water to the environment be required	**Avoid** ▪ Discharge to Hotham River in accordance with future licence conditions. ▪ Discharge during low flows to be avoided. **Minimise** ▪ Complete the following studies and provide results and outcomes in ERD: ○ Ecotoxicology assessment of tailings seepage streams and potential discharge water quality ○ Hotham River and potential discharge water mixing model ○ Finalise site-wide probabilistic water balance ○ Finalise site specific water quality values for the Hotham River ▪ Obtain and comply with Licence issued under Part V of the EP Act including implementation of monitoring programs. **Rehabilitate** ▪ Prepare and implement a Mine Closure Plan in accordance with the DEMIRS Statutory Guidelines for Mine Closure Plans (DEMIRS 2020b) for the Revised Proposal.	Based on a preliminary assessment of available information, no adverse impact to the Hotham River is predicted from potential future discharge of treated water to the environment. This will be demonstrated through the additional studies and future testing via a pilot plant system (note: no discharge to the environment will occur from the pilot plant). This process will only be implemented where Newmont can demonstrate no adverse impact to the Hotham River. Discharge to be restricted to high flow periods in the river. Discharge will be regulated under Part V of the EP Act and required to meet water quality directed by DWER.	No significant residual impact is anticipated as a result of the proposed discharge of treated water to the Hotham River.
Alteration to local groundwater aquifers from implementation of the Revised Proposal	**Avoid** ▪ Reduction of Proposal footprint to critical infrastructure required for the safe construction and operation of RDA2.	Implementation of the Revised Proposal is anticipated to have some impact to the local groundwater system. This impact will be	Given the proposed management measures, neither the Proposal alone or the Revised Proposal would be

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	Minimise ▪ Seepage management to be installed as part of approved RD2 tailings storage facility. Current design mitigation measures include HDPE liner sitting over a 300 mm compacted clay liner with seepage collection systems above and below the HDPE. Design optimisations which minimize seepage and environmental impacts will continue to be evaluated as the design is matured ▪ Newmont Boddington will expand its extensive groundwater monitoring program to ensure detection of impacts as a result of the Revised Proposal ▪ Implementation of vegetation condition monitoring program. **Rehabilitate** ▪ Continued seepage management through the initial closure period whilst rehabilitated areas are established ▪ Prepare and implement a Mine Closure Plan in accordance with the DEMIRS Statutory Guidelines for Mine Closure Plans (DEMIRS 2020b) for the Proposal.	minimised through the implementation of seepage control and recovery systems. Monitoring will be in place to assess the extent of impact over time and to enable additional management processes such as implementation of additional pump back systems. Impacts to changes in the groundwater table may be sufficiently managed to meet the objective for inland waters.	expected to result in a significant impact to local groundwater aquifers.

Alteration to existing surface water catchment flow and quality

Based on the modelled prediction, implementation of the Approved Proposal will result in approximately a 2% reduction in flow to the Hotham River catchment (GRM, 2021) and no measurable change to water quality as a result of this small reduction in flow. Implementation of mitigation measures to divert upstream catchment flow around the Proposal and those to prevent impacts to water quality will prevent significant impact to catchment flow and water quality.

The RDA2 facility is approved under the Approved Proposal and construction of the approved RDA2 facility will commence in 2026. Discussion of the approved RDA2 construction plans is not required to be assessed in this Proposal as there is no change proposed to the Approved Proposal other than is expressly provided in the description of the Proposal. The RDA2 construction activities approved by the Approved Proposal are included here to provide context to how the Proposal and Revised Proposal will integrate with the Approved Proposal following EIA. These construction activities will occur within the footprint approved under MS971 and EPBC 2012/6370 and will consist of civil earthworks and commencement of a starter dam. These activities are necessary so the construction schedule can be achieved to ensure continuation of operations at Newmont Boddington Mine. There will therefore be a small, inactive storage facility present in anticipation of approval of the Proposal which will allow for the infrastructure to connect the storage facility to the existing approved operation.

Construction of the Revised Proposal will see stormwater report to stormwater collection infrastructure. These will be designed to control sediment and water movement across the various phases of construction and operation.

Sump water shall be used for dust suppression activities during construction. Sumps shall be inspected daily and water monitoring conducted on a routine basis. Should the sumps reach capacity following large rainfall events, passive overflow of the sumps will report downstream and into Gringer Creek.

During construction of the Revised Proposal, rainfall which falls within the disturbance footprint will be captured in sumps established to ensure separation of sediments. Water quality of the sumps will be monitored, and clean water may be discharged to the environment. It is most likely this water will be captured for use as dust suppression. Diversion structures will be in place to allow catchment upstream of the Revised Proposal to be diverted around the disturbance footprint to continue reporting to Gringer Creek.

Water management infrastructure will be incorporated into construction and operational inspection procedures and routine monitoring of water quality will be implemented across the Revised Proposal. Water quality monitoring shall also adhere to the requirements of the relevant Works Approval and Licence to be administered under Part V of the WA EP Act.

Throughout construction and operation of the Revised Proposal, a 100 m vegetation buffer will be maintained on either side of Gringer Creek, with the exception being for monitoring infrastructure (e.g. surface and groundwater monitoring) or where crossing of the creek is required. For the latter, the existing creek crossings will be designed and upgraded to support the required traffic load for the construction and operation of the facility.

Throughout construction and operation of the Revised Proposal, chemical and hydrocarbon management will be undertaken in accordance with Australian Standard *1940:2017 The storage and handling of flammable and combustible liquids*, and Newmont Boddington's procedures for transport, storage, use and disposal.

Stockpiling of materials such as bauxite, gravel and topsoil will be required and these may be present for ten years or more before collection or use. Bunding will be established around the base perimeter of these stockpiles, and where appropriate further surface stabilisation will be applied to stockpiles of rehabilitation materials.

As part of construction preparation, Newmont Boddington will continue to investigate potential sources of ASS throughout the footprint and ensure management of any identified ASS is managed in accordance with controls recommended by contracted SMEs. Based on the ASS investigation works completed to date, the potential for ASS are more likely to be present in the vicinity of water course environments (CDM Smith, 2025).

Newmont Boddington continues to monitor catchment flow in Gringer Creek, at locations above and below the Revised Proposal. This information will be utilised to re-assess the surface water flow volumes assessment and review existing surface monitoring locations for adequacy through construction and operation.

Based on the planned seepage control, surface water management infrastructure and monitoring programs the impact to surface water flow and quality into the Gringer Creek catchment is not considered to have a significant residual impact.

Alteration to hydrological regimes of surface water systems should discharge of treated water to the environment be required

Newmont Boddington's primary operational philosophy regarding water management is to prioritise use of water on site and maximise recycling and reuse opportunities. The draft predicative site-wide water balance for the Revised Proposal indicates there is potential for a net positive period during the early phases of operation of RDA2, prior to the F1/F3 RDA being rehabilitated and closed. During this period reuse and recycling opportunities may be insufficient to manage excess water and a discharge of treated water to the environment may be required. There will be seepage streams that require continued management from F1/F3 RDA, during its rehabilitation and closure, whilst the internal phreatic water level reduces in this facility (Piteau, 2025).

Alteration to the hydrological regime as a result of discharge of treated water is deemed a positive opportunity for the Newmont Boddington to further investigate and progress. Whilst the Hotham River ecological assessments completed by Newmont Boddington to date demonstrate no impact to river ecology, Newmont Boddington is aware there is a general negative stakeholder perception regarding water abstraction activities from the Hotham River. If planned studies can demonstrate discharge will not negatively impact water flows or quality in the Hotham River, Newmont Boddington deems this to be a positive opportunity to progress.

The water treatment option is focussed on treatment of tailings seepage streams through a reverse osmosis (**RO**) plant. A GoldSim Contaminant Transport Module was used in the predictive site-wide water balance to predict water chemistry in the inflow and outflows of the treatment plant (Piteau, 2025).

Newmont Boddington is approaching the potential discharge option by applying the water quality management framework principles based on the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. In accordance with the guidelines, SLR has developed specific interim water quality values for various toxicants and stressors for the Hotham River (SLR, 2024). Where applicable, toxicity modifying factors such as pH, dissolved organic carbon and hardness should be applied to develop SSGVs for analytes (such as ammonia, copper, nitrate and zinc). These factors influence speciation and complexation of analytes and the rate at which they can cross membranes (SLR, 2025).

Newmont Boddington engaged SLR (2024) to investigate development of SSGVs for discharge water quality to the Hotham River. Initial review of monitoring data has provided guidance around SSGVs for potential toxicants. However, some DGVs have been used where insufficient toxicity modifying factors were available to calculate SSGVs.

Various toxicity modifying factors have been added to the surface water monitoring program in order to better understand how certain analytes are likely to behave in the local environment. Hotham River water quality data was used in the development of these interim SSGVs. The interim SSGVs developed by SLR (2024) have been adopted for comparison of water quality against the predicted RO treated water (known as permeate).

Predicted permeate water quality in the site-wide water balance suggests the majority of the metals of concern can be reduced to low parts per billion range with the application of RO treatment. However, ammoniacal nitrogen (NH3-N), which is a measure of all forms of nitrogen which can be converted to ammonia, remains present at concentrations up to 2.4 mg/L (Piteau, 2025). In addition, iron remains elevated at 0.26 mg/L and cobalt at 0.0016 mg/L at the 95th percentile for water quality (Piteau, 2025).

The conceptual discharge strategy would see permeate discharged to the D6 water storage dam located on Hotham Farm in preparation for discharge to the river during higher winter flow periods. Summer discharge was not recommended during the dry season or during low flows to reduce the risk

of eutrophication, due to lack of flushing and warmer temperatures (SLR, 2024). The D6 water dam holds water which is either pumped from the Hotham River or collected from precipitation which falls within the local catchment. Generally, the predicted water quality of the water in D6 which would be discharged approaches that required under the interim SSGVs for the Hotham River without the need for instream dilution. Under the modelled discharge scenarios, there is still exceedance of SSGVs for Fe, NH3-N and Co.

Assessment of Newmont Boddington surface water monitoring points along the Hotham River indicates there is a potential point source of cobalt downstream of Newmont Boddington operations, as most high readings occur several kilometres downstream at the Marradong gauging station (SLR, 2025).

Further studies which are underway or planned to refine the development of water treatment and potential discharge required under the Revised Proposal including:

- A planned trial for a pilot RO treatment plant to test if treatment can achieve desired water quality for discharge. All water will remain within the operational footprint and there will be no discharge of treated water to the surrounding environment from this trial
- An ecotoxicology assessment of different site water quality streams including tailings seepage and future surface flow quality (simulating tailings dam closure) to understand potential ecological impacts of these streams and understand local tolerances to various toxicants. This work will include a focus on cobalt as a toxicant of potential concern
- A discharge mixing model to:
    - Assess the extent of dilution and dispersion of treated water discharged from the operation into the Hotham River
    - Determine predicted water quality on the receiving Hotham River during discharges under typical through to worst case conditions
    - Develop a risk-based water quality and aquatic fauna monitoring program to assess the mixing zone. This program will be implemented prior to any discharge to establish an adequate baseline for the Hotham River.
- Development of finalised site-specific guideline values for discharge water quality to the Hotham River
- Revision of the probabilistic site-wide water balance following completion of the above work, and
- Ongoing collection of baseline data including surface water quality, flow and aquatic fauna.

Studies will need to demonstrate discharge of treated water to the Hotham River will not impact on aquatic ecosystems or riparian vegetation before an application to include the process on the site licence (L8306/2008/3) is made by Newmont Boddington Mine. Outcomes of studies will be discussed in the ERD.

Alteration to local groundwater aquifers from clearing of vegetation for the Proposal and placement of the approved RDA2

Groundwater conditions across the Approved Proposal and Proposal area are well understood. Newmont Boddington has a comprehensive understanding of the potential impact to groundwater as a result of approved mining and processing operations.

Open pit dewatering and production bore operation have caused local drawdown in the WFBGS with mining related drawdown remaining at a distance of at least 1 km from the Hotham River. The change in groundwater level has been identified to have the potential to impact GDV and monitoring is in place in accordance with the GGDVMMP, to assess change in vegetation within this zone.

Conversely, groundwater impacts observed at the tailings storage facilities which are present as part of the Approved Proposal include groundwater mounding and small changes in groundwater hydrochemistry in the WFBGS which has been transmitted into the SSGS (BDH 2025b). There is potential for groundwater mounding to cause harm to vegetation due to saturation of the root zone,

and there is potential for mounding to drive cross catchment groundwater flow (BDH 2025b). In areas immediately north and east of F1/F3 RDA, groundwater mounding has extended to surface and is being managed via the perimeter sump network. This risk is managed and mitigated by the RDA Groundwater Management Plan (BDH 2024).

Part of the disturbance being requested by this Proposal is for installation of surface water infrastructure which will manage potential surface water impacts as a result of implementation of the Approved Proposal (i.e. RDA2). Predicted impacts on groundwater at RDA2 (i.e. the Revised Proposal) are anticipated to be similar to what is seen at the F1/F3 RDA. However, groundwater impacts are predicted to be less than what is seen at the F1/F3 RDA due to proposed seepage management and recovery processes including:

- RDA2 design includes the installation of a dual liner across the entire footprint of the facility which consists of a HDPE liner sitting over a 300 mm compacted clay layer. Design optimisations which minimize seepage and environmental impacts will continue to be evaluated as the design is matured. By contrast, at F1/F3 RDA the HDPE liner primarily sits under the decant pond only; and
- Seepage interception and recovery will be installed in the liner system. Collected seepage water will report back to the RDA2 decant pond / tank or RO treatment facility) for use back through the processing plant.

The existing groundwater monitoring network present in the Saddleback Treefarm has been evaluated by BigDog Hydrogeology, with recommendations for additional monitoring to ensure oversight into the following:

- Potential cross catchment flow to the northwest,
- Groundwater mounding influences on vegetation in the west, and
- Groundwater discharge influences on surface water (Gringer Creek) to the east (BDH 2025b).

Water level, quality and vegetation health triggers will be established with the new facility being incorporated into the RDA Groundwater Management Plan with triggers established to highlight when additional controls may be required (e.g. pump back wells). This monitoring network is expected to be conditioned under EP Act Part V processes.

The RDA2 area and disturbance forming this Proposal will be rehabilitated upon mine closure. Where appropriate, either plantation or native vegetation will be re-established with surface water runoff eventually directed to the environment via a closure spillway.

Rehabilitation and closure will be detailed in the MCP to be approved and regulated via DEMIRS. Groundwater monitoring and vegetation condition assessments will continue to be completed to add to the existing baseline information.

With implementation of seepage management infrastructure and a rigorous monitoring and trigger program, residual impacts to groundwater because of the Proposal are unlikely to be significant.

10.6 Predicted Significant Residual Impacts

Following the application of the mitigation hierarchy, Newmont Boddington's preliminary assessment considers there will be no significant residual impacts to inland waters associated with implementation of this Proposal or the Revised Proposal.

Ongoing studies are planned to continue to evaluate the potential for discharge of treated water to the Hotham River.

Ongoing surface and groundwater monitoring continues to ensure collection of suitable adequate baseline data for the Gringer Creek catchment.

10.7 Predicted Environmental Outcomes

The EPA's environmental objective for this factor is to "*maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected*'. Inland Waters are further defined as *'the occurrence, distribution, connectivity, movement and quantity (hydrological regimes) of inland water including its chemical, physical, biological and aesthetic characteristics' (*EPA 2018a*)*. Regarding the Revised Proposal, the focus of the potential impact primary concerns the future discharge of waste (i.e. tailings), and the use of land or water which could impact on water quality and local hydrological regimes.

Current planned mitigations including seepage and surface water management which are outlined in Table 10-5 are predicted to ensure the objectives of the inland waters environmental factor guideline are achieved.

Results of monitoring and additional studies will be shared as part of the ERD process. This information will further shape recommendations for conditions, revision of existing and potential new management plans.

11 Social Surroundings

11.1 EPA Objectives

The EPA objective for Social Surroundings (EPA 2023b) is

> *To protect social surroundings from significant harm.*

For the purposes of EIA, social surrounds is included in the definition of environment and means '*living things, their physical, biological and social surroundings, and interactions between all of these*'. Therefore, social surroundings are a part of the environment that may require consideration. The *EP Act* includes an important qualification in that social surroundings is a reference to '*aesthetic, cultural, economic and other social surroundings to the extent to which they directly affect or are affected by physical or biological surroundings*'.

11.2 Policy and Guidance

As per EPA (2023b), in order for social surroundings to be considered in EIA, there must be a clear direct link between a proposal's impact on the physical or biological surroundings and the subsequent effect on a person's aesthetic, cultural, economic or other social surroundings. Policies and guidelines which have been considered by the Proponent in the assessment of potential impact to social surroundings are discussed in Table 11-1.

Table 11-1 Social Surroundings policy and guidance

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Protection Authority	
Statement of Environmental Principles, Factors and Objectives (EPA 2023a)	The EPA objective for social surroundings forms the basis of this assessment. This assessment has regard to the aims of EIA, consideration of significance and the application of the mitigation hierarchy.
Technical Guidance EIA of Social Surroundings – Aboriginal Cultural Heritage (EPA 2023c)	Considered in development of the referral and impact assessment.
Environmental Factor Guideline – Social Surroundings (EPA 2023b)	This document was considered in the preparation of this section of the referral • Applied the relevant considerations for environmental impact assessment • Identified activities that can impact social surroundings • Applied the mitigation hierarchy to avoid or minimise impacts on social surroundings, where possible. • Undertaken consultation with the GKB CAC on the Proposal. • Considered the links with other environmental factors

Policy or Guidance	How the Policy and Guidance has been considered
Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2024e)	This have been considered in planning for the Part IV approval process and has been used to inform the preparation of this referral.
Instructions on how to prepare an Environmental Review Document (EPA, 2024b)	Forms the basis of the referral headings and content to be provided in in this referral and future ERD submission.
Referral of a proposal under section 38 of the Environmental Protection Act 1986: Instructions (EPA 2024d)	
Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans (EPA 2024c)	CHMP will be prepared in accordance with the guidance and addresses, amongst other things, matters related to social surroundings.
Other State or Commonwealth	
Guideline Dust Emissions. Activities regulated under the: Environmental Protection Act 1986, Environmental Protection Regulations 1987 – Draft for external consultation DWER (2021b)	Considered during the assessment of Proposal dust emissions including: • Identified dust sources and their potential environmental impact. • Assessed air quality risks using criteria outlined in this guideline. • Identified mitigation measures to control dust emissions.
Government of Victoria, 2001. State environment protection policy (ambient air quality)	Considered during assessment of the Proposal dust emissions including: • Baseline air quality assessment to determine existing pollution levels. • Predictive modelling to estimate how the project might affect air quality. • Mitigation strategies to minimise emissions and comply with air quality standards. • Identification of monitoring requirements to track air quality over time.
Environmental Protection (Noise) Regulations 1997	Considered during assessment of the Proposal dust emissions including: • Baseline noise levels to understand existing conditions • Completed predictive noise modelling to estimate noise impacts from the Proposal • Identified mitigation measures to control noise emissions
Mine Closure Plan Guidance – How to Prepare in Accordance with Part 1 of the Statutory Guidelines (DEMIRS 2020a) Statutory Guidelines for Mine Closure Plans (DEMIRS 2020b)	The MCP will be prepared in accordance with the guidance and addresses matters related to social surroundings.

