MINERAL RESOURCES

NATIVE VEGETATION CLEARING PERMIT APPLICATION

SUPPORTING DOCUMENT

LITHCO NO.2

5 JUNE 2024 VERSION 1

DOCUMENT INFORMATION

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Revision History

Rev	Date	Prepared by	Reviewed By	Approved By	Document Purpose
1	31/05/2024	A.Cavanagh	T.Wilson	J.Cookson	Native Vegetation Clearing Permit Application Supporting Document

Acknowledgement of Country

MinRes is committed to reconciliation and recognises and respects the significance of Aboriginal and Torres Strait Islander peoples' communities, cultures, and histories. MinRes acknowledge and respect Aboriginal and Torres Strait Islander peoples as the traditional custodians of the land.

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EXECUTIVE SUMMARY

Mineral Resources Limited (MinRes) operates the Bald Hill Lithium Mine (the 'Project') approximately 60 km southeast from Kambalda, in the eastern Goldfields region of Western Australia (**Figure 1**). The Project operates on tenements M15/400, M15/1305, M15/1308 and G15/28 as a spodumene concentrate processing plant, as approved under the prescribed premises licence L8830/2014/2 (L8830). MinRes acquired the Project and assumed control on 1 November 2023, operating the Project through 100% subsidiary Lithco No. 2 (Lithco).

The local area has been subject to historical disturbance activities since the early 1900's, including agriculture, prospecting, exploration and alluvial mining activity. The Project was initially explored and mined for tin (cassiterite), tantalite and later for the processing of spodumene to produce lithium ore concentrate. The Project has been subject to various expansions before being placed in temporary closure. A total of 304.5 ha of disturbance occurred between 2017 – 2019 to support the growth of the operation, which included expansions to the open pit, construction of additional waste dumps and the construction of supporting infrastructure.

In January 2022, Lithco sought to recommence operations and applied for additional clearing to expand the project. Native Vegetation Clearing Permit (NVCP) CPS 9563/1 was granted to enable clearing of 126 ha within tenements L15/365, M/1305, M15/1308 and M15/400, required for new infrastructure and clearance for a "v" drain running from the bore fields to site.

To de-constrain operations and continue mining of the Project, MinRes proposes to expand the operation within existing tenure, and into two additional southern tenements (M15/1840 and M15/1851), facilitating additional pit expansions and waste dump capacity (**Table 3**). Previously assessed and cleared areas within CPS 9563/1 (including M15/400, M15/1305, M15/1308, L15/365) will continue to be retained and maintained as cleared areas to support the Project.

The proposed NVCP area (330 ha) is located within a total permit boundary of 1,256 ha (**Figure 2**). Concurrent with this NVCP application, MinRes is seeking amendment to the currently approved Mining Proposal and Licence.

An EPBC Act Protected Matters Report was completed on 8 March 2024, providing general guidance on matters of national environmental significance and other matters protected by the EPBC Act within a 20 km radius of the proposed NVCP boundary. Results of the report are summarised within **Table 7**.

Five historical supporting biological surveys have been referenced in this supporting application (**Section 6.2**), including:

- Ecotec (2017) Flora and Vegetation Assessment of the Bald Hill Project Expansion Areas
- Ecologia (2017) Reconnaissance Flora and Vegetation Assessment
- Biostat (2017) Fauna Risk Assessment
- Ecotec (2018) Reconnaissance Flora, Vegetation and Fauna Habitat Survey
- Terrestrial Ecosystems (2022) Basic Vertebrate Fauna Survey and Risk Assessment.

In addition to the above surveys, a recent site inspection was completed by a MinRes Ecologist in March 2024, to confirm and observe the currency and application of the information in these surveys, with results provided as part of this application in **Section 6.3**.

In summary, the following conclusions could be drawn from the relevant supporting studies and site inspection:

- There are no Environmentally Sensitive Areas (ESA) or Department of Biodiversity, Conservation and Attractions (DBCA) managed lands within the NVCP area or in close proximity to the Project.
- No significant water courses or Wetlands of Conservation significance are located within the proposed NVCP area.
- No declared rare flora, priority species, Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) were identified within the NVCP area.

- The identified vegetation units do not represent State or Commonwealth listed significant vegetation and are mostly in a “Degraded” condition as a result of grazing activity.
- Species present in vegetation types are common and widespread in the surrounding region.
- There is a high degree of disturbance and the vegetation composition in the area surrounding Bald Hill has been altered. As a result, fauna habitat has been altered, reducing species diversity.
- No conservation significant species were recorded during these surveys, with none of the habitat available in the surrounding area considered necessary for the survival of any species of conservation significance.

In accordance with the Native Vegetation Clearing Regulations 2004 (WA), an assessment of the proposed clearing has been completed against the Ten Clearing Principles and is included in **Section 8**. The assessment concluded that the clearing of up to 330 ha of native vegetation within the proposed clearing boundary is not at variance with Principles (A) to (J).

In summary, the environmental impacts of the proposal involving the clearing of native vegetation can be adequately managed by the MinRes Bald Hill Environmental Management System. Furthermore, MinRes has the environmental management resources to adequately enable this.

1. INTRODUCTION

The Bald Hill Project ('Bald Hill' or the 'Project) is located approximately 60 km southeast of Kambalda in the eastern Goldfields of Western Australia (**Figure 1**), on tenements M15/400, M15/1305, M15/1308 and G15/28. The local area has been subject to disturbance activities since the early 1900's, including agriculture, prospecting, exploration and alluvial mining. The Project was initially explored and mined for tin (cassiterite), tantalite and later for the processing of spodumene to produce lithium ore concentrate.

On 1 November 2023, MinRes acquired Bald Hill, assuming project control via its wholly owned subsidiary, Lithco No.2 Pty Ltd (Lithco).

The Project mine plan continues to target ore deposits that comprise of Lithium (spodumene) and tantalum minerals hosted in pegmatite veins which intrude metasedimentary rocks of the Archaean-age Mount Belches Formation. MinRes has been undertaking a review of the current resource model to determine future mine life and resource exhaustion for the existing pit. Through this modelling, it has been determined that expansion into the two southern tenements (M15/1840 and M15/1851) is required to de-constrain operations, by providing additional pit expansions and waste dump capacity.