Policy or Guidance	How the Policy and Guidance has been considered
National Environment Protection Measure for Ambient Air Quality (National Environment Protection Council (NEPM) 2021)	The National Environment Protection (Ambient Air Quality) Measure (NEPM) sets air quality standards across Australia to protect public health and the environment. Document was considered during the assessment of Proposal dust emissions.

11.3 Previous Studies

Table 11-2 details studies completed in relation to social surroundings for this Proposal and also the Revised Proposal.

Table 11-2 Social Surroundings studies and surveys

Author and Year	Title	Summary
Aboriginal Cultural Heritage		
ALS 2025	Newmont Boddington Gold, Residue Disposal Area 2 (RDA2) DRAFT Report on an Archaeological and Ethnographic Site Identification Heritage Survey.	Site identification heritage survey of parts of the Saddleback Tree Farm, located within the Gnaala Karla Booja (GKB) Indigenous Land Use Agreement (ILUA) area (WI2015/005). This survey involved various Traditional Owner survey participants who were nominated by GKBAC as the appropriate knowledge holders for the survey area.
ALS 2024	Desktop due diligence assessment of the proposed RDA2 project area (draft)	Identify any knowledge gaps regarding prior heritage works within the Project Area. Outlined advice on minimising risk to Aboriginal cultural heritage and ensure compliance with the amended AH Act.
Yates 2013	Report of An Aboriginal Heritage Survey of the Proposed Residue Disposal Area Option 1 Saddleback Treefarms, North Bannister.	The purpose of the ethnographic survey was to assess the ethnographic significance of the land within and surrounding the proposed RDA2 in the Saddleback Tree Fram.
Noise		
Herring Storer Acoustics (Herring Storer) 2025	Newmont Boddington Gold Mine, Residue Disposal Area 2, Environmental Noise Assessment	Acoustic study assessed potential noise impacts associated with the development and operation of RDA 2. It considered existing noise emissions from Boddington Gold Mine, including RDA F1/F3, to predict and model cumulative noise levels.
Herring Storer 2024	Residue Disposal Area 2 Construction, Noise Management Plan for Boddington Gold Mine.	Draft noise management plan for construction activities.

Author and Year	Title	Summary
Lloyd George Acoustics (LGA) 2025	Noise Monitoring Report November 2024 Monitoring Newmont Boddington Operations	Biannual ambient noise monitoring at three locations within the vicinity of Newmont Boddington Mine and assessment against requirements of *Environmental Protection (Noise) Regulations 1997.*
LGA 2024a	Noise Monitoring Report May 2024 Monitoring Newmont Boddington Operations	
LGA 2024b	Noise Monitoring Report December 2023 Monitoring Newmont Boddington Operations	
LGA 2023a	Noise Monitoring Report July 2023 Monitoring Newmont Boddington Operations	
LGA 2023c	Noise Monitoring Report November 2022 Monitoring Newmont Boddington Operations	
LGA 2023b	Noise Monitoring Report April 2022 Monitoring Newmont Boddington Operations	
LGA 2022	Noise Monitoring Report November 2021 Monitoring Newmont Boddington Operations	
LGA 2021	Noise Monitoring Report June 2021 Monitoring Newmont Boddington Operations, unpublished report prepared for Newmont Boddington	
LGA 2013	Environmental Noise Assessment, Newmont Boddington Gold Life-of-Mine Extension Project	LGA undertook a noise impact assessment for the Proposal in 2012 (LGA 2013).Modelling was undertaken based on worst-case conditions, prior to the application of mitigation measures, to predict future noise levels at 19 noise sensitive receptors. The assessment was based on the expected expansion footprint, mining fleet and with consideration of wind and atmospheric stability.

Author and Year	Title	Summary
Dust		
Environmental Technologies Analytics (ETA) 2025	Newmont Boddington – Residue Disposal Area 2 Development Dust Modelling Assessment Final Revision 3	Air dispersion modelling study was undertaken to inform the assessment of potential air quality impacts of the RDA2 on the local community. The air dispersion modelling study incorporated site-specific meteorological data, emissions information, source characteristics, and the location of model receptors. Potential impact was evaluated through comparison to relevant ambient air quality assessment criteria protective of human health and amenity (dust nuisance).

11.4 Receiving Environment

The receiving environment for social surroundings for the purpose of this referral relates to the definition of environment under the *EP Act* and includes *aesthetics, cultural, economic and other social surroundings to the extent to which they directly affect or are affected by physical or biological surroundings* (EPA 2023b). Therefore, in order for social surroundings to be considered in EIA, a clear direct link must be present between a proposal's potential impact on the environment and the subsequent effect this has on a person in accordance with the definition.

The following aspects are considered relevant to consideration of social surroundings by the Proponent and are discussed further in Chapter 11:

- Amenity - Air quality, noise, visual amenity, and
- Aboriginal cultural heritage values.

Whilst there are several European heritage sites within the Shire of Boddington listed in WA's Heritage Council 'Inherit' database, none are located within the Proposal area. The closest site is the Mount Wells Fire Tower located in State forest, to the west of the F1/F3 RDA. Most of the sites registered in the Shire of Boddington are associated with early European settlement such as homesteads and railway infrastructure. Should potential sites of European heritage be located during surveys or activities associated with the Proposal, advice shall be sought from relevant experts regarding process for assessment and management. European heritage is not discussed further in this referral.

In consideration of economic surroundings, the Proposal will be located within lands owned by the Proponent. The majority of the land under this Proposal forms part of an active pine and bluegum plantation which is owned by the Proponent and managed by a contractor. Plantation resources will be harvested prior to clearing activities for the Revised Proposal and, following implementation of the Revised Proposal, 2675 ha of active plantation area will continue to be managed by the plantation contractor.

The Proponent recognises the conservation value of the native vegetation proposed to be cleared under this Proposal and has minimised this clearing to critical infrastructure required for the safe construction and operation of the Revised Proposal. This vegetation is not part of the state forest or timber reserve and the impact to flora and vegetation is discussed in Section 8.12.

Gringer Creek flows to the Bannister River, which in turn feeds the Hotham River. These systems pass through several farming properties downstream of the Newmont owned plantation. Beyond their environmental function, these waterways play a role in the economic and social landscape of the region. Agriculture is a key local industry, with farming operations depending on water availability for livestock and irrigation. The rivers contribute to land value, rural livelihoods, and broader community sustainability. Additionally, water access and quality influence social cohesion, as shared natural resources often require collaborative management among landholders, industries, and environmental agencies.

11.5 Amenity

Surrounding land uses for the Newmont Boddington Mine include State Forest, timber plantations and agricultural land. Amenity values can be highly subjective but primarily relate to the ability for people to live and recreate within their surroundings without unreasonable interference with their health, welfare, convenience and comfort (EPA 2023b). In consideration of this, Newmont Boddington has evaluated potential impacts of the Revised Proposal and how it may change amenity considerations. Newmont Boddington has identified where the Proposal may impact on new or existing sensitive receptors in this area which include local residents and recreational users.

The nearest concentrated residential area is the town of Boddington, approximately 12 km southeast of Newmont Boddington Mine. The Proposal results in the operational footprint becoming closer to existing residential near neighbours to the east (Figure 11-1). These near neighbours were previously 6 km to 7 km from the Approved Proposal and they will now be 2 km to 6 km to the Proposal boundary where bauxite stockpiling activities are currently planned. The amenity impacts to these near neighbours is considered to be noise and air quality (dust).

Recreational sensitive receptors in the vicinity of the Proposal are described in Table 11-3 with the nearest being of the White Horse Hills Campsite on the Bibbulmun Track (Figure 11-1). The campsite is located 5.5 km northwest of RDA2 and is intermittently occupied by hikers camping overnight. Hikers will usually stay at the campsite for one night before moving on. The Bibbulmun Track is approximately 2 km from the Proposal footprint at its' closest point (Figure 11-1). Along this section of the track and for most of the Bibbulmun Track the view experience is enclosed by forest vegetation. The Saddleback Treefarm, and the Revised Proposal, is visible from high points along the track which have panoramic views (Ecoscape 2024). This is particularly evident at Kimberling Hill which is a long ridgeline and Boonering Hill (for which there is an optional offshoot track from the Bibbulmun Track). The F1/F3 RDA is visible to walkers from both of these locations, particularly from the southern edge of the Kimberling ridgeline.

Table 11-3 Sensitive Receptor Distance from this Proposal

Sensitive Receptor	Distance from RDA2 (km)	Direction from RDA2
Bibbulmun Track – White Horse Hills Campsite	5.5	Northwest
Bibbulmun Track – Mt Wells Campsite	6	Southwest
Residential Properties	2--6	East
North Bannister Roadhouse (currently vacant)	7	Northeast
Bibbulmun Track – Gringer Creek Campsite	8	Northeast
Residential Properties	6 - 11	East and Southeast
Newmont Boddington Mine Accommodation Village	11	South

11.6 Ambient Air Quality

Newmont Boddington conducts ambient air quality monitoring with various air quality monitoring infrastructure across the operation inclusive of a tapered element oscillating microbalance (**TEOM**) at Communications Hill, two portable Osiris monitoring trailers and deposition gauges at various locations (Ramboll 2022). Particulate matter (**PM**) is generally defined as particles that can remain suspended in the air by turbulence for an appreciable length of time and can include dust. It is considered the primary potential air quality impact for the current operations and future expansions.

PM is commonly defined by the size of the particles including the following:

- Total suspended particulates (**TSP**) which is all PM with an equivalent particle diameter less than 50 micrometres (**µm**)

- PM_{10} is particulate matter below 10 µm in equivalent diameter, and
- $PM_{2.5}$ is particulate matter below 2.5 µm in equivalent diameter.

PM_{10} and $PM_{2.5}$ are associated with the potential for health impacts, as particles of this size may enter the lungs. This study has focussed on predicted PM_{10} and $PM_{2.5}$ ambient air quality concentrations and TSP deposition. represents the National Environmental Protection Measures (**NEPM**) air quality guidelines for particulates (NEPC 2021) and Australian Standard guidelines for dust deposition. The DWER has published draft guidelines for dust emissions which outline standards for dust deposition of TSP which take into account potential amenity impacts. The guideline advises where baseline data exists, a criteria for the maximum increase of deposited dust should be 2 g/m^2/month, while the total deposited dust criteria of 4 g/m^2/month should apply where no baseline data exists (DWER 2021). Emissions to air are typically regulated through Part V of the EP Act via works approvals and licences.

Commonly PM emissions from Newmont Boddington's mining operations can arise from vehicle and equipment exhaust and travel on non-sealed roads, dust generated from blasting activities, movement and crushing of rock, and dust lift-off from tailings storage areas. Less common activities which occur as part of the Approved Proposal and also the Revised Proposal include vegetation clearing for expansion works and burning of vegetation for fuel reduction activities. Agricultural activities, pollen from surrounding vegetation and smoke from fuel reduction burns in the neighbouring state forest would also add to the PM levels in the area. Monitored peak concentrations generally occur during the summer/autumn months.

Dust deposition gauges established around the F1/F3 RDA have been monitored since 2017. Occasionally elevated rates of deposition at monitors in the north-west of the footprint was detected. However, it was noted these are in close proximity to the facility and located almost directly upwind of the wind trajectory from the RDA (Ramboll 2022).

Table 11-4 NEPM Air Quality Standards

Pollutant	Averaging Period	Unit of Measure	Threshold	Guiding Standard
TSP	24-hour	ug/m^3	90	NEPC 2021
PM_{10}	24-hour	$µg/m^3$	50	NEPC 2021
	Annual	$µg/m^3$	25	
$PM_{2.5}$	24-hour	$µg/m^3$	25	
	Annual	$µg/m^3$	8	
Particulate Deposition	24-hour	g/m^2/month	2	AS/NZS 3580.10.1:2003 DWER (2021)
	Annual	g/m^2/month	4	

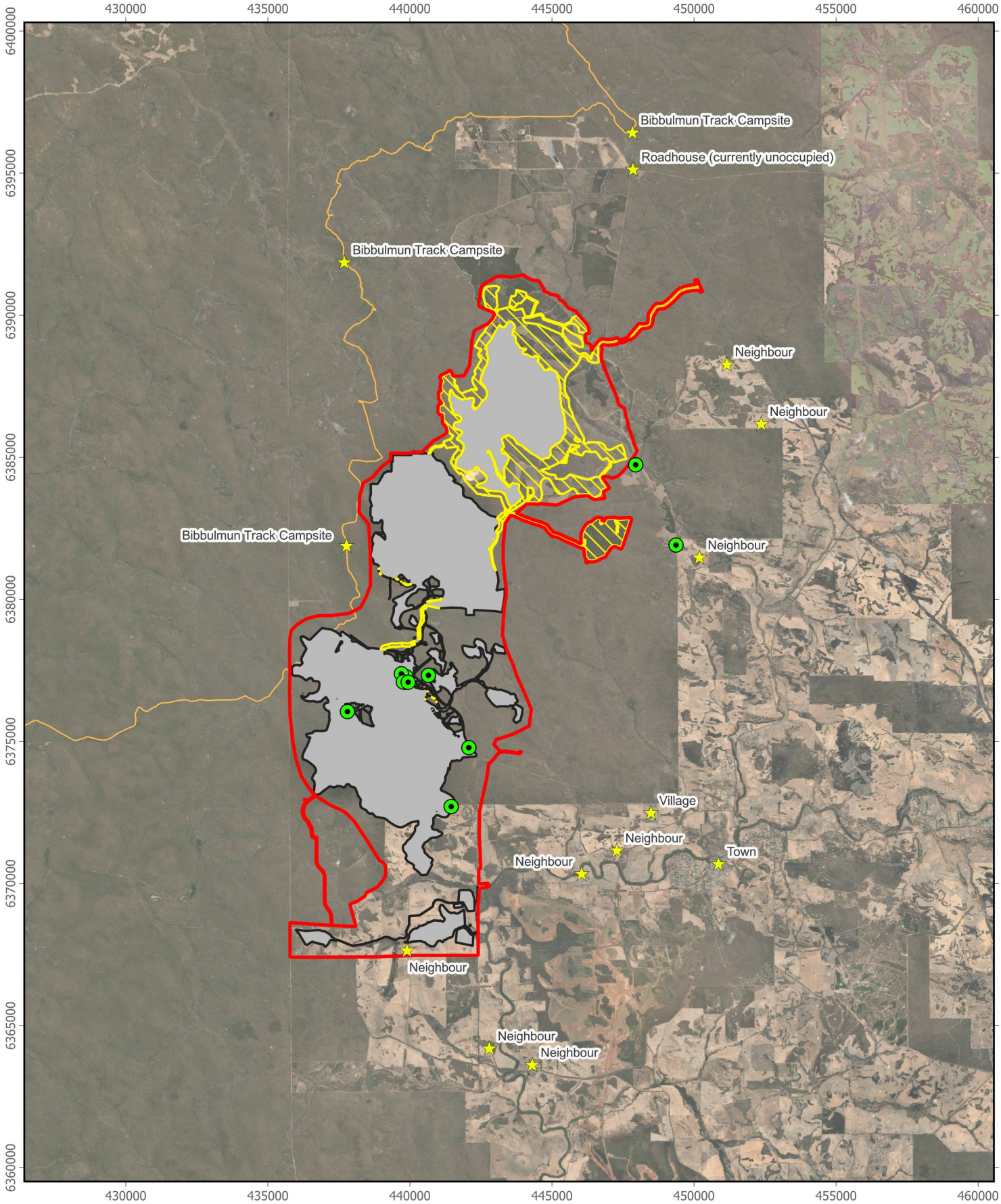


Figure 11-1 Air Quality Monitoring Locations and Sensitive Receptors

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Air Quality Monitoring Locations
- Sensitive Receptors
- Bibbulmun Track

N

0 1 2 km

Scale @A4 1: 180000
Projection: GDA94 / MGA zone 50

Client: Newmont Boddington
Project and Phase: 1001665
Data: Newmont Australia (2024)
Imagery ©Bing Aerial, Esri

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability orresponsibility for any decisions or actions resulting from the information contained within this map.
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11.7 Baseline Noise and Vibration

Activities associated with this Proposal and the Revised Proposal have potential to impact social surroundings through noise generated from activities such as vegetation clearing, earthworks, drilling and blasting, haulage, crushing and vehicle traffic. This occurs in addition to general background noise generated from local traffic, agriculture and nature.

The Approved Proposal operates under a Noise and Vibration Management Plan. The objective of the plan is to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*(**Noise Regulations)** and to minimise nuisance noise to the community. The use of explosives for blasting can generate blast overpressure (or 'airblast' which is the part of the blast which can be heard) and ground vibration. Noise is an amenity value, which when impacted, can interfere with the health, welfare and comfort of noise sensitive premises.

The Noise Regulations define prescribed standards for noise emissions when received at a sensitive premises in terms of:

- L_{A10}- A-weighted noise level in decibels (**dB**) which is exceeded for 10% of the measurement period and is considered to represent the "intrusive" noise level
- L_{A1}- A-weighted noise level which is exceeded for 1% of the measurement period and is considered to represent the average of the maximum noise levels measured, and
- L_{Amax}- A-weighted noise level which is the highest time-weighted sound level measured during a period.

The relevant levels for operational noise at noise sensitive premises (e.g. residences) are presented in Table 11-5. These values may be lowered if the noise contains tonality, modulation and/or impulsiveness. For each of these factors, the assigned level is lowered by 5 dB.

Blasting is also regulated under the Noise Regulations with these activities limited to occur between 0700 and 1800 on any day with an airblast level not to exceed 120 dBL at noise sensitive premises or 125 dBL at locations not considered sensitive. Current blasting activities at Newmont Boddington Mine are primarily in the open pits and at depth, blasting hard basement rock. The blasting activities which will be required for this Proposal will be primarily targeting bauxite resource which needs to be preserved. Bauxite is usually present higher in the landscape and at shallower depth.

Environmental noise monitoring is completed to ascertain potential noise impacts of the existing operation on local sensitive receptors. Noise monitoring campaigns were conducted twice yearly from 2021 to 2024 with results compared to the Noise Regulations. Noise monitors are established at the perimeter boundary of Saddleback Treefarm and Chalk Brook Road and on Hotham Farm (near the existing farm residence) (LGA 2021, 2022, 2023a, 2023a, 2023c, 2024a, 2024b,2025).

Over the eight monitoring periods, the logger at Hotham Farm L_{A90} noise levels between 22.9 and 42.1 dB during downwind periods. Wildlife noise, particularly birds and frogs, was the dominant noise at this site. Where industrial noise could be heard at nighttime, which resulted in an exceedance of the regulations, it could not all be ascertained to Newmont's operations as there are other operators in the area including but not limited to agriculture, mining and forestry activities.

Over the eight monitoring periods at the site near Chalk Brook Road, mine noise could be detected as a very low-level rumble on several occasions with noise levels again dominated by wildlife. At this logger, L_{A90} noise level records have ranged between 19.5 dB and 42.6 dB (LGA 2021, 2022, 2023a, 2023a, 2023c, 2024a, 2024b,2025).

Table 11-5 Baseline Assigned Noise Levels

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area (e.g. residential area)	0700 to 1900 hours Monday to Saturday (day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

Baseline Visual Amenity

The sensitive receptors for visual impacts are the users of the landforms surrounding Newmont Boddington Mine. The Saddleback Treefarm is boarded by the Albany Highway for several kilometres where the view is dominated by forest vegetation on either side. The Proposal and Revised Proposal will not be visible from the Albany Highway (Ecoscape 2024). The Saddleback Treefarm, and the Revised Proposal, is visible from two elevated lookouts along the stretch of the Bibbulmun walking track from Gringer Creek campsite to Mt Wells campsite including Boonering Hill and Koombarling Hill.

11.8 Aboriginal Cultural Heritage

The Proposal is located within Wilman Country which is primarily within the Gnaala Karla Booja (**GKB**) Indigenous Land Use Agreement (**ILUA**) area (WI2015/005), in the Southwest region of Western Australia (ALS, 2024). Wilman Noongar people are part of WA's Southwest Noongar Nation with their traditional lands extending from Wagin, Narrogin and Williams west to Collie, Wuraming north to Gnowing, Dattening, and Pingelly, east to Wickepin, Dudinin and Lake Grace, and south to Nyabing, Katanning, Woodanilling and Duranilling (ALS 2025). Newmont Boddington acknowledges the Wilman people maintain their traditional rights and responsibilities as custodians of this Country, and hold knowledge of cultural practices, values, and heritage related to it.

The Darling Scarp, which covers a significant area of Wilman Country, represents the body of the Waugal and, during the dreaming, the Waugal created the curves and contours of the Scarp and, slithered over the land to create water bodies inclusive of rivers, swamps and lakes (ALS 2024). All waterways are of high cultural value and importance to Wilman Traditional Owners (ALS 2024).

Under the GKB ILUA, Gnaala Karla Booja Aboriginal Corporation (**GKBAC**) represents four Noongar language or dialectical groups inclusive of Wilman (ALS 2024) and is responsible for the management and implementation of the GKB ILUA. The GKB People originally submitted a native title claim over the

area in 1998 (WC1998/058). This native title claim was withdrawn when Traditional Owners nominated by the GKB agreed to enter into the South West Settlement (WDC2021/010) along with five other Noongar Nations. The South West Settlement extinguished Native Title rights over the claim areas (ALS 2024).

The GKB ILUA provides GKBAC with additional and ongoing management opportunities for land within the area of the GKB ILUA and greater control over the activities that occur within the GKB ILUA area, including from an Aboriginal cultural heritage management perspective. Under the GKB ILUA the State Government is required to enter into a Noongar Standard Heritage Agreement (**NSHA**) and other land users within the GKB ILUA area are encouraged to enter into a NSHA prior to undertaking ground disturbing activities within the South West Settlement Area (ALS 2024).

Newmont Boddington entered into two agreements with the GKB People prior to the finalisation of the South West Settlement. Newmont Boddington entered into a formal agreement with Traditional Owners in 2006, with the Moorditj Booja Community Partnership Agreement (**CPA**). The CPA is a voluntary ILUA which includes commitments from both parties. In addition, Newmont Boddington entered into the Preservation of Aboriginal Heritage Agreement (**PAHA**) in 2007. The PAHA applies to Newmont Boddington's activities and outlines a process for communication and consultation in respect of joint management of Aboriginal heritage within the areas of operation of the mine, and surrounding exploration activities. The PAHA includes a process for management of Aboriginal heritage values within a defined heritage area of influence (**HAI**) and for nomination of GKB Traditional Owners to oversee and conduct heritage management within the HAI. The area of this Proposal sits within the HAI and, all planned areas of disturbance within the HAI are surveyed and assessed for potential heritage values in accordance with the PAHA.

The CPA and PAHA historically involved consultation with GKB via the South West Aboriginal Land and Sea Council (**SWALSC**). Following establishment of the GKBAC, administration of the CPA and PAHA has been transitioned from SWALSC to GKBAC. Both parties are currently working to replace the PAHA with a NSHA.

The CPA establishes a Relationship Committee which consists of a group of GKB Traditional Owners who have been nominated by GKBAC. The Relationship Committee meets on a quarterly basis regarding project updates and compliance with the CPA and PAHA. The Relationship Committee has been undergoing a process of transition with management of the CPA transitioning from SWALSC to GKBAC and quarterly meetings have been paused since Q1 2024. In the interim Newmont has undertaken considerable consultation with the GKBAC Executive as well as the Heritage team and CAC. Newmont and GKBAC intend for regular quarterly meetings to be re-established in 2025, following decisions on Relationship Committee governance by the GKBAC.

The relevant WA legislation governing protection of Aboriginal heritage includes the *Aboriginal Heritage Act 1972,* which provides for protection and management of Aboriginal cultural heritage through the issue of approvals, and the *EP Act* in consideration of Social Surroundings. The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* enables the Commonwealth Government to intervene and issue declarations to preserve and protect areas and objects of significance to Aboriginal people of Australia upon receipt of an application for such a declaration.

Under the CPA and PAHA, Newmont Boddington has conducted Aboriginal cultural heritage surveys with Traditional Owners, anthropologists and archaeologists, over the Proposal area. Common site types found on Wilman Country include water sources, culturally modified trees (particularly in the Jarrah Forest); artefact scatters, granite outcrops, camp sites for hunting parties, natural features in the landscape which were used as meeting points or trading posts, and lizard traps (ALS 2025). There are several registered sites in the area surrounding Newmont Boddington's operation, as well as records of lodged places and stored data (not a site).

Five heritage places are known to exist within the Saddleback Treefarm area including (ALS 2025):

- Boddington Forest 44 (DPLH ID 4238) – Water source
- Boddington Forest 45 (DPLH ID 4239) – Grinding area/grooves (was collected as accessioned into the WA Museum collection)

- Dukatj (34 Mile) Creek (DPLH ID 21471) – Camp; creation/dreaming narrative; other; water source (access to this file is restricted for cultural reasons)
- Dandalup River (DPLH ID 27937) – Creation/dreaming narrative; hunting place; landscape/seascape feature; plant resource; water source, and
- BGA_S32_2_001 – Modified Tree (DPLH ID 40453) – Modified tree (two modified jarrah trees).

Within a 10 km radius of the Saddleback Treefarm additional Aboriginal cultural heritage places have also documented including:

- Boddington Forest 40 (DPLH ID 4234) – Artefacts/scatter
- Boddington Forest42 (DPLH ID 4236) – Artefacts/scatter
- Boddington Forest 36 (DPLH ID 4230) – Artefacts/scatter
- Bannister Gnamma Hole (DPLH ID 3269) – Ritual/ceremonial; water source
- Kitty's Grave, Bannister (DPLH ID 3267) – Burial
- Pollard's Possum Tree (DPLH ID 3270) – Modified tree
- HEA01 (DPLH ID 18749) – Artefacts/scatter
- Birdiya Hill (Mt Wells) (DPLH ID 21470) – Camp; creation/dreaming narrative; hunting place, and
- BGA_S32_3_001 – Modified Tree (DPLH ID 40512) – Modified tree.

The Hotham River from Pumphrey's Bridge to the Murray River, and its direct tributaries (which includes Bannister River, 34 Mile Brook, Boggy Brook and Junglen Gully), forms registered heritage site (DPLH ID 27935). The Hotham River holds mythological significance and is a customary home of the Waugal and is recognised as a creation/dreaming narrative. Traditional owners also recognise the site as being an important source of fresh water and a travel route (ALS 2025).

Newmont Boddington has obtained four section 18 consents under the AH Act for disturbance to registered Aboriginal cultural heritage sites for the purposes of the current mining operations. One was obtained in 2005 over 34 Mile Brook for the purposes of mining activities including water dams and the F1/F3 RDA. A second was obtained in 2013 for a water pipeline from Hedges water dam (on Junglen Gully) to the Hotham River pump station. The third was obtained in 2014 and pertains to a southern extent of the 34 Mile Brook and the fourth s18 consent was granted in 2017 for the D6 dam on Junglen Gully.

Given the age of some of the existing heritage surveys, additional heritage surveys are underway over the Revised Proposal area. These surveys are focused on waterways and granite outcropping through the Revised Proposal area.

435000 440000 445000 450000

6390000 6385000 6380000 6375000 6370000

N

0 1 2
Kilometers

2005 Section 18 Consent

2014 Section 18 Consent

2016 Section 18 Consent

2013 Section 18 Consent

2024 Section 18 Consent

Heritage Agreement Project Area

Section 18 Approvals

- Newmont
- STH32

Newmont Heritage Surveys

- 2024 - Worsley Survey - Hotham North
- 2021-2023 Worsley Survey - Boggy Brook and Saddleback Tree Farm
- 2021 - Aboriginal Heritage Survey of Drilling Area Hume Tank
- 2021 - Aboriginal Site Survey of the Extended Footprint of RDA2
- 2012 - Aboriginal Site Survey of the proposed RDA Option 1
- 2012 - Aboriginal Site Survey of the proposed D6 Water Dam Hotham Farm
- 2011 - DIA 4300 Boddington Forrest 1 and DIA 4230 Boddington Forrest 36
- 2010 - Reassessment of DIA 21470 Birdiya Hill / Mount Wells
- 2009 - Area Clearance Survey of Proposed Watermonitoring Bores
- 2008 - Tullis Bridge Weir Cable Trench and Boggy Brook Road
- 2008 - Area of Hotham River Pump Station
- 2006 - Old BGM Camp & Soldiers Rd
- 2006 - Old Mine Camp Rd Verge Project
- 2006 - Proposed BGM Accommodation Villlage Site
- 2002 - Boddington field investigations
- 2003 - Mount Wells and surrounding Area
- 2000 - Aboriginal Site Survey at BGM
- 1997 - Hedges Gold Proposed Drilling Traverse N1 and Proposed Drilling Traverse Area A
- 1997 - Wattle Project Area
- 1994 - Boddington Gold Mine Survey Extension
- 1987 - Survey for Alcoa , part of Mineral lease 239A
- 1984 - Water Supply Dam Impoundment Area
- 1984 - Worsley Alumina Joint Venturers bauxite/gold operation
- 1980 - Bunnings Forest
- 1980 - Worsley Alumina Project Survey for Aboriginal Sites

DPLH Sites

- Surveyed/ Actual Site
- Lodged
- Register

NEWMONT AUSTRALIA

Boddington Project

Historic Heritage Surveys s18 Extents PAHA Project Area Figure 11-2

Author: S. Myles	Scale: 1:65,000	Date: 10/06/2025
Drawn: V. Preedy	Coord System: GDA 1994 MGA Zone 50	

BOD_Her_Surveys.aprx Layout:BOD_Her_A3_NewmontSurveysDPLH

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11.9 Preliminary Assessment of Potential Social Surroundings Impacts

Activities associated with this Proposal with potential to impact on social surroundings include clearing of vegetation and land disturbance from activities associated with stockpiling and ancillary works.

The potential impacts that may occur to social surroundings as a consequence of implementation of this Proposal include:

Direct Impacts

- Impacts to sites of Aboriginal cultural heritage value
- Impact to local air quality from the generation of PM from cleared areas, burning of waste vegetation, vehicle and equipment exhaust, use of unsealed roads and creation of stockpiles
- Noise and blast vibration emissions from construction and operational activities impacting sensitive receptors, and
- Reduced visual amenity experience for recreational users of the Bibbulmun Track from vegetation clearing.

Indirect Impacts

- Physical or biological change to the environment, including hydrology, which may impact values associated with sites of significant cultural heritage.

11.9.1 Potential Air Quality Impacts

Dust has the potential to cause reduced air quality, acute and chronic health effects, as well as amenity impacts due to reduced visibility and settling on surfaces causing soiling and staining. The potential impact of dust is determined by particle size, chemical composition and concentration.

Air quality dispersion modelling for the cumulative impact of the Revised Proposal was undertaken by Environmental Technologies and Analytics (2025) (ETA 2025). Modelling was undertaken using the CALMET/CALPUFF model suite using:

- Meteorological data based on the 2022 calendar year
- Background air quality modelling data from Newmont Boddington's onsite air quality monitoring station at Communications Hill

Three phases of implementation were modelled to assess air quality impacts including:

- Phase 1: vegetation clearing and topsoil stripping
- Phase 2: mining of subsurface bauxite and ongoing clearing, and
- Phase 3: construction of dam embankments (noting the embankments fall within the footprint of the Approved Proposal).

Sensitive receptors included residential, amenity, heritage and ecological. Further information about modelling methodology is presented in (Appendix E

No human health or amenity related receptors were predicted to observe a TSP or PM_{10} value above the criteria when assessing the phases of development with or without background levels. Clearing and topsoil stripping is likely to have localised impact on receptors in the immediate vicinity of the activities. However, the modelling indicates that for bauxite mining and dam construction, TSP had potential to increase at some receptors outside of 2 km from the activities associated with RD2 development. These sites are in close proximity to the Approved Proposal and the background averages are already elevated (ETA 2025) (Figure 11-3 and Figure 11-4). Similar results were predicted for the PM_{10} modelling when including background or isolated works. However, when including background, three ecological receptors close to the Proposal were predicted to have at least one 24-hour PM_{10} concentration above the 50 $\mu g/m^3$ criteria.

The results of the dispersion modelling show the monthly dry deposition rates at sensitive receptors are predicted to be below criteria and limited to within the Revised Proposal (ETA 2025). Since this initial modelling work was completed, the referral footprint has been refined and a phased approach to implementation of the RDA2 has been adopted. Therefore, the air quality modelling study will be revised with the results to be reported in the ERD. Given the existing modelling results, preliminary assessment of potential impacts on air quality as a result of the Proposal are not considered to be significant.