To enable this expansion, approvals will be sought through this Native Vegetation Clearing Permit (NVCP) Application, as well as amendments to the currently approved Mining Proposal and Licence.

1.1 Purpose and Methodology

The purpose of this NVCP application is to seek **330 hectares (ha)** of native vegetation clearing within tenements M15/400, M15/1840 and M15/1851 required to facilitate mine plan expansions, as displayed in **Figure 2**. Clearing will be undertaken using mechanical equipment (e.g. Dozer and wheel loader) with suitable material stockpiled for future reuse as rehabilitation material.

The mine plan proposes to expand its operations in an eastern and southern direction, into tenement M15/1840 and M15/185, as well as within the existing tenement M15/400, equating to **330 ha** of native vegetation clearing. Expansions are proposed, in order the accommodate the following developments:

- Stage 4 Central Pit Cutback expansion
- Main Waste Dump Expansion
- Golden Eye Waste Dump
- Northern Waste Dump Expansion
- 'Other Mining Activities' such as laydowns, roads/transport infrastructure, topsoil stockpiling.

The proposed native vegetation clearing is generally located within a cleared and disturbed area which has been subject to historical practices such mining, exploration, pastoral activities and livestock grazing (Ecotec, 2017). The size and location of the ore body requires clearing of limited native vegetation around the periphery of existing disturbed footprints (**Figure 2**). A recent reconciliation of cleared footprints of the Bald Hill mine site completed for the 2024 Annual Environmental Report (AER) submission determined that 97% (357.5 ha) of the total approved area (367.63 ha) had been previously disturbed under historic Mining Proposals and Clearing Permits. A comparison of the indicative area of disturbance proposed as part of this application, with the current clearing instrument approved areas to clear (CPS9563/1) is provided within **Figure 3**.

Drainage lines are located within the vicinity of the proposed clearing footprint, as illustrated in **Figure 2.** Disturbance up to the boundary of the drainage line to the west of the Northern Waste Dump occurred within the extent of NVCP CPS 9563/1 prior to the MinRes acquisition, in approximately 2018-2019 (Google Earth, 2024). Relevant environmental surveys had noted that these drainage lines are impermanent, non-perennial watercourses with non-distinctive vegetation growing in association with the watercourse (Ecotec, 2017) (Ecologia , 2017).