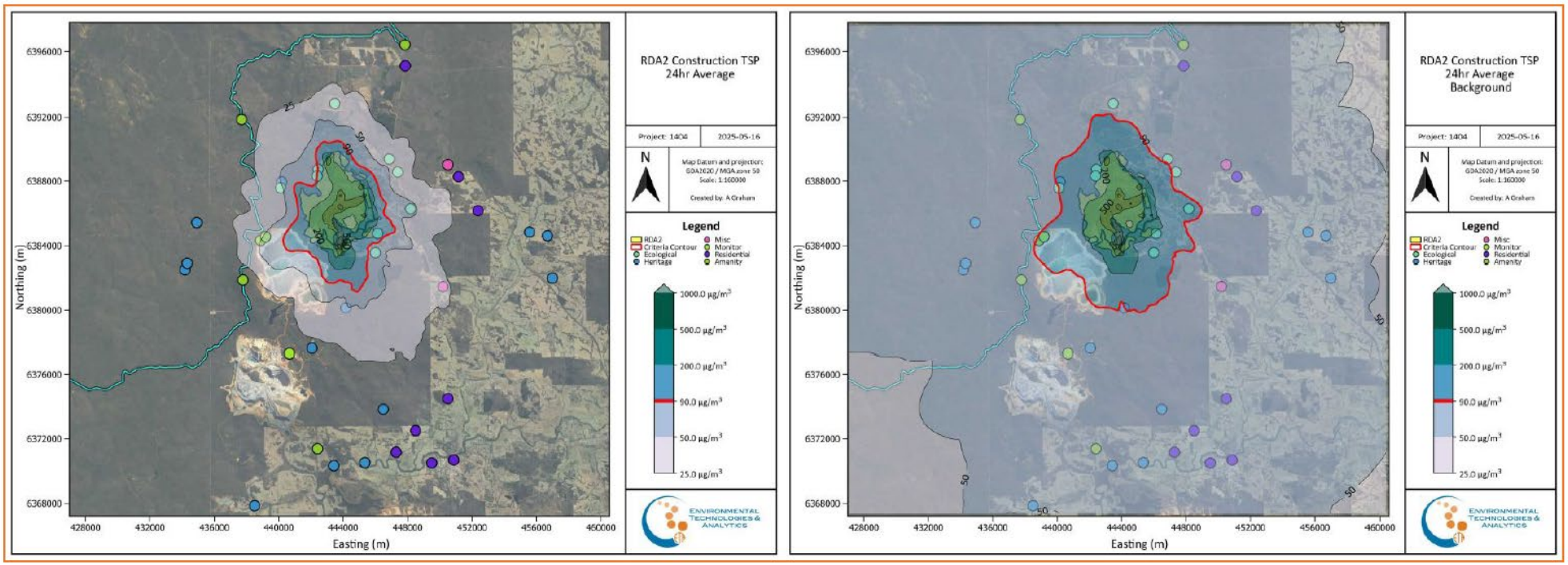


Figure 11-3 Predicted maximum 24-hour TSP concentrations (µg/m³) – Dam Construction

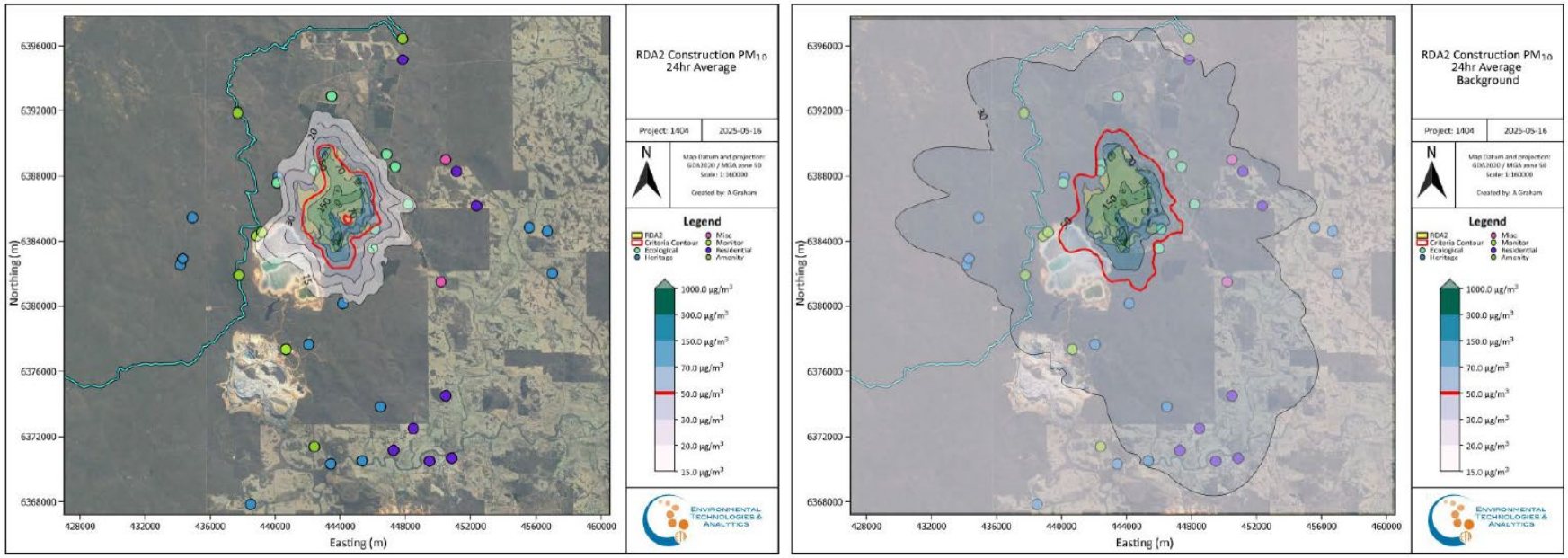


Figure 11-4 Predicted maximum 24-hour PM_{10} concentration contours (µg/m³) – Dam Construction

11.9.2 Potential Noise and Vibration Impacts

Implementation of the Proposal is expected to result in additional noise and vibration emissions through clearing and construction activities. Key activities with the potential to emit noise include:

- Clearing and grubbing activities
- Construction activities including blasting, and
- Vehicle movements (light vehicles and heavy equipment).

Noise modelling for the implementation of the Revised Proposal has been completed and is inclusive of supporting infrastructure such as roads, pipelines, stockpiles and associated haul roads. It also modelled noise in conjunction with existing tailings and mining operations in order to consider cumulative impacts (Herring Storer Acoustics 2025). The model investigated noise levels at the six potential sensitive receptors closest to the Newmont Boddington Mine operations (Figure 11-5). Inputs to the model included:

- Approved and Proposed site layouts
- Sound power levels of equipment to be used
- Ground contours, and
- Weather conditions (Herring Storer Acoustics 2025)

Blasting activities for construction of the RDA2, will be primarily for the purpose of preservation of bauxite which may be present in the area. Unlike the deep open pits associated with the gold/copper mine, bauxite blasting is conducted higher in the landscape. Blasting for bauxite will occur during the daytime, with very occasional days in which more than one blast occurs.

Modelling was undertaken under the worst case scenario being at night with maximum propagation conditions (Herring Storer Acoustics 2025). Cumulative impacts with current Newmont Boddington Mine operations were modelled. Additional details of the model are provided in Appendix E.

The modelling demonstrated the noise guidelines would be complied with at all residences even if full operations occurred at nighttime, when applicable noise regulations are at the lowest (Table 11-6 , Figure 11-5).

The footprint for the Proposal has undergone review since the noise modelling was completed. The modelling work is under review and revised results will be presented in the ERD. However, the results are predicted to be similar to what is presented in this referral.

Table 11-6 Assessment of Noise Levels

Scenario	Receiver	Assessable Noise level, dB(A)	Time of day	Applicable L_{A10} assigned noise level, dB(A)	Compliance
Night time Full Plant Operations	R1	14	Night (22:00 to 7:00)	35	Complies
	R2	7			Complies
	R3	18			Complies
	R4	22			Complies
	R5	27			Complies
	R6	25			Complies

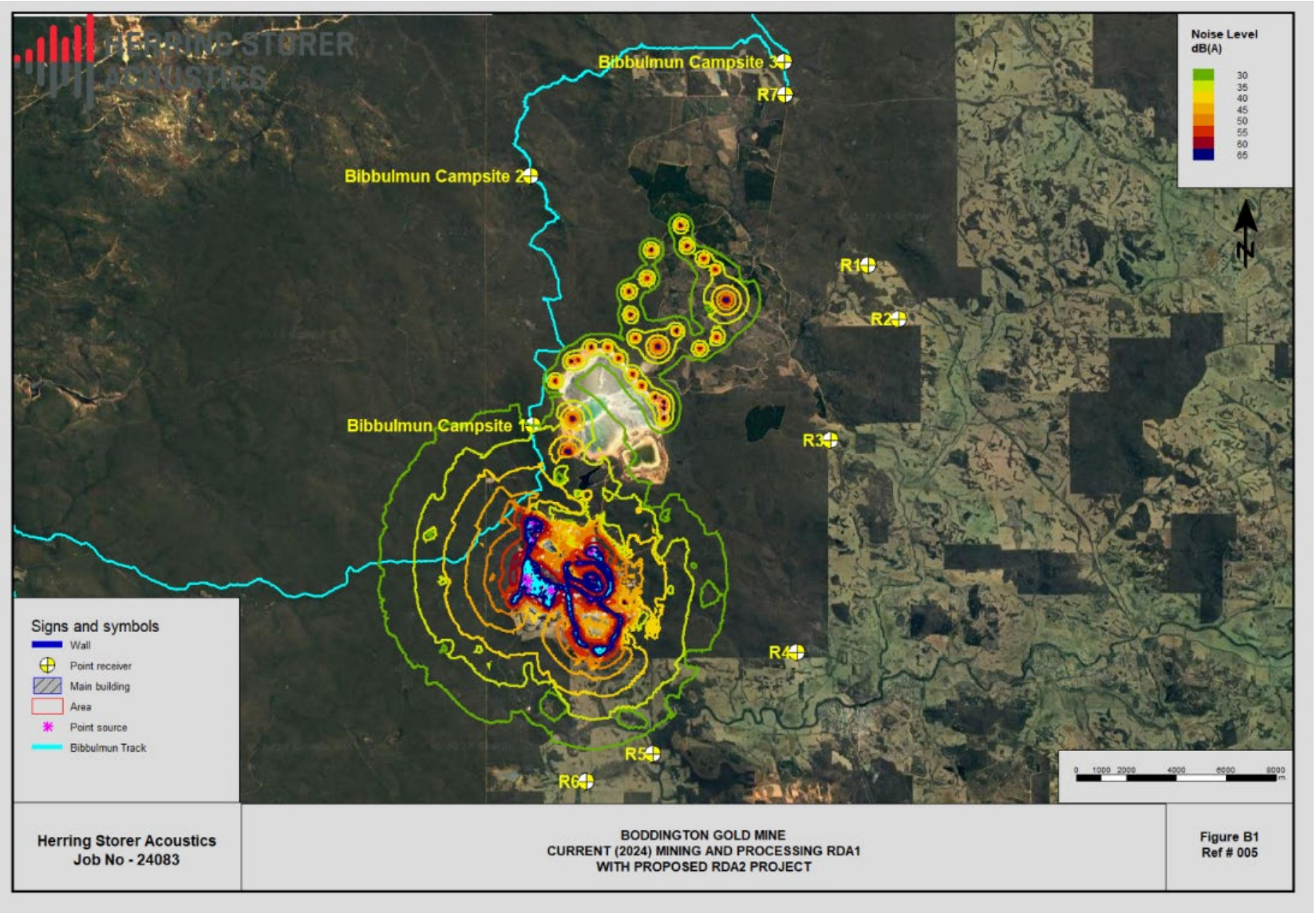


Figure 11-5 Noise contour plots from modelling

11.9.3 Potential Visual Amenity Impact

This Proposal lies approximately 2 km from the Bibbulmun Track at the closest point. Landscape and Visual Impact Assessment for the Revised Proposal was completed and identified that the view experience for most of the Bibbulmun Track is enclosed by forest vegetation (Ecoscape 2024). However, the Saddleback Treefarm, and hence the Proposal disturbance footprint, is visible from high points along the track which have panoramic views (Ecoscape 2024). This is particularly evident at Kimberling Hill which is a long ridgeline and Boonering Hill (for which there is an optional offshoot track from the Bibbulmun Track). The approved, active F1/F3 RDA is visible to walkers from both of these locations, particularly from the southern edge of the Kimberling ridgeline.

Newmont is investigating options for harvesting of all usable timber and production of hydromulch where possible. However, there may be a need to burn some waste vegetation stockpiles which will result in temporary smoke visible from afar. This impact will be temporary and is not anticipated to be of any additional significance to what is already experienced by the region from asset protection, agricultural and state forest burning practices.

The visual impact of the Proposal and the Revised Proposal is unlikely to be substantially different from that of the Approved Proposal. The visual impact assessment will be revised and this preliminary assessment will be reviewed and discussed in the ERD.

11.9.4 Potential Direct Impact on Aboriginal Cultural Heritage Values

Newmont Boddington will undertake additional heritage surveys over the area of the Proposal. These additional surveys may identify previously unknown Aboriginal cultural heritage sites. Heritage surveys which have been completed since 2021 in the Saddleback Treefarm, as well as planned survey extents, is shown in Figure 11-6.

Where disturbance of heritage sites registered under the AH Act is required, the appropriate consent approvals under the AH Act (i.e. section 16 or section 18) will be sought from DPLH. Newmont Boddington will continue to engage with GKBAC CAC in respect of Aboriginal cultural heritage management and the Proposal.

11.9.5 Potential Indirect Impacts to Aboriginal Cultural Heritage Values

Newmont Boddington regularly engages with GKBAC in respect of the Approved Proposal and this Proposal. Through this engagement, and via heritage survey participation, GKB Aboriginal people have raised matters in respect of potential indirect impacts of the Revised Proposal, including downstream impacts to water courses such as changed hydrological regimes. Newmont continues to engage with GKBAC and GKBAC CAC regarding environmental and cultural heritage management protocols in accordance with the PAHA and the future NSHA.

440,000mE

445,000mE

450,000mE

6,390,000mN

6,385,000mN

- Proposed Disturbance
- Heritage Agreement Project Area

DPLH Sites

- Surveyed/ Actual Site
- Lodged
- Register

Newmont Heritage Surveys

- 2024 - Worsley Survey - Hotham North
- 2021-2023 Worsley Survey - Boggy Brook and Saddleback Tree Farm
- 2021 - Aboriginal Site Survey of the Extended Footprint of RDA2
- 2012 - Aboriginal Site Survey of the proposed RDA Option 1
- 2010 - Reassessment of DIA 21470 Birdiya Hill / Mount Wells
- 2009 - Area Clearance Survey of Proposed Watermonitoring Bores
- 2024/2025 Saddleback Heritage Surveys

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Boddington Project

Saddleback Treefarm Completed and Planned Heritage Survey Extents Figure 11-6

Author: S. Myles	Scale: 1:40,000	Date: 10/06/2025
Drawn: V.Preedy	Coord System: GDA 1994 MGA Zone 50	

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11.9.6 Preliminary Cumulative Impacts Discussion

The Proposal will increase the disturbance in the Boddington region, resulting in landscape changes from the native vegetation and plantation viewshed to a tailings storage facility. The Proponent acknowledges the potential for these activities to impact on intangible cultural heritage which may include song lines, ceremonies and dreaming stories, knowledge and practices concerning nature and plants. Therefore, implementation of this Proposal, in addition to the Approved Proposal, has potential to make additional change and impact to the intangible cultural heritage values of the Wilman people.

This Proposal will add to the current dust and noise emissions already produced by the Approved Proposal. However, this increase is not predicted to have a significant impact on sensitive receptors. ETA (2025) modelled predicted dust levels as a result of the Revised Proposal. Whilst dust emissions are expected to increase locally within the operational footprint, no unacceptable dust levels are anticipated to reach local sensitive receptors with the implementation of the Revised Proposal. This work will be revisited with the latest footprint and phased implementation plan with results reported in the ERD.

Similarly, noise emissions have been modelled for the Revised Proposal and currently predict noise emissions at sensitive receptors will remain below that required by the Noise Regulations. The study assessed night-time (worst case) noise emissions under maximum propagation conditions for the processing plant (Herring Storer Acoustics 2025). The highest predicted noise emission for the nearest sensitive receptor for this period was 27 assessable noise level (**dB(A)**) against an assigned compliance level of 35 dB(A). This work will be revisited with the latest footprint and phased implementation plan with results reported in the ERD.

It is acknowledged bushwalkers along the Bibbulmun Track will be able to view the Revised Proposal from lookout points along the track including Boonering Hill and Kimberling Hill. The current operations, and Saddleback Treefarm are already visible from these vantage points and this impact will be temporary for the period of operation. Following closure, the RDA landforms will be rehabilitated with vegetation and will blend into the surrounding landscape. No significant impact to visual amenity beyond the Approved Proposal, is predicted for implementation of the Revised Proposal.

11.9.7 Closure

The MCP will be revised to include the footprint required for this Proposal as these areas fall under Mining Act tenure. The proposed post-mining land use assumes the site will be rehabilitated with native vegetation to create a safe, stable and non-polluting landscape which is compatible with the current surrounding land use.

The MCP will also ensure heritage values within the RDE are managed and protected to ensure they are preserved for future generations to visit and learn. Management planning will be conducted with the cooperation and participation of the Traditional Owners.

11.10 Preliminary Mitigation

Newmont Boddington proposes preliminary mitigation of potential impacts to social surroundings according to the mitigation hierarchy; avoid, minimise and rehabilitate. To limit potential impacts on social surroundings, management actions will be implemented as outlined in the construction cultural heritage management plan which is to be developed in consultation with the GKBAC CAC, and the construction environmental management plan. These actions are outlined in Table 10-5.

11.10.1 Aboriginal Cultural Heritage Values

Heritage surveys were completed for the RDA2 footprint as part of the Approved Proposal from 2011-2013. Newmont has identified the need to complete a due diligence assessment in respect of Aboriginal heritage, which will include conducting additional heritage surveys with GKBAC.

Newmont engaged ALS to complete a desktop due diligence assessment which recommended further Aboriginal heritage survey work within the Approved Proposal as well as targeted areas to survey for this Proposal's footprint (ALS, 2024). As per existing survey protocol, all heritage surveys involve Traditional Owners nominated by the GKBAC CAC as well as anthropological and archaeological technical experts. Newmont Boddington is working with the GKBAC to transition management of the surveys to GKB Impact which is a business arm of GKBAC to support economic growth and create sustainable employment for GKB people.

The GKBAC CAC and Heritage department are currently being consulted regarding places and objects which have been identified in surveys completed in December 2024 and January 2025. Additional heritage surveys are planned for June 2025. Newmont Boddington will continue to engage with GKBAC in relation to other matters raised by Aboriginal survey participants, and the GKBAC CAC in the course of its consultation, including in relation to potential impacts to surface and groundwater resources in the vicinity, or downstream of the Revised Proposal.

Where surveys identify sites or objects of Aboriginal Cultural significance, Newmont will adopt protective mechanisms in consultation with ALS, GKB survey participants and the GKBAC CAC. This includes utilisation of Aboriginal monitors during clearing works, adoption of agreed buffer distances and ensuring the heritage GIS database is maintained. Where agreed with GKBAC CAC, results of heritage surveys for the Proposal and Revised Proposal will be shared in the ERD.

Newmont operates under a Site Disturbance Permit Application and Assessment process which assesses potential disturbance for environmental and heritage aspects and a Chance Find Procedure, whereby works are required to stop should potential culturally significant sites or artefacts be found during activities. Personnel completing activities such as exploration, or in-field study programs are required to undergo Chance Find Procedure awareness training.

The Proponent (in consultation with the GKBAC) will develop a Cultural Heritage Management Plan (**CHMP**) for implementation of the Proposal. The CHMP will include:

- Requirement for site inductions for all personnel (employees and contractors) which includes outlining locations of heritage sites and buffer zones, any s.16 or s.18 requirements, the chance find procedure requirements and the consequences for disturbance of culturally significant sites, and
- Surface and groundwater infrastructure to ensure downstream flow to Gringer Creek is maintained as much as practicable through diversion of upstream catchments and water quality is not deteriorated through increased sedimentation

Where impacts to heritage sites cannot be avoided, Newmont Boddington will implement steps to minimise or mitigate impacts and ensure required statutory approvals are obtained. Newmont Boddington will request approvals under s.16 and/or s.18 of the AH Act where applicable. This process will be undertaken in consultation with the GKBAC.