Figure 1: Project Regional Location

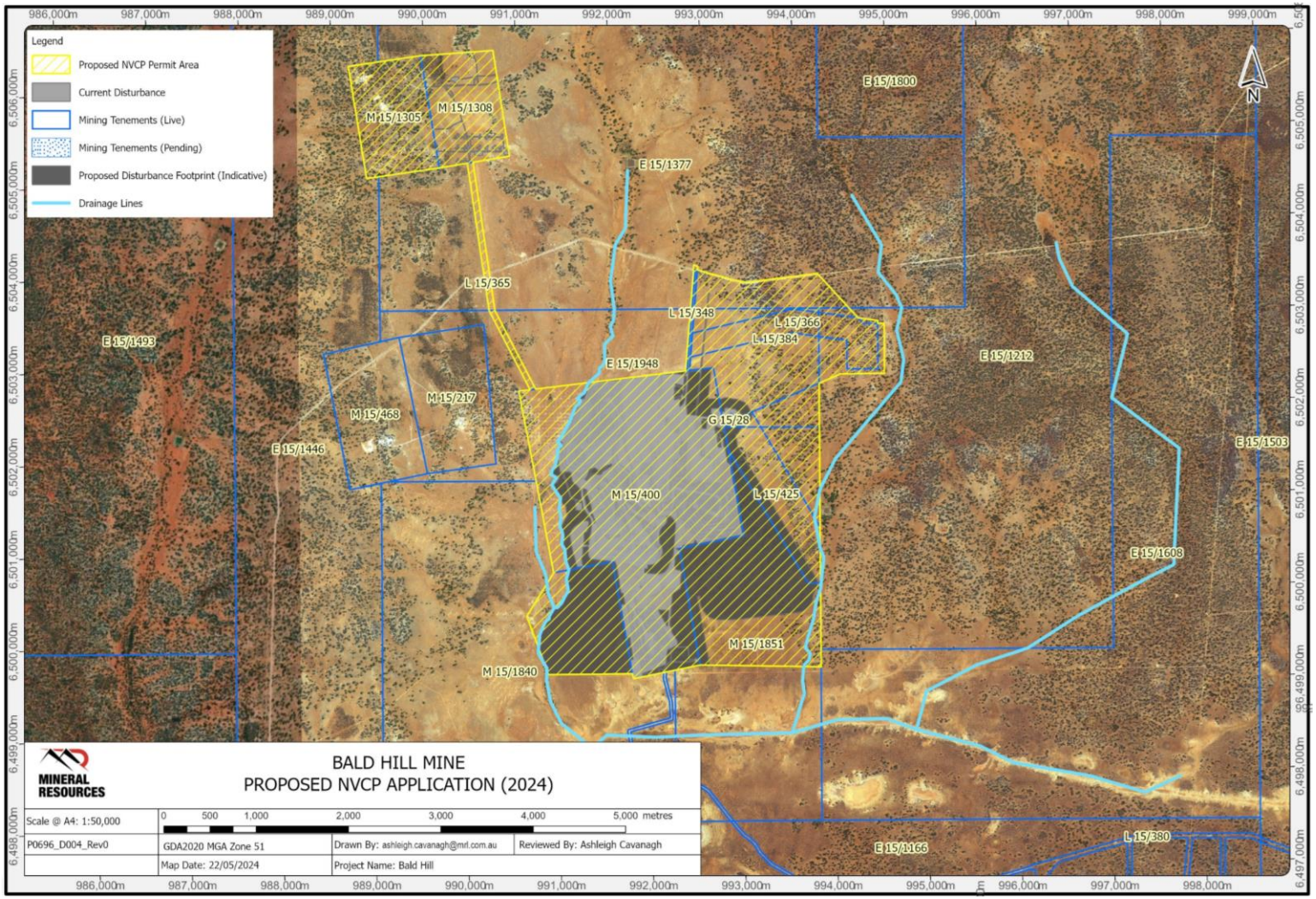

Figure 2: Proposed Clearing Boundary

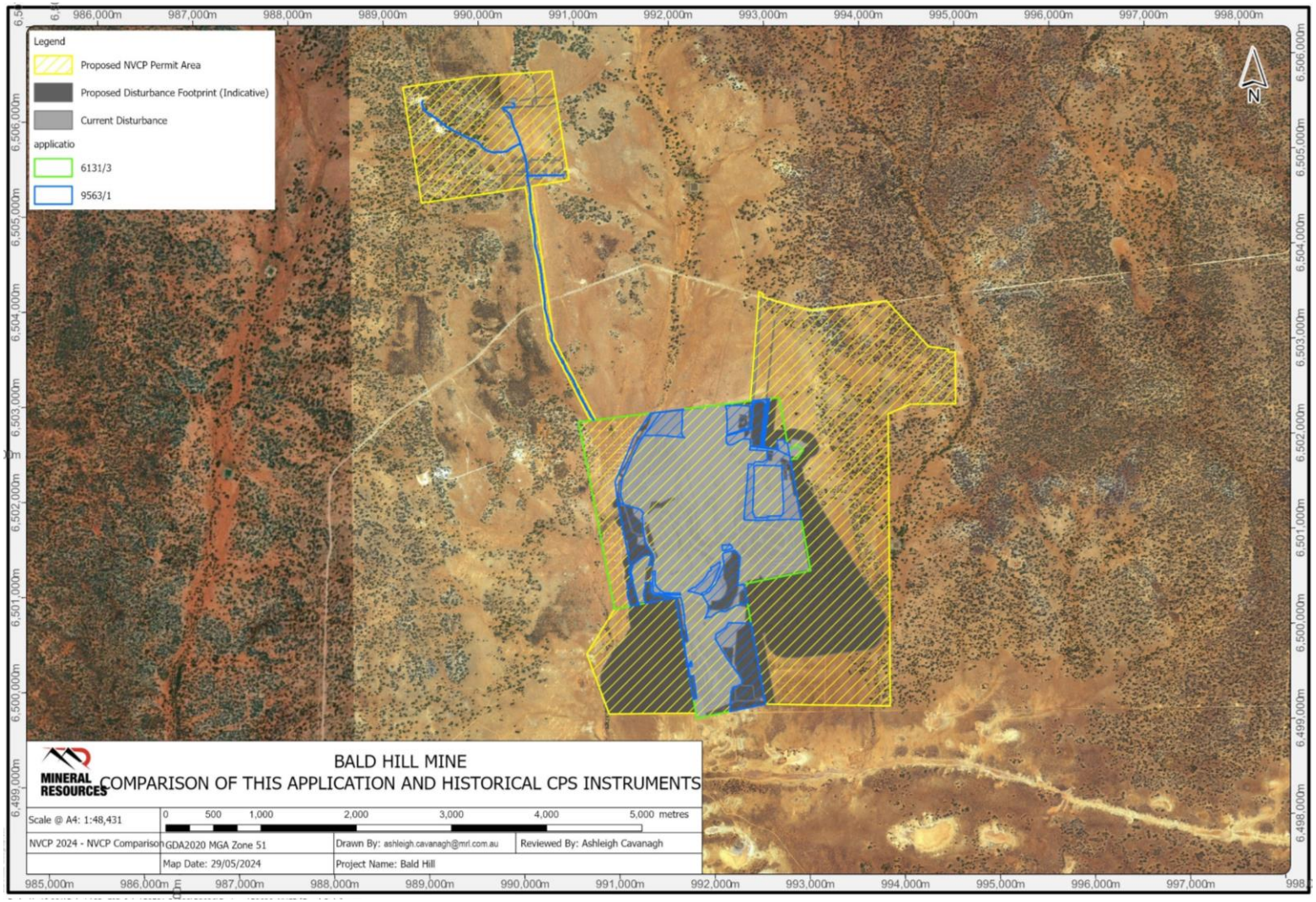

Figure 3: CPS9563/1 Areas approved to clear - comparison with this application

1.2 NVCP History

Haddington International Resources Ltd commenced the first large-scale tantalum mining and processing, with approvals attained under the *Mining Act 1978* (Mining Act) through various Notices of Intent (NOI 3540, 3633, 4061, 4685 and 5117) from October 2000 to 2005, when the Project was placed in care and maintenance.

Alliance Mineral Assets Ltd (then HRM Resources) (Alliance) acquired the tenure in 2011 and recommenced mining operations in 2014, with approval for the Project obtained under the Mining Act through Mining Proposal (MP) REGID 45573, granted on 12 August 2014.

In 2014, NVCP CPS 6131/1 was granted to support the expansion of the Bald Hill Project, aligning with Mining Proposal (MP) REG ID 45573 (Version 4), and facilitating 30.1 ha of clearing within M15/400 and G15/17. This NVCP was later updated:

- in 2015 to allow 70.1 ha (CPS 6131/2) of clearing
- in 2021 to increase the clearing area by 187.9 ha (total of 258 ha)(CPS 6131/3).

A summary of the historical NVCP approvals relevant to the Project are provided below, in **Table 1** and illustrated in **Figure 3**.

Table 1: NVCP Summary and History

Decision Date	Permit application No.	Proponents Name	Property Reference	Clearing Limit	Permit Area
21 August 2014	6131/1	Alliance Mineral Assets Ltd	M 15/400 & G15/17	30.1 ha	502 ha, consistent with the tenement boundary of M15/400
26 November 2015	6131/2	Alliance Mineral Assets Ltd	M 15/400 & G15/17	70.1 ha	
23 November 2017	6131/3	Alliance Mineral Assets Ltd	M 15/400 & G15/28	258 ha	
28 May 2022	9563/1	Lithco No.2 Pty Ltd	M 15/400, M15/1305, M15/1308, L 15/365	126 ha	Within area cross-hatched yellow

In June 2017 Alliance expanded its operations, in partnership with Tawana Resources NL (Tawana), to include the processing of spodumene to produce lithium ore concentrate, following the definition of a significant lithium resource by Tawana in late 2016. Alliance and Tawana continued to operate and expand the Project, under various revisions of approved Mining Proposals until 2018.