11.10.2 Impact to local air quality, noise and visual impact

The footprint of this Proposal will result in operational activities coming closer to neighbours to the east of Saddleback Treefarm and to different areas of the Bibbulmun Track to the west. However, all sensitive receptors will remain at least 2 km from operational areas.

Impact to local air quality, noise and visual impact shall be avoided during implementation of this Proposal by ensuring the cleared footprint is minimised wherever possible. Existing cleared areas for access and placement of infrastructure will be utilised to avoid unnecessary increases in footprint.

Mitigation measures to minimise potential impacts to amenity will be captured in the Construction Environmental Management Plan (**EMP**) which will be developed and approved via EP Act (Part V) approval pathways.

Dust suppression activities will include the use of water carts, sealing of tracks where possible, and use of dust suppression additives as required and where practicable.

Dust and noise monitoring will be installed with triggers established for visual inspection and checks as well as active real-time monitoring (for noise) under the construction EMP.

Impacts to visual amenity will be limited to lookout points along the Bibbulmum Track and Newmont Boddington will consult with DBCA and the Bibbulmun Track Foundation regarding installation of interpretive signage in these areas.

11.10.3 Other statutory decision-making processes

Other statutory decision-making processes that can mitigate potential environmental impacts of the Proposal on Social Surroundings are summarized in Table 11-7 . This list considers the EPA's *Interim Guidance on Taking Decision-Making Processes into Account in EIA* (EPA 2021c) and provides reasons for how these processes address the following:

- EP Act's objectives and principles
- EPA's objective for Social Surroundings, and
- Specific potential impacts of the Proposal.

The AH Act is the relevant state legislation that governs the protection of registered Aboriginal heritage sites. Under the AH Act it is an offence to damage or destroy a heritage site without first gaining appropriate approval. Newmont Boddington has internal standards and approval requirements regarding the management of Aboriginal cultural heritage on tenure an Newmont freehold owned land. All activities and approvals must adhere to Newmont Boddington company standards, statutory obligations, and commitments made during consultations with the GKB Traditional Owners.

Table 11-7 Social Surroundings – other statutory decision-making processes

Potential impact	Statutory decision-making process can mitigate impacts on the environment?	Reasons
Impacts to heritage sites	Yes	*AH Act* Approval under the AH Act is required prior to impact to registered heritage sites. Newmont Boddington will prepare a CHMP to mitigate potential impact to heritage sites from the construction and operation of the Proposal, other than those that have approval to be impacted under s18 of the AH Act.

Potential impact	Statutory decision-making process can mitigate impacts on the environment?	Reasons
Particulate emissions reducing ambient air quality at sensitive receptors	Yes	*EP Act Part V licence* The current Part V Operating Licence L8306/2008/3 Category 5 – Processing or beneficiation of metallic or non-metallic ore authorises the processing of 45,000,000 t of ore per year and this will not increase as a result of the Proposal. Air quality (dust) was assessed under Part IV of the EP Act as part of the licence amendment.
Noise emissions and visual changes to the rural residential landscape	Yes	The provisions of the Noise Regulations are applicable, and Newmont Boddington notes that noise can be regulated under the Noise Regulations, if required. Mine closure and rehabilitation is regulated under the Mining Act. A MCP will be developed for the Proposal and will address the potential impacts on surrounding landscape and rehabilitation of mine landforms.
Changes surface water regimes from discharge of surplus water	Yes	*EP Act Part V licence* Licence will specify location of surplus discharge, discharge rate limit, monitoring locations and parameters, triggers, reporting and compliance requirements.

11.10.4 Preliminary Assessment and significance of residual impacts

Newmont Boddington has considered the significance and relevant issues outlined regarding social surroundings and has completed the following preliminary assessment of the significance of the impacts to this environmental factor. The assessment of potential impacts discussed in Table 11-8 are following the application of mitigation.

Table 11-8 Preliminary assessment of impacts, mitigation measures and potential residual impact

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
Direct Impacts			
Impact to Aboriginal cultural heritage sites	**Avoid** ▪ Application of buffer zones to all registered sites as per DPLH requirements ▪ Application of buffer zones to other identified sites of cultural significance (inclusive of scattered artefacts and/or identified habitat trees) to be avoided as far as practicable as per consultation with GKBAC CAC and heritage SMEs ▪ Assessment of the footprint for this Proposal following heritage survey and amendment of footprint wherever possible (noting this has already been completed in one section of Plantation Road) ▪ Cultural heritage monitoring in place during clearing and/ or excavation works when in proximity to culturally significant sites and values. **Minimise** ▪ Develop a construction specific Cultural Heritage Management Plan in consultation with the GKBAC which will include: ○ Implementation of the Chance Find Procedure which is inclusive of awareness	Implementation of the Proposal may have a direct impact on Aboriginal cultural heritage sites and the cultural heritage values of these sites, both tangible and intangible. There is potential for residual impact to Aboriginal cultural heritage which will require assessment via the EIA process. Potential impacts to Aboriginal heritage sites will be appropriately managed via existing legislation and will not occur unless in accordance with consent under s16 or s18 of the AH Act and is supported by the GKBAC. Ongoing engagement with the GKBAC and Traditional Owner representatives will be managed through stakeholder engagement frameworks which are established through existing agreements The clearing of native vegetation and loss of plants and animals of cultural value represents an impact on social surroundings. Implementation of management plans will support management of Aboriginal social, cultural and heritage values by: • Managing impacts to key water parameters to ensure quantity and quality of water is maintained to protect existing	An evaluation of significance of residual impact to Aboriginal cultural heritage sites will be completed following planned surveys.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	training for all construction personnel ○ Where sites or artefacts require relocation or removal, consultation with GKBAC CAC to understand options and process to be undertaken ○ Obtain and comply with approvals under the AH Act for any Aboriginal Heritage sites (or Other Heritage Places that are likely to be sites) for disturbance where required. **Rehabilitate** ▪ Where agreement can be reached through consultation with GKBAC CAC, implementation of improvement program for local sites of cultural significance outside of Proposal footprint. Works to be implemented under the guidance of GKBAC and include works for indigenous peoples such as GKB Rangers.	and potential environmental values (Water Management Plan) • Managing impacts to fauna values (TFMP and BCMP) • Managing impacts to access (CHMP) • Ensuring that the Revised Proposal is rehabilitated in an ecologically sustainable manner (MCP).	
Impact to local air quality from the generation of PM from cleared areas, burning of waste vegetation, vehicle and equipment exhaust, use	**Avoid** ▪ Clearing of the minimum required footprint for implementation of this Proposal including utilisation of existing access tracks and cleared areas where possible.	Clearing of native vegetation and plantation areas for the Proposal has potential to impact local air quality with the generation of PM. The construction EMP will include measures to reduce impact to local	Based on the preliminary air quality modelling assessment, no significant residual impacts are anticipated to air quality as a result of this Proposal. The footprint required for this

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
of unsealed roads and creation of stockpiles	**Minimise** ▪ Extension of existing mitigation measures into the construction EMP which will include implementation of dust suppression activities such as water carts and use of binding additives where appropriate ▪ Where possible, coverage of rehabilitation stockpiles with vegetated material such as mulch to encourage plant growth to minimise dust generation ▪ Adherence to speed limits by all personnel ▪ Implementation of work area inspections to account for visual assessment of dust ▪ Implementation of triggers (e.g. no visible dust across construction area boundary) to be adhered to by personnel ▪ Establishment of additional dust monitoring equipment at key locations near sensitive premises to measure dust generation ▪ Any additional dust management protocols required from regulatory instruments such as works approvals and licences. **Rehabilitate** ▪ Progressive rehabilitation will be undertaken for all of areas no longer	sensitive receptors and will be regulated under other processes. Predictive modelling suggests construction and operational activities will not cause unacceptable impacts to air quality at sensitive receptors. Dust impacts are anticipated to be largely restricted to the construction and operational footprints of this Proposal and shall be managed in accordance with the EMP. The air quality modelling work will be updated to match most recent footprint and stages of development of the Revised Proposal. The results of this work, and any amendment to the predicted impact will be provided in the ERD.	Proposal is at least 2 km from the nearest sensitive receptor.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	required for operational purposes. This reduces the cleared area from which particulates may become mobilised. Regular reviews of cleared areas will be undertaken to ensure rehabilitation is undertaken in a timely manner.		
Noise and blast vibration emissions from construction and operational activities impacting sensitive receptors	**Avoid** ▪ All mobile equipment to be fitted with broadband reversing alarms over tonal alarms ▪ Equipment to be maintained to avoid excessive noise generation due to poor performance. **Minimise** ▪ Obtain and comply with Works Approval and Licence issued under Part V of the EP Act. ▪ Construction EMP to include management and mitigation for reducing noise emissions as far as practicable. Where necessary, the EMP will consider where additional controls are required should activities fall outside of 'normal' construction hours (0700 to 1900, Monday to Saturday) ▪ Real-time monitoring of noise emissions located near key sensitive receptors	Construction and operation of the Revised Proposal will add noise to the local surrounding area and brings the operation in closer proximity to some previously distant neighbours. The construction EMP will include measures to mitigate noise emissions to within those permitted under the Noise Regulations. Based on the preliminary noise modelling assessment for the Revised Proposal, no residual significant impact is anticipated to noise emissions as a result of implementation of this Proposal All noise from the Proposal and Revised Proposal are predicted to comply with the Noise Regulation levels at all sensitive receptors. Blasting activities are also required to meet the requirements for blast overpressure in the Noise Regulations. Monitoring will be in place to assess noise emissions with protocols in place to amend activities and investigate if exceedance is detected or complaints are made. These processes shall be outlined in the CEMP.	Whilst this assessment is preliminary, no significant residual impact to noise emissions is anticipated as a result of implementation of the Proposal.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	▪ Procedures in place for response to noise exceedance at monitoring sites or noise complaints.	Noise modelling work will be updated to match most the recent footprint and stages of development of the Revised Proposal. The results of this work, and any amendment to the predicted impact will be provided in the ERD.	
Reduced visual amenity experience for recreational users of the Bibbulmun Track from vegetation clearing.	**Avoid** ▪ It is acknowledged the footprint for this Proposal will be visible from lookout points along the Bibbulmun Track. However, current operations are visible from these locations and this change is not viewed as significant. **Minimise** ▪ Newmont Boddington to consult with DBCA and the Bibbulmun Track Foundation regarding placement of additional interpretive signage at these locations. Interpretive signage will discuss the temporary use of the area and include montages of phases of development including rehabilitation and closure. **Rehabilitate** ▪ Rehabilitation will be undertaken in a timely manner to minimise visual impacts of cleared areas.	Construction and operation of the Revised Proposal will result in a larger disturbance footprint visible from two lookouts along the Bibbulmun Track. Interpretive signage is proposed in these areas to discuss the land use and future rehabilitation of the site. Based on the preliminary visual impact assessment, no residual significant impact is anticipated to visual amenity as a result of the Proposal. The footprint of this Proposal will be visible from high lookout points along the Bibbulmun Track only. Whilst clearing will be evident during the initial construction period, the facility will largely appear like a water holding dam during operations and will be rehabilitated to blend into the surrounding landscape upon closure. This is not deemed significantly different to the activities approved under the Approved Proposal.	Whilst this assessment is preliminary, the impact to visual amenity is unlikely to be a significant residual impact.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
Indirect Impacts			
Physical or biological change to the environment that sustains Aboriginal places, objects, and cultural landscapes.	**Avoid** ▪ Disturbance footprint for Proposal is minimised to the extent required for safe construction and operation of the Approved Proposal ▪ Previous movement of RDA2 west, removes direct impact on Gringer Creek from the Revised Proposal. **Minimise** ▪ Implementation of water management infrastructure to ensure: o Surface water flows to Gringer Creek during construction are void of sediment above acceptable criteria o Groundwater mounding is minimised and seepage is returned to the operational water management system o Implementation of monitoring programs during construction and operation to assess changes in surface and groundwater quality, vegetation condition and identified sites of cultural significance. ▪ Develop a Cultural Heritage Management Plan in consultation	Through the development and implementation of the CHMP, it is likely that indirect impacts from the Proposal and Revised Proposal will be appropriately managed so that social, cultural and heritage values are not significantly impacted.	Whilst this assessment is preliminary, indirect impacts to social surroundings is unlikely to result in a significant residual impact.

Potential Impact	Mitigation Measure	Assessment of Residual impact	Significance of residual impacts
	with the GKB Traditional Owners and undertake works in consultation ▪ Obtain and comply with approvals under the AH Act for any Aboriginal Heritage sites (or Other Heritage Places that are likely to be sites) for disturbance where required ▪ Ongoing engagement with GKBAC CAC and Relationship Committee on closure and rehabilitation and the application of design and closure principles to the Proposal. **Rehabilitation** ▪ Rehabilitation activities will be undertaken progressively over the life of the mine and opportunities to involve GKB Traditional Owners in the rehabilitation of their country will be explored.		

11.11 Predicted Significance of Residual Impacts and Environmental Outcomes

Following the application of the mitigation hierarchy Newmont Boddington's preliminary assessment considers there is no significant residual impact to Social Surroundings from the Proposal.

Whilst additional heritage survey and revised modelling studies are planned to be completed for the Proposal and Revised Proposal, implementation of planned mitigation measures to reduce the likelihood of potential significant impact are expected to result in this Proposal meeting the EPA's objective for social surroundings.

12 Other Environmental Factors or Matters

Table 12-1 provides evaluation of 'other factors'. This includes justification as to why Newmont Boddington's preliminary assessment considers that they are not key environmental factors.

Table 12-1 Other environmental factors

Relevant activities for the Proposal	Potential impacts	Justification for why factor is not considered to be a preliminary key environmental factor
GHG Emissions EPA objective: *To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change' to maintain the variety and integrity of significant physical landforms so that environmental values are protected*		
Generation of GHG emissions	Contribution of ~45kt CO_2-e Scope 1 emissions	**Significance considerations** GHG is not expected to be a Key Environmental Factor as GHG emissions from the Proposal are not expected to exceed the 100,000 t CO_2-e per annum threshold for Scope 1 emissions stated in the *Environmental Factor Guideline –Greenhouse Gas Emissions* (EPA 2024f). Annual Scope 1 emissions for the Proposal have been estimated at ~ 45t CO_2-e. **Proposed mitigation** The Proponent tracks and reports GHG emissions under the *National Greenhouse and Energy Reporting System* (NGERS) for Newmont Boddington. Further, this is a designated large emitter facility under the Safeguard Mechanism. Newmont Boddington has entered into a long-term Power Purchase Agreement (PPA) with Collgar Wind Farm to source 100% renewable electricity for its operations. This agreement, effective from 2027 to 2042, supports Newmont's decarbonisation goals, aiming for a reduction in CO_2 emissions by 2030. The Proponent considers that NGER Act and Safeguard Mechanism provide contemporary, robust, transparent, and enforceable legislation to deliver GHG emissions reductions commensurate to Australia's international obligations. These mechanisms apply to GHG emissions associated with the Proposal. **Environment outcome** Proposal implementation will be consistent with environment outcome to reduce net GHG emissions in order to minimise the risk of environmental harm associated with climate change. GHG emissions will also be avoided and reduced over the life of the project, in accordance with the NGER Act and the Safeguard Mechanism.
Air Quality EPA's objective*: To maintain air quality and minimise emissions so that environmental values are protected" (EPA 2020a).*		
Ground disturbance and earthworks including blasting	Particulate emissions (dust) reducing ambient	**Significance considerations**

Relevant activities for the Proposal	Potential impacts	Justification for why factor is not considered to be a preliminary key environmental factor
Construction of infrastructure (roads, surplus water transfer) Wind erosion from stockpiles and open areas	air quality at sensitive receptors	During stakeholder consultation as part of the feasibility study, air quality was identified as a potential factor largely due to impacts from dust. Potential impacts from dust have been addressed in the respective chapters of the referral (e.g. Flora and Vegetation and Social Surroundings). The Proponent has reviewed the potential impacts of the Proposal on *Air Quality, considering the Environmental Factor Guideline – Air Quality* (EPA 2020b), with the findings summarised below: Existing high levels of dust are present in adjacent agriculturally cleared land and windblown dust is expected to be a significant contributor to the ambient dust levels in the area. The nearest permanently occupied receptor is more than 2 km to the southeast and east of the Proposal. **Proposed mitigation** Air quality (dust) was assessed under Part V of the EP Act as part of the 750MT amendment of the existing Newmont Boddington Operations. The licence assessment of dust emissions indicated that the distance to the nearest sensitive receptor and the current controls were appropriate to manage the increase in dust emissions associated with the increase in capacity of the existing RDA facility. Newmont Boddington notes that Air Quality (dust) can be regulated under Part V (Section 49) of the EP Act, if required. Baseline modelling will be revised and monitoring will be undertaken within the RDE and surrounds to validate current dust modelling as outlined in Table 11-8. **Environment outcome** The Proposal will maintain air quality and minimise dust emissions so that environmental values are protected.
Landforms EPA objective: *To maintain the variety and integrity of significant physical landforms so that environmental values are protected*		
Ground disturbance and installation of infrastructure		**Significance considerations** Newmont Boddington has reviewed the potential impacts of the Proposal on Landforms, considering the Environmental factor guideline – Landforms (EPA 2018b), with the findings summarised below:

Relevant activities for the Proposal	Potential impacts	Justification for why factor is not considered to be a preliminary key environmental factor
Drainage and stormwater management		No significant landforms (consistent with the description in *Environmental factor guideline – Landforms* (EPA 2018b)) are located within Revised Development Envelope. Newmont Boddington notes the potential significance of Landforms (e.g. Gringer Creek, Hotham River, Mokine, Mount Wells) to the Traditional Owner groups and the cultural and heritage values associated with these landforms. The potential significance of Landforms has been expressed during consultation with Traditional Owners. Cultural and heritage values and visual amenity will largely be captured under Social Surroundings. **Mitigation** Mine closure and rehabilitation is regulated under Mining Act. MCP for the Proposal will be developed and will address the potential impacts on natural landforms, including provision of flood bunds, spillways, abandonment bunds and rehabilitation of mine landforms. **Environmental outcome** The implementation of the Proposal will maintain the variety and integrity of significant physical landforms.
Terrestrial Environmental Quality EPA objective: *To maintain the quality of land and soils so that environmental values are protected*		
Ground disturbance and earthworks including blasting Construction of infrastructure (roads, surplus water transfer) Wind erosion from stockpiles and open areas	Contamination of land, through the excavation and exposure of PASS material. Increased erosion	**Significance considerations** Newmont Boddington has reviewed the potential impacts of the Proposal on Terrestrial Environmental Quality, considering the *Environmental factor guideline – Terrestrial Environmental Quality* (EPA 2016c), with the findings summarised below: ▪ The preliminary risk assessment identified that there was a low risk of generating and exposure of potential ASS. ▪ Risk of sedimentation and erosion is considered unlikely due to conservative design of sediment control measures. **Mitigation** The Proponent continues to undertake detailed ASS investigation of the footprint required for this Proposal and results will be incorporated in the *Acid Sulphate Soils Management Plan.* Potential impacts to surface water and land is regulated under Part V of the EP Act.