A total of 304.5 ha of disturbance occurred between 2017 – 2019, prior to the site being placed in care and maintenance in August 2019. At the time, additional infrastructure for mining and processing of lithium was in development, however, was never completed.

Lithco No. 2 Pty Ltd. (Lithco) recommenced operations at Bald Hill on the 19th of February 2022, mining lithium (spodumene) and tantalum under various revisions of the Mining Proposal and prescribed premises licence L8830/2014/2 (L8830). To support the recommencement of operations, new infrastructure and clearance for a “v” drain running from the bore fields to site, Lithco applied for an additional 126 ha of clearing (NVCP CPS 9563/1) to expand the project within tenements L15/365, M/1305, M15/1308 and M15/400.

Contrastingly from CPS 6131 (which allowed clearing of the clearing permit area to occur within the clearing permit boundary) NVCP CPS 9563/1 delineated specific footprints of the proposed disturbance. This was reflected in the permit as ‘The Permit Holder must not clear more than 126 hectares of native vegetation within the area cross-hatched yellow’, presented as the blue outlined footprint in **Figure 3**.

As part of this NVCP application, MinRes proposes a similar approach to the NVCP instrument CPS 6131, with a nominated amount of clearing to occur within a clearing permit boundary. Indicative disturbance footprints have been provided only for reference purposes.

A comparison of the previous CPS instruments and what is proposed within this application is provided in **Table 2**.

Table 2: Comparison of Proposed Disturbance from clearing instruments (ha)

	CPS 6131/3	CPS 9563/1	This Application	Proposed Cumulative Clearing
Total Proposed Clearing (ha)	An additional 187.9 ha from that approved in CPS 6131/2, resulting in 258 ha to be cleared within a 502 ha clearing permit boundary (Tenement M 15/400).	126 ha within specified cross-hatched areas only.	330 ha to occur within tenements M15/400, M15/1840, M15/1851, G15/28, L 15/425, L 15/384.	714 ha

2. PROJECT DESCRIPTION

2.1 Regional Setting

The Bald Hill Project is located within the Coolgardie Bioregion and Eastern Goldfields Subregion (COO03) of the Interim Biogeographic Regionalisation of Australia (IBRA) region, located in the southern rangelands of western Australia (Ecotec, 2018). The Eastern Goldfields subregion is characterised by undulating plains, greenstone ridges, playa lakes, and scattered exposed bedrock. The subregion lies on the Yilgarn Craton's Eastern Goldfields Terrain and comprises of gently undulating plains interrupted in the west by Archaean greenstone ridges and low hills, while the east contains a horst of Proterozoic granulite. In the western half there are a series of large playa lakes which are remnants of an ancient major drainage line. The dominant soil type is Calcareous earth, which covers most of the plains and greenstone areas (CALM, 2002).

The Eastern Goldfields subregion is dominated by Mallees, Acacia thickets and shrub heaths on sandplains. Diverse Eucalyptus woodlands occur around salt lakes, on ranges, and in valleys and dwarf shrublands of samphire are common in salt areas (Ecotec, 2018).

Bald Hill is also within the Great Western Woodlands comprising of approximately 16 million hectares from the Wheatbelt to Kalgoorlie-Boulder in the north to the desert's northeast of the Nullarbor Plain (**Figure 4),** recognised for its biological diversity. The Great Western Woodlands is regarded as the largest remaining area of intact Mediterranean-climate woodland left on Earth (DBCA , 2010).

In contrast to much of the Great Western Woodlands, the biological diversity of the immediate vicinity of the Bald Hill site is depleted, due primarily to historic and current intensive livestock grazing (Ecotec, 2018).