Relevant activities for the Proposal	Potential impacts	Justification for why factor is not considered to be a preliminary key environmental factor
		Best management practices in stormwater management to control erosion and scouring. Newmont Boddington proposes that mine closure and rehabilitation is regulated under the Mining Act. **Environment Outcome** The implementation of the Proposal will maintain the quality of land and soils so that environmental values are protected.
Subterranean Fauna EPA Objective: *To protect subterranean fauna so that biological diversity and ecological integrity are maintained*.		
No relevant activities for the Proposal identified.	None identified.	**Significance considerations** The Proponent has reviewed the potential impacts of the Proposal on subterranean fauna considering the *Environmental factor guideline – Subterranean Fauna* (EPA 2016b). The assessment of subterranean fauna, undertaken by Outback Ecology (2013) within the adjacent, Approved Proposal found that it was unlikely that rich subterranean communities would occur in the area given the geological and hydrogeological setting. The habitat suitable for subterranean fauna was absent as the area does not have cave, karst or other groundwater environments that usually support subterranean fauna. **Mitigation** Due to no suitable habitat available to support subterranean fauna no mitigation is proposed. **Environment Outcome** The implementation of the Proposal will protect subterranean fauna so that biological diversity and ecological integrity are maintained.

13 Offsets

Offsets are the last of the four steps in the mitigation hierarchy (Avoid, Minimise, Rehabilitate and Offset). They are only applied to counterbalance residual significant impacts following application of the previous steps to reduce the impact of a Proposal.

Newmont Boddington has commissioned numerous environmental surveys and studies for the Proposal to date and additional studies are planned. Assessment of existing survey results and research enables determination of key environmental values requiring protection, including significant fauna habitat, flora and vegetation, and areas of Aboriginal cultural value. Changes to the Proposal design have been made by Newmont Boddington to avoid and minimise significant impacts to key environmental factors during implementation of the Proposal, and include avoidance of key habitat features.

Avoid wherever practicable:

- Disturbance of areas of cultural concern identified in recent Aboriginal heritage surveys and consultation with the GKB
- Disturbance of significant flora and fauna habitat
- Disturbance of riparian vegetation on Gringer Creek, and
- Disturbance of Mount Saddleback Heath Communities PEC (P1).

Minimise:

- The extent of direct and indirect impacts to native vegetation including Mt Saddleback Heath PEC
- Impacts to Priority flora
- Impacts to FRTBC, CBC and BBC foraging and breeding habitat, and
- Impacts to supporting habitat for Woylie, Chuditch, Numbat, and Brush Tailed Phascogale.

The application of these avoidance and minimisation mechanisms in the Proposal design and operations has meant the impacts to key environmental values have been significantly reduced. Newmont Boddington understands this conclusion is in part based on commitments for completion of additional studies and monitoring in order to confirm the study outputs.

The *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).) states:

'In general, significant residual impacts include those that affect rare and endangered plants and animals (such as declared rare flora and threatened species that are protected by statute), areas within the formal conservation reserve system, important environmental systems and species that are protected under international agreements (such as Ramsar listed wetlands) and areas that are already defined as being critically impacted in a cumulative context. Impacts may also be significant if, for example, they could cause plants or animals to become rare or endangered, or they affect vegetation which provides important ecological functions'.

13.1 Summary of Significant Residual Impacts

The assessments conducted in Section 8 and 9 have used the findings of the numerous surveys and studies completed in the RDE and surrounding areas. These studies have assessed the residual impacts of the Proposal against the residual impact significance model provided in the *WA Environmental Offsets Guidelines* (Government of Western Australia 2014). The findings of this preliminary assessment are provided in Table 13-1.

Newmont Boddington's preliminary conclusion is that offsets are required for the following significant residual impacts for the Proposal that includes clearing of 528 ha of native vegetation.

- 475 ha of foraging habitat for BBC
- 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat
- 479 ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC, and

- Disturbance of supporting habitat for Woylie (472 ha), Numbat (500 ha) and Chuditch (517 ha).

Newmont Boddington has assessed the residual impacts of the Proposal against the residual impact significance model provided in the *WA Environmental Offsets Guidelines* (Government of Western Australia 2014). The findings of this assessment are provided in Table 13-1. A completed *Offsets Template* is provided in Table 13-2.

Table 13-1 Assessment against residual impact significance model

Relevant Part IV Environmental Factors	Vegetation and Flora					Terrestrial Fauna	
Part V Clearing Principles	**Rare flora**	**Threatened ecological communities**	**Remnant vegetation**	**Wetlands and waterways**	**Conservation areas**	**High biological diversity**	**Fauna habitat**
Residual impact that is environmentally unacceptable or cannot be offset	No residual impacts are considered to meet these criteria						
Significant residual impacts that will require an offset – all significant residual impacts to species and ecosystems are protected by statute or where the cumulative impact is already at a critical level.	No residual impacts are considered to meet these criteria: • No Threatened Flora records are located within the areas surveyed. • Impacts to Priority Flora are not considered significant.	No residual impacts are considered to meet these criteria as there are no TEC or PEC in the Proposal Footprint.	No residual impacts are considered to meet these criteria – all vegetation associations have over 80% of pre-European extent remaining.	No residual impacts are considered to meet these criteria as no wetlands or waterways that are protected by statute lie within the RDE or would be indirectly impacted by the Proposal.	No clearing will occur in conservation areas	No residual impacts are considered to meet these criteria	Residual impacts to the following are considered likely to meet these criteria ▪ FRTBC, BBC and CBC breeding and foraging habitat ▪ Habitat for Woylie, Numbat and Chutich The significant residual impacts are predicted to be clearing of: ▪ 475 ha of foraging habitat for BBC ▪ 475 ha of breeding habitat for CBC and 475 ha of foraging habitat. ▪ 479 ha of breeding habitat and 503 ha of foraging habitat for FRTBC ▪ 517 ha of Chuditch habitat ▪ 472 ha of Woylie habitat ▪ 500 ha low value Numbat habitat
Significant residual impacts that may require an offset – any significant residual impacts to potentially threatened species and ecosystems, areas of high environmental value or where the cumulative impact may reach critical levels if not managed	No residual impacts are considered to meet these criteria – refer above	No residual impacts are considered to meet these criteria	No residual impacts are considered to meet these criteria – refer above	No residual impacts are considered to meet these criteria – refer above	No residual impacts are considered to meet these criteria – refer above	No residual impacts are considered to meet these criteria – refer above	No other residual impacts are considered to meet these criteria – refer above
Residual impacts that are not significant	No residual impacts are considered to meet these criteria – refer above.	No residual impacts are considered to meet these criteria	Clearing of remnant vegetation is not considered to be a significant residual impact (noting other associated values are discussed separately in this table)	No significant wetlands (e.g. Ramsar) occur within the Proposal Footprint.	No residual impacts are considered to meet these criteria – refer above	No residual impacts are considered to meet these criteria or any other criteria above	Fauna habitats in the Proposal area are well represented locally and regionally and do not support species that are considered restricted to the area.

Table 13-2 WA Offsets Policy Calculation Template Contents

	Mitigation				Offset Calculation Methodology				
Existing Environment/ Impact	**Avoid and Minimise**	**Rehabilitation Type**	**Likely Rehabilitation Success**	**Significant Residual Impact**	**Type**	**Risk**	**Likely Offset Success**	**Time Lag**	**Offset Quantification**
Clearing of: 475 ha of foraging habitat for BBC 475 ha of medium to high quality breeding habitat for CBC and 475 ha of foraging habitat. 479ha of medium to high quality breeding habitat and 503 ha of foraging habitat for FRTBC 517ha of Chuditch habitat 472 ha of Woylie habitat 500 ha low value Numbat habitat	Ecological surveys in the surround areas has been utilised to design the Proposal footprint to avoid Mt Saddleback Heath PEC (P1) The Proposal utilises previously cleared areas and pine plantation where possible.	Rehabilitation will be in accordance with the completion criteria. Targeting to meeting the 'Attributes of Restored Ecosystems' defined by The Society for Ecological Restoration (SER) (2004).	**Can the environmental values be rehabilitated /Evidence** Rehabilitation methods are relatively well-established for Northern Jarrah Forest species. It is acknowledged the effort and complexity involved with achieving the desired outcomes of re-establishing a functional and sustainable community, and that success cannot be guaranteed. Development of completion criteria will include objectives and performance targets and draws on current rehabilitation practices for Northern Jarrah Forest species. **Operator experience in undertaking rehabilitation** Experienced operators will be used to conduct the rehabilitation works, and will leverage existing practices. **What is the type of vegetation being rehabilitated** Jarrah/Marri and other species in the Northern Jarrah Forest **Time lag** Estimated 20 years. **Credibility of the rehabilitation proposed (evidence of demonstrated success)** Development of completion criteria will include objectives and performance targets and draws on current rehabilitation practices for Northern Jarrah Forest species.	Yes	Protection and maintenance of 1,324 ha of native vegetation in good or better condition.	Low - indicative areas identified with sufficient area suitable for use as an offset.	None as offset is protecting and maintaining existing native vegetation	No time lag as protects and maintains vegetation on agreement.	Offset provides protection and maintenance of vegetation in good or better condition. Commonwealth Calculator (DSEWPaC, 2012) and WA Offsets Calculator (DWER, 2021)
					Rehabilitation of 150 ha land	Medium - Development of completion criteria will include objectives and performance targets and draws on current rehabilitation practices for Northern Jarrah Forest species.	Refer to comments in 'Likely Rehabilitation Success' column of this table.	Rehabilitation rates estimated at least 20 years.	Offset provides revegetation Jarrah/Marri and other species in the Northern Jarrah Forest. Commonwealth Calculator (DSEWPaC, 2012) and WA Offsets Calculator (DWER, 2021)

13.1.1 Details of Proposed Offsets

Newmont Boddington is exploring preliminary biodiversity offset options to counterbalance the residual impact of the Proposal. The final decisions will be outlined in the ERD after detailed consultation and ecological and economic assessments. The two preliminary offsets identified are:

- Habitat Preservation Offset – Safeguarding and enhancing 1,324 hectares of native vegetation in very good or better condition, with management actions to improve habitat value for conservation-significant species, and
- Restoration Offset – Rehabilitation of 150 hectares of Hotham Farm to establish a habitat corridor linking forest areas.

The combined study area and proposed offset locations is shown in Figure 13-1. A draft Biodiversity Offset Strategy has been developed and is available in Appendix J.

13.2 Proposed Offset Values

Phoenix (2025) conducted surveys of the Habitat Preservation Offset to determine the offset values of with regards to FRTBC, BBC, CBC breeding and foraging habitat and habitat for Woylie, Numbat and Chuditch. A summary of the offset values assessment is sourced from Phoenix (2025).

The survey was undertaken concurrently with surveys for South 32 Worsley, owned and operated by Worsley. Due to data sharing agreements between Newmont Boddington and Worsley, and the continuity of habitats between the survey areas, the results of the targeted significant mammal component of the survey have been combined to allow for more robust and comprehensive interpretation on the fauna values of the survey areas. Here after, the Newmont Boddington and Worsley survey areas are referred to as the Combined Study Area and the Worsley study area (Figure 13-1).

The Phoenix (2025) assessment identified a total of 3,053.7 ha of high quality foraging habitat across the Habitat Preservation offset. Foraging habitat is represented by Wandoo woodland, Jarrah/Marri woodland, Jarrah/Marri/Allocasuarina woodland, and Eucalyptus woodland on valley floors. High value breeding habitat for CBC and FRTBC occurs in the Habitat Preservation Offset and is represented by eucalypt-dominant habitat types. Breeding habitat for BBC was determined to be of low-value due to the species known breeding range occurring outside of the desktop search extent. The field surveyed recorded an average of 20.4 potential hollow trees Potential hollow tree (PHTs) per hectare from 1,169 PHTs recorded over a 50 ha sample area. From the 290 hollows identified in the field survey, none showed evidence of breeding or occupancy by black cockatoos or any other fauna. The total extrapolated number of hollows was 17,537 occurring inside the Habitat Protection Offset. Due to the specific nesting requirements of black cockatoos, the majority of these hollows are expected to be of unsuitable size.

Some conservation-significant mammals were recorded in relatively high concentrations throughout the survey, such as Western Brush Wallaby (768 records in the Combined Study Area, 364 in the Habitat Protection Area), Woylie (707 and 671 records, respectively), and Chuditch (646 records and 546 records, respectively). These species, along with others such as Quenda (332 and 65 records, respectively) and South-western Brush-tailed Phascogale (79 records and 71 records, respectively), indicate that both the Habitat Preservation Offset and wider combined study areas provides suitable habitat with ample resources for foraging, denning, and shelter. However, these fauna may be locally concentrated in the higher quality patches of habitat which align with their niche. For example, in the Southwest, Quenda that inhabit Jarrah Forest are typically associated with watercourses. While population estimates and modelling indicate the entire significant mammal assemblage recorded in the survey meet the industry benchmark standard of 20-50 individuals to establish a translocated population, these populations form part of a larger, more continuous population which extends beyond the boundaries of the study areas, and therefore it is not clear whether these populations would be viable and self-sustaining in isolation.

The high number of conservation significant species recorded suggests the Habitat Preservation Offset provides valuable habitat with structurally diverse vegetation, abundant food resources, and connectivity to

surrounding ecosystems. The prevalence of species like Chuditch (in all areas) and Woylie in the Habitat Preservation Offset indicates that ground-dwelling mammals are still able to persist despite the presence of introduced predators. The abundance of Western Brush Wallabies further highlights the availability of suitable vegetation for foraging.

Survey results suggest the Habitat Preservation Offset, and the wider Combined Study Area serves as an important ecological refuge for conservation significant fauna. Habitat connectivity is known to be a key factor in supporting viable population of significant mammals, and the maintenance of high-quality ecological corridors between the Habitat Protection Offset and broader Jarrah Forest will assist in promoting gene flow and ecological continuity between populations in a partially fragmented and disturbed landscape.

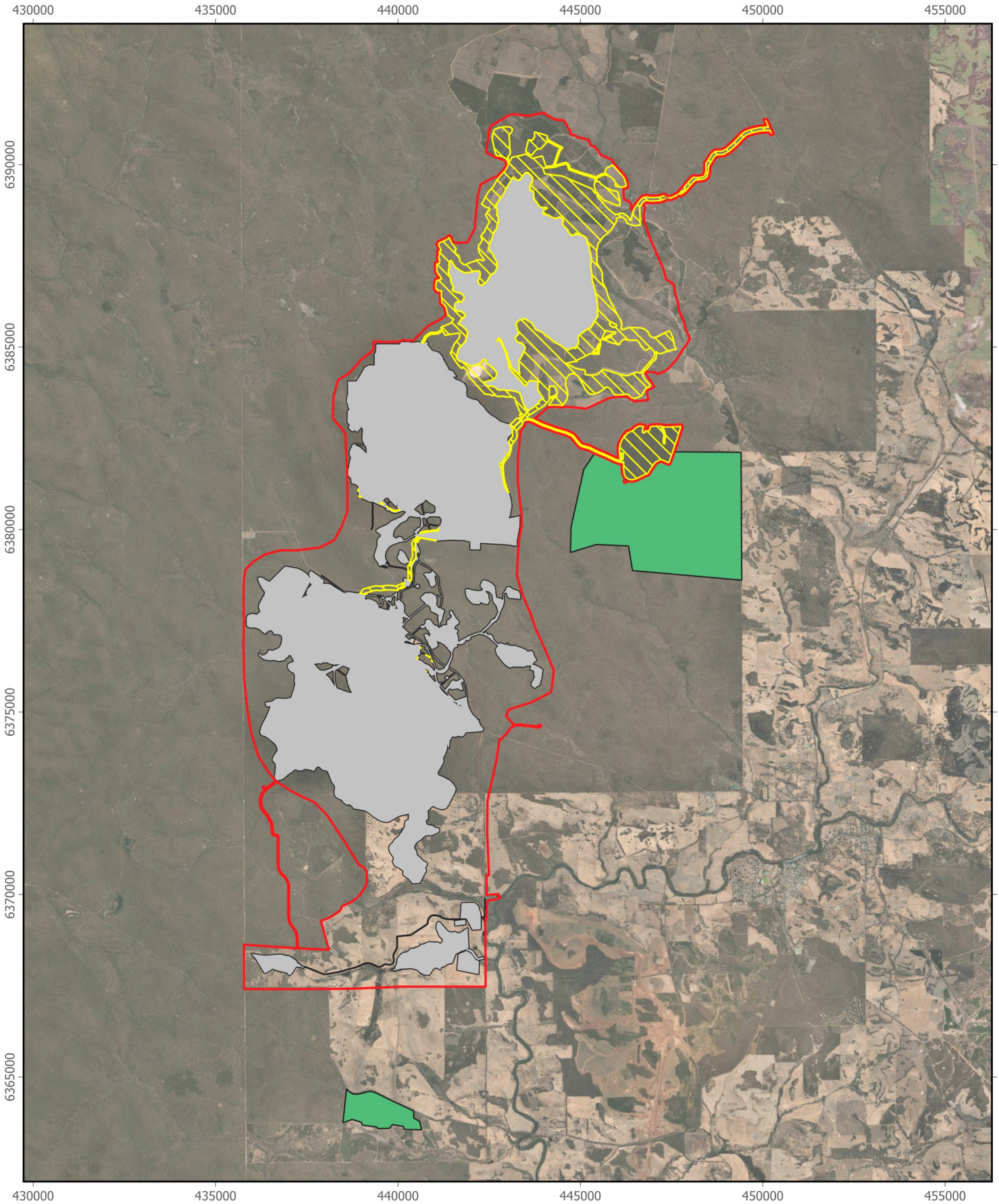


Figure 13-1 Indicative Locations of Protection and Proposed Offsets

LEGEND

- Proposal Footprint
- Revised Development Envelope
- Approved Disturbance Footprint
- Habitat Protection Area

N

0 1 2 km

Scale @A4 1: 140000
Projection: GDA94 / MGA zone 50

Client: Newmont Australia
Project and Phase: 1001665
Data: Newmont Australia (2024)
Imagery Esri Satellite

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DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: oostveenperrylj Date: 23 May 2025 \\cdminc.internal.cdm.com\offices\AUST\Project\1001665 - Boddington RDA2 S38 Approvals\7Work\3GIS\QGZ\1001665-Boddington Master_250424 - LM-figures_A.qgz

13.3 Proposed Offset Strategy

Offsets include protection and maintenance activities to maintain (and potentially improve) the condition of the native vegetation and reduce the risk of potential degradation and loss.

Protection and maintenance activities proposed include but are not limited to:

- Access restrictions into vegetated areas to minimise damage from off-road vehicles
- Maintenance of farm fences to prevent access from adjacent properties
- Erection of signs to identify the boundaries of the offset site
- Regular monitoring for signs of weed propagation and dieback occurrence
- Removal / treatment of weeds (if present)
- Implementing hygiene control measures and erecting signage in dieback affected areas (if present)
- Active control of feral pigs and baiting for foxes and cats, and
- Investigate partnerships and joint management opportunities with local Aboriginal corporations.

Newmont Boddington will work with DBCA, DCCEEW and EPA Services to determine the most appropriate method of providing long-term conservation protection for the offset sites.

Management of the offset sites is proposed to be undertaken for a minimum of 20 years.

13.4 Assessment Against Offset Principles and Calculators

Newmont Boddington has considered the six principles in the *WA Environmental Offsets Policy* (Government of Western Australia 2011) and EPBC Act overarching principles applied in determining the suitability of offsets to determine the proposed offsets and to demonstrate that these are appropriate to counterbalance the significant residual impact (Table 13-3).

The Commonwealth and WA Governments have similar offset calculators that allow a general assessment of the suitability of offsets in counterbalancing the residual impacts of a proposal. A key difference is that the EPBC Act calculator does not account for rehabilitation of the Proposal when determining residual impacts. The calculators consider factors such as:

- The quality of the impacted area and offset sites (with and without the offset being applied)
- The likelihood that the offset sites will be disturbed (with and without the offset being applied)
- The size of the offset areas, and
- The likely change in quality with and without an offset.

The proposed offsets have been assessed against the WA Offsets Calculator and EPBC Offsets Calculator. The review indicates that the proposed offsets adequately counterbalance the total proposed disturbance achieving 90% and 100% offset requirements under the EPBC Act and EP Act respectively (DSEWPaC 2012a, Government of Western Australia 2014).

The DSEWPaC offset calculations have been included in Appendix A and the DWER calculator sheets have been include in Appendix B of the Draft Biodiversity Offsets Strategy (Appendix J).

Table 13-3 Assessment of Proposed Offsets WA Environmental Offsets Policy and Principles

Principle	Alignment
WA Environmental Offsets Policy (Government of Western Australia 2011)	
Principle 1: Environmental offsets will only be considered after avoidance and mitigation options have been pursued.	The potential impacts from the Proposal have been significantly reduced as a result of the efforts applied during the detailed design phase and during environmental assessment. This reduction has been largely achieved through the additional avoidance and mitigation measures that have been developed for the Revised Proposal. Specific avoidance minimisation and mitigation measures are further described in the referral.
Principle 2: Environmental offsets are not appropriate for all projects.	Consistent with other projects in the Northern Jarrah Forest IBRA Region, Newmont Boddington considers that offsets (for the significant residual impact of clearing of vegetation with foraging habitat for BBC, foraging and breeding habitat for CBC and FRTBC and supporting habitat for Chuditch Woylie and Numbat) are appropriate for this Proposal.
Principle 3: Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.	The proposed offsets have been designed to be cost-effective by targeting the initial retention and conservation of existing remnant vegetation, in close proximity to the Proposal, meaning that much of the same equipment and resources could be used for management. Moderate to high value CBC, FRTBC, BBC breeding and foraging habitat and habitat for Numbat, Chuditch and Woylie is proposed to be cleared during the implementation of the Proposal. The proposed offsets contain correlating values that represent those that will be lost during the implementation of the Proposal. The use of the proposed offsets for the Proposal is considered to be relevant and proportionate to the significance of the environmental value being impacted.
Principle 4: Environmental offsets will be based on sound environmental information and knowledge.	The proposed offsets have been informed by recent survey assessments and the Commonwealth's Offset Assessment Guide (DSEWPaC, 2012c). Offsets were selected based on the information and guidance provided within the State Policy (GoWA, 2011) and EPBC Guidelines (DSEWPaC, 2012a), and surveys and assessments were conducted, ensuring similar habitat values exist in both the offset and impact areas. The protection and maintenance of the offset sites will ensure its protection from development and that it is managed to maintain its natural values in the long-term.
Principle 5: Environmental offsets will be applied within a framework of adaptive management.	An adaptive management framework is outlined in Proposal Offsets Management Plan. Offsets have been designed to be adaptive, Newmont Boddington will undertake regular monitoring and reporting to assess the performance of protection mechanisms and identify areas for improvement. This allows information and knowledge captured during operation to be used in an adaptive manner for ongoing maintenance and protection.

Principle	Alignment
Principle 6: Environmental offsets will be focused on longer term strategic outcomes.	Practical management actions for the proposed direct offsets will be formalised through specified management plans. The proposed offsets have been designed to offset the impacts of the Proposal from the outset. The protection and maintenance of the offset sites will ensure its protection from development and that it is managed to maintain its natural values in the long-term.
EPBC Act overarching principles applied in determining the suitability of offsets	
Principle 1: Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action.	Newmont Boddington proposes offsets that will fully compensate for impacted conservation significant species: In total, 1,324 ha will be protected (in perpetuity) and managed (for life of impact) to maintain the viability of impacted MNES including the three black cockatoo species; Chuditch; Woylie and Numbat. In total, at least 150 ha will be rehabilitated and managed to recreate, improve and maintain viability of habitat for the three black cockatoo species; Chuditch; Woylie and Numbat.
Principle 2: Be built around direct offsets but may include other compensatory measures.	The proposed offsets are direct offsets.
Principle 3: Be in proportion to the level of statutory protection that applies to the protected matter	Newmont Boddington acknowledges the level of statutory protection that apply to the protected matter. This was considered when assessing the significance of the residual impacts. The scale of the proposed offsets takes into account these considerations.
Principle 4: Be of a size and scale proportionate to the residual impacts on the protected matter.	The proposed offsets are significant in size and scale, proportionate to the predicted residual impacts. These have been designed to account for >90% SRI (and in some instances greater) calculated for each impacted MNES with respect to the quality and quantity of the habitat to be impacted by the actions of the Proposal.
Principle 5: Effectively account for and manage the risks of the offset not succeeding.	The Offset Plan has accounted for risk via the following measures: Use of a detailed and conservative methodology for quantifying habitat and offset value for the six MNES including associated risks of loss and confidence in results Surveys of offset areas to determine habitat suitability for MNES Planning of offsets based on current scientific knowledge gained through document review and stakeholder engagement as well as more than 10 years of implementation of rehabilitation, including formal procedures, completion criteria and monitoring Governance to ensure effective design, implementation, evaluation and administration.

Principle	Alignment
Principle 6: Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action).	The proposed offsets are in addition to that which is already required, determined by law or planning regulations, or agreed to under other schemes or programs. The offset sites is are not protected as conservation estate by any current legislation.
Principle 7: Be efficient, effective, timely, transparent, scientifically robust and reasonable.	Efficiency and effectiveness of offsets will be achieved by ensuring that offsets are guided by subject matter experts and regulators as part of a consultation framework. Proposed offset activities will build on already established and successful conservation and land management practices appropriate for the region. Transparency has been achieved by ensuring that the preparation of this offset plan for all conservation significant species. Newmont Boddington currently owns the land to maintain and manage the offset sites in the long-term. Implementation of the offsets can commence at any time after the Proposal approval date (if approved). Scientific robustness and reasonableness will be achieved through the design of the offsets using existing scientific and on-ground knowledge as well as the proposed ongoing governance of the offset strategy. Offset design has been developed in consideration of species recovery plans, including their objectives and specific recovery actions, and relevant scientific literature.
Principle 8: Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	The governance of the offsets will be undertaken by Newmont Boddington. The measurement and monitoring of offset outcomes will occur at pre-defined intervals and with defined criteria to ensure that offsets meet key performance indicators and to ensure contingency measures are implemented should elements of offsets not be delivering tangible benefits for MNES. The monitoring results will be provided to regulators (DWER and DCCEEW) in annual reports.

14 Matters of National Environmental Significance

The EPBC Act outlines the framework for a consistent approach to protecting listed Matters of National Environmental Significance (**MNES**) listed under the Act including:

- World Heritage Properties
- National Heritage Places
- Wetlands of Internation Importance (Ramsar Wetlands)
- Great Barrier Reef Marine Park
- Commonwealth Marine area
- Listed Threatened Ecological Communities
- Listed Threatened Species, and
- Listed Migratory Species.

Actions that may potentially have a significant impact to MNES must be referred to DCCEEW for assessment. Depending on the preferences of DCCEEW and the persons undertaking the Proposed Action, potential impacts to MNES may either be assessed by DCCEEW or DCCEEW may choose to delegate the assessment to State authorities. Newmont Boddington is requesting that DCCEEW assesses the potential impacts of the project on MNES. A separate EPBC Act referral has been prepared and submitted to DCCEEW.

This section provides a brief summary of the MNES at Boddington.

The Protected Matters Search Tool (**PMST**) was used to search for records within 20 km feature area. This resulted in the following two tables (Table 14-1) which delineate between nearby and regional conservation significant species under this Revised Proposal.

Species of conservation significance recorded in the RDE are:

- *Bettongia penicillata ogilbyi* (Woylie) EPBC Act Endangered
- *Myrmecobius fasciatus* (Numbat) EPBC Act Endangered
- *Zanda baudinii* (Baudin's Black Cockatoo), EPBC Act Endangered
- *Zanda latirostris* (Carnaby's Black Cockatoo), EPBC Act Endangered
- *Dasyurus geoffroii fortis* (Chuditch), EPBC Act Vulnerable
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) EPBC Act Vulnerable.

Potential impacts of the Revised Proposal on these species are discussed in Section 9.

Table 14-1 Matters of National Environmental Significance Within <20 km Feature Area

Matters of National Environmental Significance - Categories	Feature Area <20 km Count	Description
World Heritage Properties	0	N/A
National Heritage Places	0	N/A
Wetlands of International Importance (RAMSAR)	1	Peel-Yalgorup System
Great Barrier Reef Marine Park	0	N/A
Commonwealth Marine Area	0	N/A
Listed Threatened Ecological Communities	0	N/A

Matters of National Environmental Significance - Categories	Feature Area <20 km Count	Description
Listed Threatened Species	16	*Rostratula australis (Australian Painted Snipe) EN* *Myrmecobius fasciatus (Numbat) EN* *Diuris purdiei (Purdie' s Donkey-orchid) EN* *Bettongia penicillata ogilbyi (Woylie) EN* *Zanda baudinii (Baudin's Cockatoo) EN* *Zanda latirostris (Carnaby's Black Cockatoo) EN* *Setonix brachyurus (Quokka) VU* *Phascogale calura (Red-tailed Phascogale) VU* *Leipoa ocellata (Malleefowl) VU* *Eleocharis keigheryi (Keighery's Eleocharis) VU* *Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo) VU* *Aphelocephala leucopsis (Southern Whiteface) VU* *Dasyurus geoffroii (Chuditch) VU* *Calidris acuminata (Sharp-tailed Sandpiper) VU* *Diuris micrantha (Dwarf Bee Orchid) VU*
Listed Migratory Species	6	*Calidris ferruginea* (Curlew Sandpiper) Migratory; CE *Calidris acuminata* (Sharp-tailed Sandpiper) Migratory; VU *Actitis hypoleucos* (Common Sandpiper) Migratory *Apus pacificus* (Fork-tailed Swift) Migratory *Calidris melanotos* (Pectoral Sandpiper) Migratory *Motacilla cinerea* (Grey Wagtail) Migratory
Other Matters Protected by the EPBC Act		
Commonwealth Lands	0	N/A
Commonwealth Heritage Places	0	N/A
Commonwealth Reserves Terrestrial	0	N/A
Critical Habitats	0	N/A
State or Localised Matters		
State and Territory Reserves	0	N/A
Regional Forest Agreements	1	South West WA Regional Forest Agreements
Key Ecological Features	0	N/A
Biologically Important Areas	0	N/A

15 Preliminary Holistic Impact Assessment

Newmont Boddington has conducted a preliminary holistic assessment of the potential environmental impacts of its proposal or the relevant key environmental factors and environmental values individually in Sections 8 to 11. Given that studies are still in progress, refinements to this assessment are expected, and full results will be presented in the ERD.

The assessment considers key environmental factors such as Inland Waters, Flora and Vegetation, Terrestrial Fauna, and Social Surroundings, in line with relevant EPA guidelines. Newmont Boddington has examined the connections and interactions between these factors to inform a preliminary holistic view of impacts to the whole environment. Figure 15-1 below illustrates the connections and interaction between key activities of the Proposal and environmental values to inform the preliminary holistic assessment.

Clearing of native vegetation is identified as a key impact, as it will directly impact three key environmental factors. Clearing will impact the Flora and Vegetation and Terrestrial Fauna key environmental factors by removing or disturbing significant flora species and fauna habitat. Newmont Boddington acknowledges that native vegetation values are related to the availability of faunal and botanical resources and represents a connection to country for Traditional Owners.

While not a direct impact, the introduction and spread of dieback and weeds has the potential to impact three key environmental factors and therefore has also been considered as a key impact. Introduction and spread of dieback and weeds have the potential to impact the Flora and Vegetation and Terrestrial Fauna key environmental factors through mortality (flora) and a reduction in habitat extent and quality (flora and fauna).

Newmont Boddington acknowledges that other impacts of the Proposal (dust air and noise emissions) provide linkages between the other key environmental factors however these impacts are unlikely to be significant and therefore linkages are not considered to be as strong as the others mentioned above.

Implementation of the Proposal will avoid, where possible, and minimise direct disturbance to Aboriginal cultural heritage sites within the RDE and footprint required for this Proposal. However, it is acknowledged that there are other potential impacts to social, cultural and heritage values. Newmont Boddington is committed to ongoing engagement with the GKB in relation to water management and other matters relevant to Social Surroundings via implementation of the CHMP and NSHA.

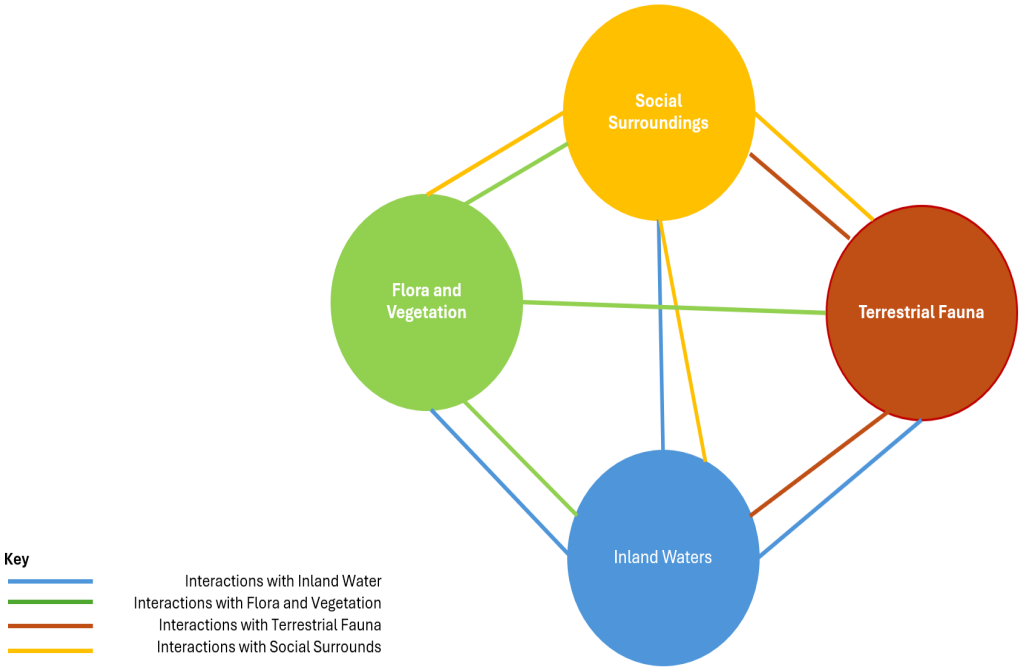


Figure 15-1 Holistic Assessment of Environmental Factors and Impacts

All linkages have been considered in the design of the Proposal, application of the mitigation hierarchy and proposed management measures. The Proposal lies in the ranges for Chuditch, Woylie, Numbat, FRTBC, CBC and BBC. The Proposal has unavoidable impacts associated with vegetation clearing and habitat loss, therefore it was imperative that these impacts were avoided and minimised as far as practicable.

There are some potential impacts that require management and monitoring to ensure that the impacts are not significant. Many of these potential impacts are adequately regulated by other decision making authorises under other legislation:

- Discharge of excess water to Hotham River be regulated under Part V of the EP Act
- General environmental management will be regulated through a Mining Proposal assessed under the Mining Act, and
- Closure and rehabilitation will be regulated through a MCP assessed under the Mining Act.