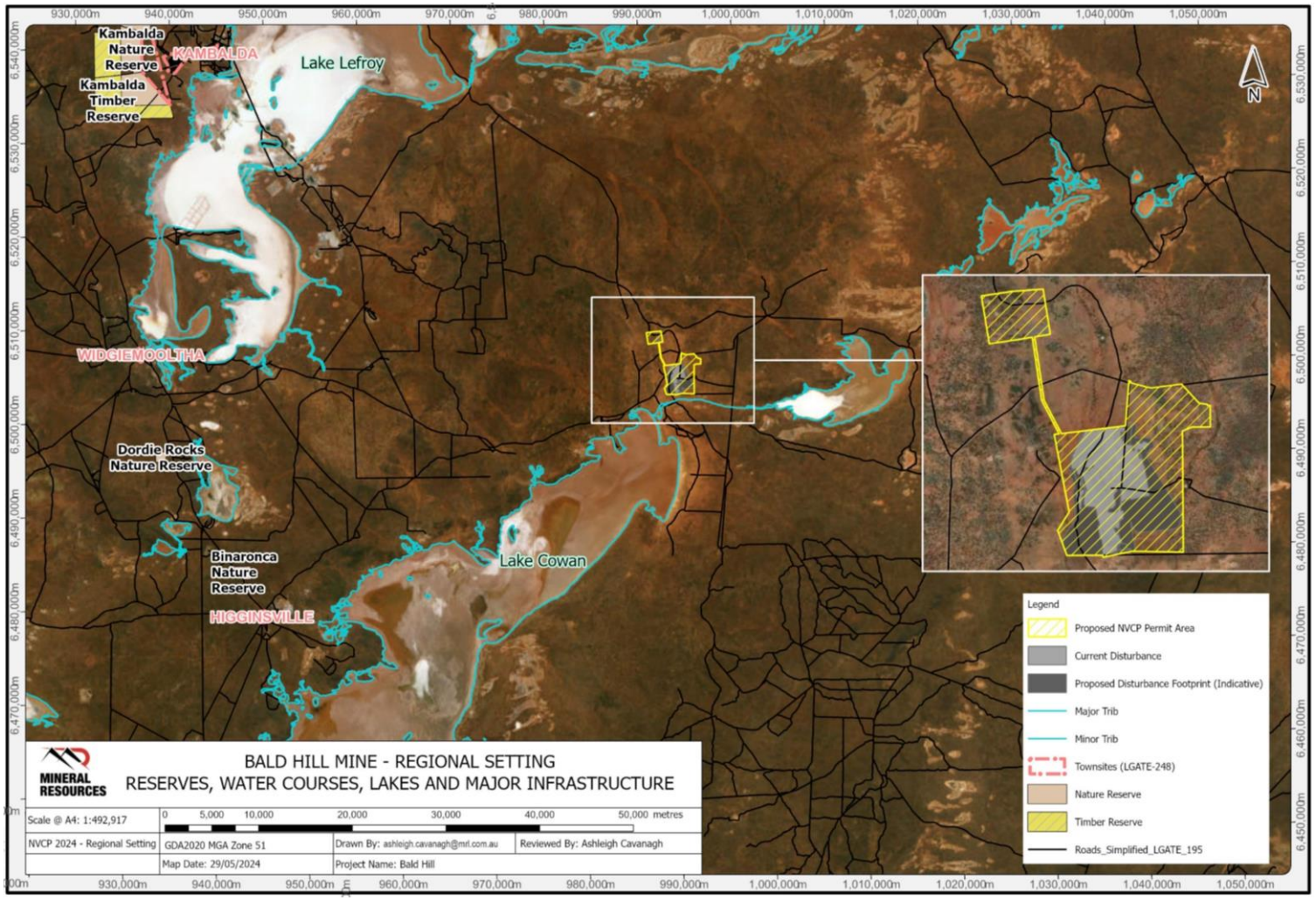

Figure 4: Regional Setting including reserves, water courses, lakes and major infrastructure

2.2 Tenure and Land Access

The land tenure of the Project is outlined in **Table 3,** with the boundaries of the respective tenements presented in **Figure 2. Table 3** identifies the tenements that were included as part of the previous NVCP (CPS 9563/1) and the additional tenements that are proposed for expansion activities under this NVCP application. Proof of ownership for all tenements listed in **Table 3** is provided within **Appendix A** as tenement extracts, along with a copy of the ASIC Company Summary for Lithco.

The proposed permit area (330 ha) is located within a total permit boundary of 1,256 ha (**Figure 2**). Previously assessed and cleared areas within CPS 9563/1 (including M15/400, M15/1305, M15/1308, L15/365) will continue to be retained and maintained as cleared areas to support the Project.

Table 3: Land Tenure

Identifier	Legal Area	Granted	Holder	Status	Expiry
Tenements on Existing NVCP (CPS 9563/1) - to be retained in this NVCP application					
M15/400	501 ha	30/08/1988	Lithco No.2 Pty Ltd	Live	09/07/2030
M15/1305	97.89 ha	29/12/2000			28/12/2042
M15/1308	92.53 ha	29/12/2000			28/12/2042
L15/365	15.49 ha	19/07/2017			18/07/2038
Additional Proposed Tenements in this NVCP application					
M15/1840	972.63 ha	10/11/2022	Lithco No.2 Pty Ltd	Live	10/10/2043
M15/1851	570.31 ha	10/11/2022			10/10/2043
G15/28	1.43 ha	25/05/2017			24/05/2038
L 15/425	74.78 ha	03/10/2022			02/10/2043
L 15/384	234.35 ha	01/11/2018			31/10/2039

2.3 Proximity to DBCA Managed Lands

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) Legislated Lands and Waters (DBCA-011) shows the three closest DBCA managed lands (**Figure 4**) to be the following:

- Randell Timber Reserve - LR3089/312 (46 km north)
- Binaronca Nature Reserve - LR3001/962 (46 km west)
- Dordie Rocks Nature Reserve - LR3136/836 (52 km west).

A search of the Environmental Protection Biodiversity Conservation (EPBC) Act Protected Matters Report (**Appendix B**) reports no State or Territory Reserves within a 20 km radius of the site which is reflective of the database records listed above.

2.4 Historical and Future Land Use

The dominant land uses in this bioregion are pastoralism, crown reserves and mining. Mining is evident in many areas around Kalgoorlie, Kambalda, Widgimooltha and Higginsville, with numerous small abandoned and operational mines scattered throughout the landscape (Terrestrial Ecosystems, 2022).

The site is located within the Madoonia Downs Pastoralist Station, with the post-mining land use of the site to be returned to pastoralism following the cessation of mining.

3. LEGISLATION AND APPROVALS

A number of approvals have been granted and applied for to allow for the current operations and proposed expansions of the Project. In summary, these include:

- Mining leases and tenure granted by DEMIRS under the Mining Act
- Programme of Works granted by DEMIRS under the Mining Act
- Mining Proposals and Mine Closure Plans granted under the Mining Act
- Prescribed Premises Licence to Operate granted by DWER under Part V of the *Environmental Protection Act 1986* (EP Act)
- Works Approval to Construct granted by DWER under Part V of the EP Act
- Section 26D Licence to Construct or Alter Wells granted by DWER under the *Rights in Water and Irrigation Act 1914* (RIWI Act)
- Section 5C Licence to Abstract Groundwater granted by DWER under the RIWI Act.

Amendments to several of the above-mentioned approvals are currently under assessment, or in the process of being submitted to support the proposed Project expansion. In particular a Mining Proposal will be submitted (approximately June) to support the same disturbance footprint applied for in this NVCP application. A licence amendment to DWER has also been submitted.

4. STAKEHOLDER ENGAGEMENT

Understanding that MinRes acquired the Project in November 2023, stakeholder engagement and the development of associated relationships is in its initial stages. Despite this, the importance of developing and maintaining relationships with stakeholders of the project is recognised, through meaningful and effective stakeholder engagement and management. Targeted stakeholder engagement has been undertaken to incorporate any stakeholder comments and queries within the submission, as well as presenting the expansion footprints as a whole. This has been undertaken for this NVCP application with the following stakeholders:

Table 4: Stakeholder Engagament Summary

Stakeholder	Date	Brief Summary	Stakeholder Response
DEMIRS	21 February 2024	Discussion of expansion footprints and additional clearing required. Superseded discussion of referrals (further discussed in Section 4.1)	No comments were received in regard to footprint discussions. General guidance provided on NVCP Application type and suitability of surveys.
Ngadju Traditional Owner Aboriginal Corporation	7 May 2024	Implementation Committee Meeting presenting future approval submissions and expansion footprints.	No concerns were raised regarding the proposed footprints.
Shire of Coolgardie	20 May 2024	Meeting with Shire of Coolgardie representative presenting future approval submissions and expansion footprints.	No concerns were raised regarding the proposed footprints.
Madoonia Downs Pastoral Station	2 May 2024	Written correspondence with the Pastoral Station holder discussing future approvals submission and expansion footprints.	No concerns were raised regarding the proposed footprints.