There are some potential impacts however that are expected to require limits or conditions in the Revised Proposal Ministerial Statement, including:

- Limits on the disturbance of native vegetation within the RDE
- Implementation of TFMP and BCMP
- Implementation of the WFMMP
- Implementation of a Cultural Heritage Management Plan, and
- Implementation of a Biodiversity Management Plan.

Impacts associated with clearing of native vegetation and supporting conservation significant fauna habitat are considered to remain significant once mitigation measures are implemented. Offset measures are

required to counterbalance these residual impacts to ensure that the EPA objective for Flora and Vegetation and Terrestrial Fauna can be met. Newmont Boddington has proposed offsets and assessed the suitability of the offset against the WA and EPBC offset guidance, provided in Section 13 13. The Offsets Management Plan (expected to be a Ministerial Condition), through discussions with DBCA, DCCEEW and EPA Services, will be developed to ensure it meets the required outcomes and adequately counterbalance the residual impacts.

Newmont Boddington considers that when the relevant environmental factors are considered together, for the holistic validation, that the Proposal meets the EPA's objectives.

16 Preliminary Cumulative Impact Assessment

Newmont Boddington has completed preliminary assessment of the potential and residual environmental impacts for each key environmental factor relevant to the Proposal. Since studies are still in progress, refinements and further findings will be presented in the ERD. The preliminary cumulative environmental impact assessment was included to assess the successive, incremental and interactive impacts of the Proposal on the environment in addition to impacts from past, present and reasonably foreseeable future activities.

The EPA report 1768 noted the need for consideration of long-term cumulative impacts of mining disturbance to the Northern Jarrah Forest. Newmont Boddington has undertaken the cumulative impact assessment of successive, incremental and interactive impacts on the environment of this Proposal with past, present and reasonably foreseeable future activities within 40 km of the Proposal which includes Newmont Boddington, Worsley and Alcoa.

The historical and present status of the existing environment is described for each factor in the Sections 8 to 11. Whilst the below is an examination of the reasonably foreseeable cumulative impacts from activities and pressures in the Northern Jarrah Forest. It should be noted that this may differ for each environmental factor according to the availability of data.

Preliminary cumulative impact assessment of the spatial extent of the site-vegetation types, fauna habitat was completed by comparison with a Wider Surveyed Area near Boddington. This is due to a lack of detailed mapping at this scale over all of the southwest forests, the outcomes of this are described below.

16.1 Flora and Vegetation

In line with the approach described at the beginning of this chapter, the preliminary cumulative impact assessment for Flora and Vegetation has considered cumulative impacts associated with existing, known and potential future projects in the Northern Jarrah Forest. The Proposal is estimated to contribute 528 ha to the cumulative impact of clearing of vegetation in Good to Excellent condition within the Northern Jarrah Forest IBRA Region, in addition to the 5,435 ha for the Approved Proposal.

The Northern Jarrah Forest measures approximately 1.9 million hectares of which 58% or approximately 1.1 million hectares is estimated to remain as native vegetation (Government of Western Australia 2019). The contribution from nearby existing or reasonably foreseeable projects includes Worsley (17,718 ha) and Alcoa (42,007 ha) which when considered with the Revised Proposal totals 65,688 ha (Table 16-1).

Table 16-1 Existing and proposed clearing by South32 Worsley Alumina, Alcoa and Newmont Boddington

Proponent	Duration of operations	Existing native vegetation clearing (ha)1	Proposed native vegetation clearing (ha)1	Total (ha)
South32 Worsley Alumina Pty Ltd	Worsley Alumina Revised Proposal	[2]8,895	8,823[3]	17,718
Alcoa	Jarrahdale 1963 to 1998	4,030	0	4,030
	Huntly1976 – present	17,384	12,189[4]	29,573
	Willowdale 1984 – present	6,739	1,665[5]	8,404

Proponent	Duration of operations	Existing native vegetation clearing (ha)1	Proposed native vegetation clearing (ha)1	Total (ha)
Newmont Boddington	Boddington Gold Mine 1987 to 2041	3,987	1,448[6]	5,435
	Revised Proposal		528	528
Total		**41,035**	**39,643**	**65,688**

Source: (EPA Assessment Report 1768 , 2024) (Environmental Protection Authority, 2024)

[1]Figures for South32 Worsley Alumina Pty Ltd and Alcoa are as of 30 June 2023 and for Newmont as of 31 December 2022.

[2] Includes 5,014 ha at the Boddington Bauxite Mine under MS 423 and MS 719 and 1,735 ha at the refinery. Also includes clearing undertaken prior to MS 423.

[3] Approved under MS 1237.[3] Approved under MS 1237. .

[4] 11,861 ha currently under assessment by the EPA including 8,323 ha under the Pinjarra Alumina Refinery Revised Proposal and 3,538 ha under the Bauxite mining on the Darling Range in the southwest of WA for the years 2023 to 2027 proposal. Remainder has been previously referred under MS 646. Clearing of the 3,538 ha under the latter proposal can commence while under EPA assessment in accordance with the Environmental Protection (Darling Range Bauxite Mining Proposals) Exemption Order 2023. 6 28 ha currently under assessment by the EPA under the Bauxite mining on the Darling Range in the southwest of WA for the years 2023 to 2027 proposal. Remainder has been previously referred under MS 728. Clearing can commence while under EPA assessment in accordance with the Environmental Protection (Darling Range Bauxite Mining Proposals)

[5] *Exemption Order 2023.*

[6]Approved under MS 971.

Data for the impacts to significant flora was not available for older projects. Data for Worsley Revised Proposal was available and indicated that there may be impact to individuals of *Calytrix simplex subsp.Simplex* (P1) (1), *Gastrolobium sp. Prostrate Boddington (P1)* (2047), H*ibbertia ambita* (34) and *Halgania corymbose (P3)*(26) . Further, a new orchid species, to be named *Caladenia caesarea subsp. Mooradung,* was recorded and is likely to be listed as Priority 2.

However, it is not possible to cumulatively assess these impacts with the Revised Proposal because the data presented in the Worsley Revised Proposal equates to the number of individual plants of each species. Whereas Newmont Boddington has used the number of records of each species in this document because the number of individuals comprising a single record is not always documented in the data.

Regional vegetation complexes in the Northern Jarrah Forest Region are located within the RDE. Based on the cumulative impacts of the Proposal, Approved Proposal and nearby existing and reasonably foreseeable future projects more than 20% percentage of the pre-European extent of each will remain (Table 16-2).

Table 16-2 Existing and proposed clearing by vegetation complexes

Vegetation Complex	Pre-European Extent (ha)[1]	Current Extent (ha) in Northen Jarrah Forest Bioregion	Newmont Boddington		Worsley Alumina Revised Proposal	Alcoa	Cumulative loss of current extent	Pre-European Extent remaining after cumulative impacts
			Proposal (ha)	Approved Proposal (ha)	Worsley (ha)	(ha)	(ha)	(%)
Cooke	36,779	30,304	4.29	21	2008.9	116.43	2151	76.5
Coolakin	163,992	64,205	53.72	109	1152	0	1315	38.3
Dwellingup 4	132,416	115,662	396	256	4214.1	88	4954	83.6
Michibin	168,040	42,996	0	74	755.3	0	829	25.1
Pindalup	167,151	128,358	68	465	352.8	136	1021	76.2
Swamp	53,658.2	40,613.0	0	264	44.1	36.87	345	75.0
Williams	28,984.	7,517	0	0	18.6	0	19	25.9
Yalanbee 5	126,610	83,829	6	0	648	0	654	65.7

16.2 Terrestrial Fauna

Cumulative loss of fauna habitat from mining in the Northern Jarrah Forest is recognised as a potentially significant residual impact, as it includes clearing of supporting fauna habitats within these land systems. Table 16-3 includes a summary of fauna impacts from mining projects surrounding the Proposal. Potentially significant impacts to supporting habitat are proposed to be offset for the Proposal (Section 13).

All the significant fauna species recorded or considered likely to occur within the RDE may be affected by cumulative impacts from existing or foreseeable future projects. **Table 16-4** identifies the occurrence of conservation species within 40 km of the Proposal. Many of these species occur widely in the Northern Jarrah Forest and can move throughout the local landscapes. The retention of high value habitat will help maintain the significant fauna species within the Northern Jarrah Forest Region. Further, any project, including the Proposal impacting supporting habitat for significant fauna will be offset.

Table 16-3 Cumulative impacts to Fauna Habitats

Fauna Habitat Type	Fauna Habitat Code	*Current Extent in the Wider Surveyed Area (ha)	Proposal Footprint (ha)	Newmont Boddington Approved Proposal (ha)	*Worsley Alumina Revised Proposal Worsley (ha)	Cumulative loss of current extent (ha)	Cumulative loss as a percentage of Wider Survey Area (%)
Blackbutt woodlands on lower slopes	BB	1640.1	8	10	25.30	43	3
Flooded gum woodlands riparian community	FG	1,516	9	130	87.10	226	15
Melaleuca woodland/shrubland on seasonally wet or water-logged clays and clay-loams on valley floors.	MS	670.1	1	119	12.30	139	21
Melaleuca, E. rudis Woodlands on seasonally wet valley floors	MW	8.9	8	0.50	0.10	2	18
Marri/jarrah on lower slopes	DL	1221	28	81	110.70	220	18
Jarrah/marri/Allocasuarina (sheoak) woodlands on slopes and ridges.	JC	11027	242	256	2239.10	2737	25
Jarrah/marri woodlands on slopes	JM	9498	189	366	949.40	1504	16
Low eucalyptus woodland over low shrubs	ML	22	0	0	0.00	0	0
Wandoo woodlands	WO	7820	42	225	426.50	693	9
Heaths including perched heaths	PH	541	2	2.5	0	4.5	1

*Data sourced from South 32 RtS (South 32 2024)

Table 16-4 Significant fauna occurrence at existing or potential future project areas

Species	This Proposal	Approved Proposal	Worsley Revised Proposal South 32	Alcoa
Chuditch (*Dasyurus geoffroii)* VU (EPBC Act; BC Act)	✓	✓	✓	✓
Quenda (*Isoodon fusciventer)* P4 (DBCA list)	✓	✓	✓	✓
South-western Brush-tailed Phascogale *(Phascogale tapoatafa wambenger)* CD (BC Act)	✓	✓	✓	✓
Western Brush Wallaby *Notamacropus Irma* P4 (DBCA list)	✓	✓	✓	✓
Woylie (*Bettongia penicillata ogilbyi*) EN/CR (EPBC Act; BC Act)	✓	✓	✓	✓
FRTBC *(Calyptorhynchus banksii naso)* VU (EPBC & BC Acts)	✓	✓	✓	✓
BBC *(Zanda baudinii)* EN (EPBC & BC Acts)	✓	✓	✓	✓
*CBC (Zanda latirostris)*EN (EPBC & BC Acts)	✓	✓	✓	✓
Numbat (*Myrmecobius fasciatus*)EN (EPBC Act; BC Act)	✗	✗	✓	✗
Quokka *(Setonix brachyurus)*VU (EPBC Act; BC Act)	✗	✗	✓	✗
Rakali, Water Rat (*Hydromys chrysogaster*) P4 (DBCA list)	✓	✓	✓	✓
Red-tailed Phascogale (*Phascogale calura)* VU/CD (EPBC Act; BC Act)	✓	✓	✓	✗
Western False Pipistrelle (*Falsistrellus mackenziei)* P4 (DBCA list)	✓	✓	✓	✓
Western Ringtail Possum (*Pseudocheirus occidentalis)*CR (EPBC Act; BC Act)	✓	✓	✓	✓
Honey Possum *(Tarsipes rostratus)* Keystone species	✓	✓	✓	✗
Yammar Wallaby (*Notamacropus eugenii)*P4 (DBCA list)	✓	✓	✓	✗
Peregrine falcon *(Falco peregrinus*) Other specially protected fauna (BC Act)	✗	✓	✓	✓

16.3 Social Surroundings

The preliminary cumulative impact assessment for social surroundings has focussed on the South West Native Title Settlement determination and GKB ILUA area and consideration of the Approved Proposal and future Revised Proposal and potential future third-party operations.

Newmont Boddington recognises the implementation of the Revised Proposal in association with other future third-party proposals has the potential to cumulatively affect social, cultural and heritage values. These impacts include the cumulative loss of cultural heritage sites and values, loss of access to places of cultural significance, degradation of cultural heritage values through indirect effects such as increased dust, vibration, noise, and a loss of amenity.

Overall, the above-mentioned existing and potential future proposals are obligated to have taken impacts to social surroundings into consideration, with extensive survey effort and Traditional Owner consultation having been undertaken. Newmont Boddington Mine operates under an existing CHMP.

Through the implementation of the construction specific CHMP and other related environmental management plans (EMPs), impacts from the Revised Proposal will be appropriately managed so that cumulative impacts to social, cultural and heritage values are minimised. Development of the construction CHMP will occur in consultation with GKBAC CAC and will include sharing of information in relation to cultural and environmental values.

GKB representatives have expressed concerns regarding ongoing impacts to culturally significant water values in the vicinity of the Proposal, including Gringer Creek. Newmont Boddington will continue to consult with the Traditional Owners, through GKBCAC, on the proposed water management measures including groundwater monitoring and the potential controlled seasonal water discharge to Hotham River to ensure the Revised Proposal will not impact culturally significant water values.

Newmont Boddington considers the cumulative impact to Social Surroundings from implementation of the Revised Proposal when considered in conjunction with past, present and/or reasonably foreseeable future activities has the potential to be significant. The impacts associated with the Revised Proposal will be minimised and managed through the implementation of the CHMP, EMPs, the MCP and the implementation of the mitigation strategies outlined within these documents.

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Appendix A. Proposal content document

The Newmont Boddington Life of Mine Extension Amendment Proposal Content Document (Version 1.0) is provided separately.

Appendix B. List of Flora and Vegetation Reports

The following studies undertaken to support the assessment of Flora and Vegetation for the Proposal are provided with this supporting document:

B1. Assessment of Flora and Vegetation on Worsley Mine Expansion Primary Assessment Area (Mattiske Consulting Pty Ltd 2021)

B2. Assessment of Threatened and Priority Flora on Worsley Mine Expansion Primary Assessment Area (Mattiske Consulting Pty Ltd 2023)

B3. Assessment of Flora and Vegetation Values on Residua Expansion Areas Newmont Boddington Gold Mine WA (2024)

B4. Memorandum Threatened and Priority Flora search for Newmont Boddington Gold Mine within the Residue Dam Expansion Area (2025a)

B5. Assessment of Flora and Vegetation Values on Vegetation Plots on Offset Area Newmont Boddington Gold Mine WA (2025b)

B6. Boddington Gold Mine GGDVMMP Review Outcomes – draft (Umwelt, 2025).

Appendix C. List of Terrestrial Fauna Reports

The following studies support the assessment of Terrestrial Fauna for the Proposal are provided with this supporting document:

C1. Black Cockatoo breeding habitat assessment for the Worsley Mine Expansion Project (Phoenix Environmental Sciences Pty Ltd 2023a)

C2. Black cockatoo habitat assessment for the Worsley Bauxite Alumina Project (Phoenix Environmental Sciences Pty Ltd 2023b)

C3. South32 Worsley Alumina Boddington Mine and Offset Properties – Numbat Habitat Assessment (Biologic 2023)

C4. Four-phase short-range endemic invertebrate fauna survey for the Worsley Mine Expansion Project (Phoenix Environmental Sciences Pty Ltd 2023c)

C5. Targeted significant mammal and black cockatoo survey for the Boddington Gold Project Prepared for Newmont Australia Ltd (Phoenix Environmental Sciences Pty Ltd 2025).

Appendix D. List of Inland Waters Reports

The following studies support the assessment of Inland Waters for the Proposal are provided:

D1. Gringer Creek Baseline Aquatic Fauna Survey and Interim Site-Specific Guideline Values (SLR 2024b)

D2. Boggy Brook Baseline Aquatic Fauna Survey & Interim Site-Specific Guideline Values (SLR 2024a)

D3. Draft Hotham River Aquatic Fauna Survey and Interim Site-Specific Guideline Values Desktop Review and Risk Assessment of Modelled Discharge (SLR 2024a).

Appendix E. List of Social Surroundings Reports

The following studies support the assessment of Cultural heritage and Social Surroundings for the Proposal are provided:

E1. Newmont Boddington – Residue Disposal Area 2 Development Dust Modelling Assessment (ETA 2025)

E2. Herring Storer Acoustics Environment Noise Assessment Boddington Gold Mine Residua Disposal Area 2 May 2025 (Herring Storer Acoustics 2025)

E3. Newmont Boddington Air Dispersion Modelling and Monitoring Review (Ramboll 2022)

E4. Newmont Boddington Future Tailings Deposition Options Visual Impact Assessment (Ecoscape 2024).

Appendix F. IBSA Data Package

The following studies support the assessment of Cultural heritage and Social Surroundings for the Proposal are provided:

Newmont Boddington has provided biodiversity data and reports as part of the IBSA data package, prepared consistent with the EPA's *Instruction for the preparation of data packages for the Index of Biodiversity Surveys for Assessments* (IBSA) (EPA 2021d).

Newmont Boddington has provided the following IBSA data packages via the online IBSA Submissions portal:

Survey	File Reference
Assessment of Flora and Vegetation Values on Residua Expansion Areas Newmont Boddington Gold Mine WA (2024)	F1
Memorandum Threatened and Priority Flora search for Newmont Boddington Gold Mine within the Residue Dam Expansion Area (2025a)	F2
Assessment of Flora and Vegetation Values on Vegetation Plots on Offset Area Newmont Boddington Gold Mine WA (2025b)	F3
Bennelongia (2024). Future Tailings-Boddington Gold Mine Short Range Endemic Fauna Survey Report. Unpublished report prepared for Newmont Boddington Gold (NBG).	F4
Ecologia Environment (2024). Boddington Gold Mine Future Tailings Storage Options Vertebrate Fauna Survey.	F5

Appendix G. DRAFT Weed & Forest Disease Monitoring and Management Plan

Attached separately

Appendix H. DRAFT Terrestrial Fauna Management Plan

Attached separately

Appendix I. DRAFT Black Cockatoo Management Plan

Attached separately