Further information on this engagement is provided below.

4.1 DEMIRS Engagement

MinRes has recurring monthly meetings with DEMIRS, where the scope and status of Mining Proposals for its operations, are discussed.

The Bald Hill Project was first discussed with DEMIRS in a meeting of 21 November 2023 with Tyler Sujdovic and Dan Endacott. A further meeting to specifically discuss the scope of proposed expansions and approvals for Bald Hill was held with DEMIRS on 8 January 2024 (Ivy Lynch, Lou Mailey, Maree Doyle).

The indicative footprints of the Mining Proposal are reflected in this NVCP application, including the following expansions:

- North Waste Dump expansion
- Main Waste Dump expansion
- Golden Eye Waste Dump (new landform)
- Stage 4 Central Pit expansion
- Key Mining Activity footprint amendments to match reconciliation
- Other Mining Activity footprint amendments.

A meeting was held with a representative of the Resource and Environmental Compliance Division of DEMIRS 21 February 2024, discussing potential options for NVCP submissions at Bald Hill following the acquisition. Originally, the option of a referral for limited clearing (<10 ha) was proposed to be submitted to DEMIRS for their review. The reconciliation of available clearing left within instrument CPS9563/1 determined that 40 ha was still available within the 'areas approved to clear' on the permit. This meant that a referral was not required to complete works until the February 2024 Mining Proposal submission (REG ID 123366), as adequate allowance was included under the existing NVCP.

This NVCP application reflects the additional clearing allocation required to undertake the works to support the expansions proposed within the June 2024 MP submission.

4.2 Traditional Owners Engagement (Ngadju Traditional Owner Aboriginal Corporation)

MinRes held a meeting with the Ngadju Traditional Owner Aboriginal Corporation on 7 May 2024 to present the proposed June 2024 Mining Proposal and NVCP (this application) footprints. No concerns or queries were raised regarding the previously provided February 2024 Mining Proposal (REG ID 123366), the June Mining Proposal expansions or the NVCP footprints (this application).

A copy of the NVCP will be provided to the Ngadju Traditional Owner Aboriginal Corporation prior to submission.

4.3 Shire of Coolgardie

MinRes met with a Shire of Coolgardie representative on 20 May 2024, discussing all works within the Local Government Authority. The licence amendment application, the June 2024 Mining Proposal and the NVCP (this application) footprint were provided within a scoping presentation. A copy of the presentation was provided for review of the planning team via email on 22 May 2024. There have been no concerns or queries raised in regard to the presented approval submissions.

4.4 Pastoralist (Madoonia Downs Pastoral Station)

MinRes has been in regular contact with the pastoral representatives at Madoonia Downs discussing the Bald Hill expansion plans and potential encroachment on pastoral infrastructure. The pastoral representative has no objection to the expansion subject to cost recovery for cattle movements away from a stock dam west of the mine and relocation of fencing; and has recently agreed to formalise an agreement to ensure all Parties interests are appropriately managed during life of mine. The most recent written correspondence with the Madoonia Downs Pastoral station owner was undertaken on the 2 May 2024 and ongoing verbal communication continues at a site-level.

5. ENVIRONMENTAL SETTING

5.1 Climate

The Bald Hill Project is located in the arid to semi-arid climatic region of the Goldfields in Western Australia. The average daily temperature in the Kalgoorlie region is 25.3°C and the average daily minimum temperature is 11.7°C. The annual average rainfall for the region is 250 to 300 mm per annum with average annual evaporation ranging from 2,700 mm to 3,000 mm (Bureau of Meteorology, 2016).

Widgiemooltha was the closest BoM weather station to Bald Hill, operating from 1897 – 1979. Long-term average rainfall was 271 mm, with the area experiencing on average 46 wet days per year and most rainfall occurring between March and August. Average annual Class A pan evaporation ranges from 2,300-2,700 mm, to the southwest and northeast of Bald Hill, respectively (Golder Associates, 2016).

Weather stations near Bald Hill which are currently operating include Kambalda West approximately 80km NW (BoM ID. 12117), Norseman Airport approximately 90km SSW (BoM ID. 12009) and Fraser range approximately 77km SE (BoM ID. 12029). Fraser Range has operated since 1901, Norseman Airport from 1999 and Kambalda West from 2004. Rainfall data for Norseman during 2023 is shown in **Figure 5: Norseman 2023 Rainfall data against long-term Mean and Median** (BOM, 2023)

against the long-term mean and median (Bureau of Meteorology, 2024).

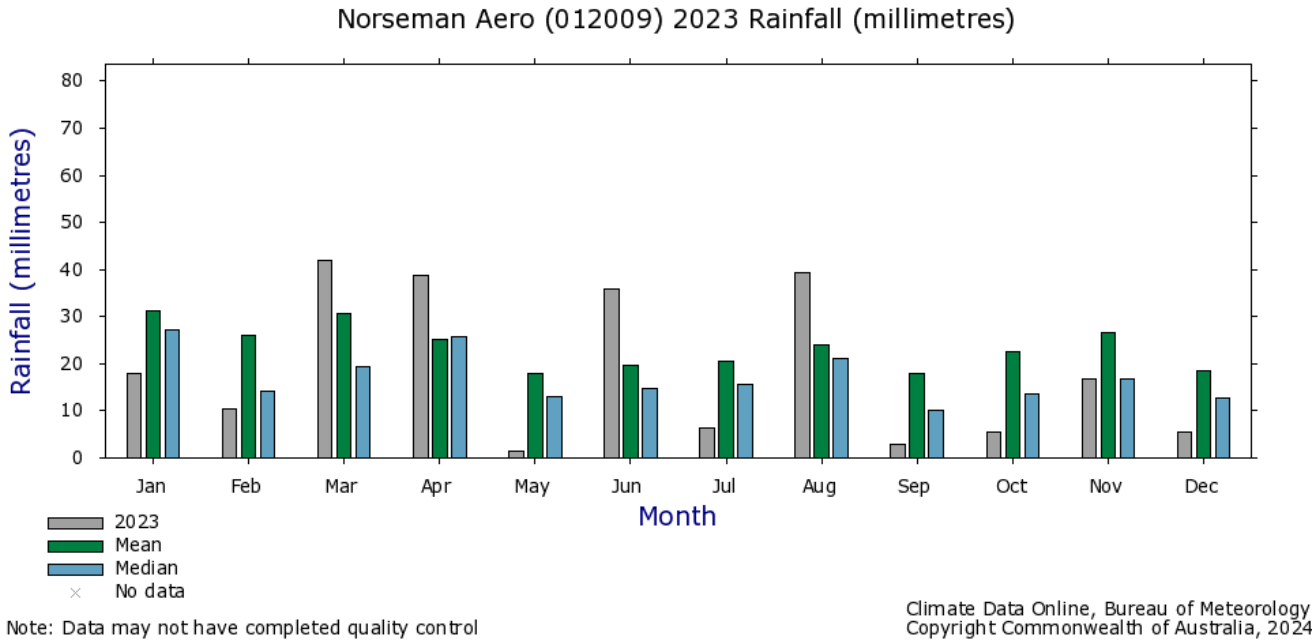

Figure 5: Norseman 2023 Rainfall data against long-term Mean and Median (BOM, 2023)

Norseman Airport is the only station (of the three) which has maximum temperature data. The highest and lowest daily temperatures for each month and monthly mean for 2023, along with the long-term data is provided below in **Figure 6. Table 5** shows this same data in a graphical format (Bureau of Meteorology, 2024).

Table 5: Norseman Aero Maximum temperature data for 2023 and long-term

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Highest daily (2023)	40.4	42.4	40.2	33.1	27.5	21.6	23.5	32.9	38.7	34.8	39.1	40.2
Lowest daily (2023)	23.6	25.7	20.5	16.5	16.1	9.5	13.0	12.5	17.3	20.0	18.7	24.7
Monthly mean (2023)	31.9	33.2	29.4	23.4	21.1	15.7	17.9	21.0	26.7	27.2	29.1	32.5

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	32.6	31.7	28.8	25.3	21.0	17.9	17.4	19.3	22.6	25.9	28.6	31.4
Highest monthly mean	35.2	35.1	31.2	27.8	24.0	20.2	19.3	23.4	26.7	30.0	31.7	36.5
Lowest monthly mean	29.9	26.1	24.5	22.1	19.4	15.5	15.7	17.4	20.3	22.4	24.7	27.4
Highest Daily	46.5	44.8	43.5	39.2	32.0	28.2	25.1	32.9	38.7	40.0	45.4	45.1
Date	13th 2019	27th 2019	5th 2008	6th 2021	6th 2002	1st 2017	6th 2014	26th 2023	29th 2023	10th 2019	17th 2019	19th 2005
Lowest Daily	17.3	16.3	17.0	15.0	12.1	9.5	8.9	10.9	11.8	12.0	13.4	15.0
Date	4th 2007	8th 2017	27th 2000	29th 2000	24th 2004	26th 2023	9th 2016	28th 2004	1st 2015	30th 2022	1st 2005	1st 2001

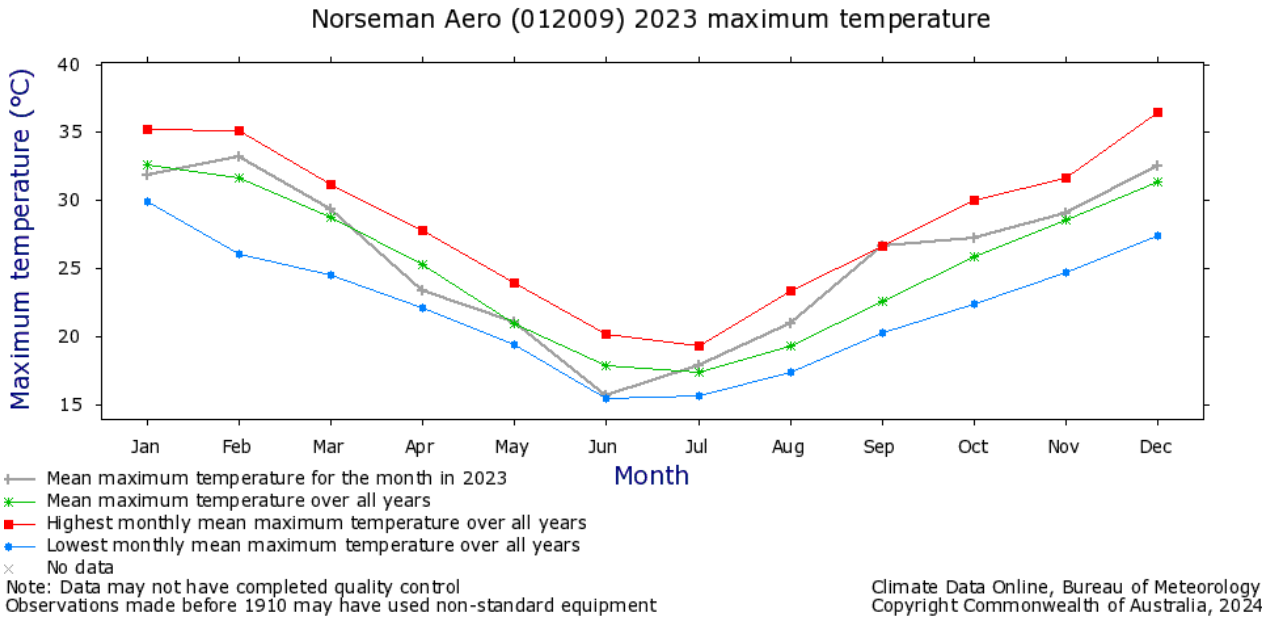

Figure 6: Norseman 2023 Temperature data against long-term Mean and Median

Figure 7 illustrates the Mean Daily & Monthly Evaporation at the Kalgoorlie-Boulder Airport (BoM ID. 12038) (Bureau of Meteorology, 2024).

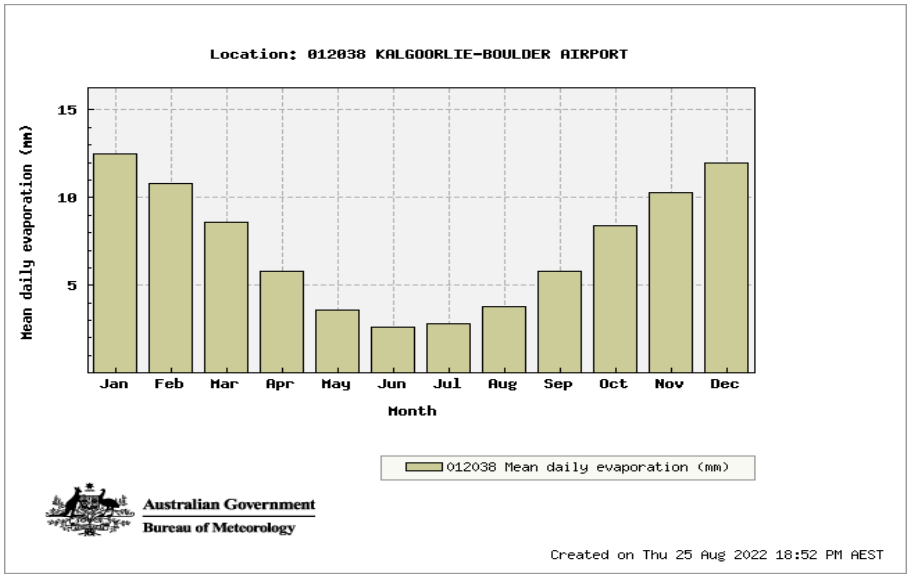

Figure 7: Mean Daily & Monthly Evaporation - Kalgoorlie-Boulder Airport

5.2 Underlying Geology

The Project is located within the Kalgoorlie soil-landscape province (Tille, 2006) in the central eastern portion of the Yilgarn Craton. The area overlies Archaean rocks of the Southern Cross Domain and the Eastern Goldfields Superterrane. The basement rocks are a mix of granite, gneiss and greenstone. Even-grained porphyritic granitic rocks (intruded by quartz veins and dolerite dykes) are most common across the north as well as in the western half and the north-east. The largest areas of migmatite and gneiss are found in the south-west. The greatest concentration of greenstone belts is in the centre of the eastern half, between Norseman and Kalgoorlie (Ecotec, 2018).

Bedrock at Bald Hill is composed of metamorphosed turbiditic rocks of the Achaean-age Mount Belches Formation. The sandstone-mudstone sequences display graded bedding, parallel and cross-lamination, scours and soft-sediment deformation. Many beds have mudstone as the uppermost interval, which is now dominated by medium-grained metamorphic biotite or amphibolite. Hornfels is common where the metasedimentary rocks have been intruded by granitic plutons, pegmatite and quartz veins, and mafic dykes (Rockwater, 2018).

A prominent feature of the bedrock geology at Bald Hill is the Binneringie Dyke, which is a major Proterozoic-age mafic-ultramafic dyke that traverses the southern part of the area, about 6 km south of Central Pit (Rockwater, 2018).

Lithium and tantalum mineralisation is hosted by swarms of pegmatite dykes, which typically comprise very coarse feldspar, books of mica and interstitial quartz. The dykes are particularly common close to granitic intrusions, but also occur along north-north-westerly-trending lineaments, faults and granitic intrusions (Golder Associates, 2016). The thickness of the pegmatite dykes mined at Bald Hill is one to eight metres.

Unconformably overlying the bedrock are scattered remnants of Eocene marine sediments of the Eundynie Group, principally the Princess Royal Spongolite. Eocene marine sediments also fill a large paleo-valley located immediately south of the Binneringie Dyke. Although up to 110 m thick, the sediments are dominantly fine-grained and of low permeability (Rockwater, 2018).

5.3 Soils and Soil Landscapes

A search of the Department of Primary Industries and Regional Development (DPIRD, 2017) Soil Landscape Mapping – Systems demonstrate that there are several soil systems underlying the site and immediate surrounds. These Soil Landscape Systems are illustrated in **Figure 8** and summarised in **Table 6,** below.

Table 6: Soil Landscape Map Descriptions

Soil Landscape Zone	Soil Landscape System	Map Unit Name	Description
Underlying Proposed NVCP Permit Area			
265	265l8	My154 atlas system	Undulating country on acid volcanic rocks and sedimentary materials.
265	265g3	BB39 atlas system	Prominent ridges of basic rocks
Site Surrounds			
265	265d3	AC1 atlas system	Gently sloping to gently undulating plateau areas, or uplands, on granites, gneisses, and allied rocks, with long gentle slopes and, in places, abrupt erosional scarps
265	265n8	SV3 atlas system	Saline valleys of salt lakes, clay pans, kopi dunes, sand dunes, sometimes with tors and bosses of outcropping granites
265	266i2	DD14 atlas system	Flat to undulating land with small valleys occasionally broken by low narrow rocky hills and ridges, or tors and bosses
265	265Ls	Lakeside System	Sandplains with occasional sand dunes and prominent claypans, supporting mallee eucalypts and spinifex.
265	265k7	Mx41 atlas system	Flat to undulating pediments marginal to unit AC1; granitic rock outcrop; some low escarpments
265	265Sd	Sedgman System	Gritty surfaced plains with granite outcrop and low granite domes and hills supporting acacia tall shrublands.
265	265Gm	Gumland System	Extensive pedeplains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys.
265	265Bi	Binneringie System	Hills and plains supporting dense tall acacia shrublands with scattered eucalypt trees.

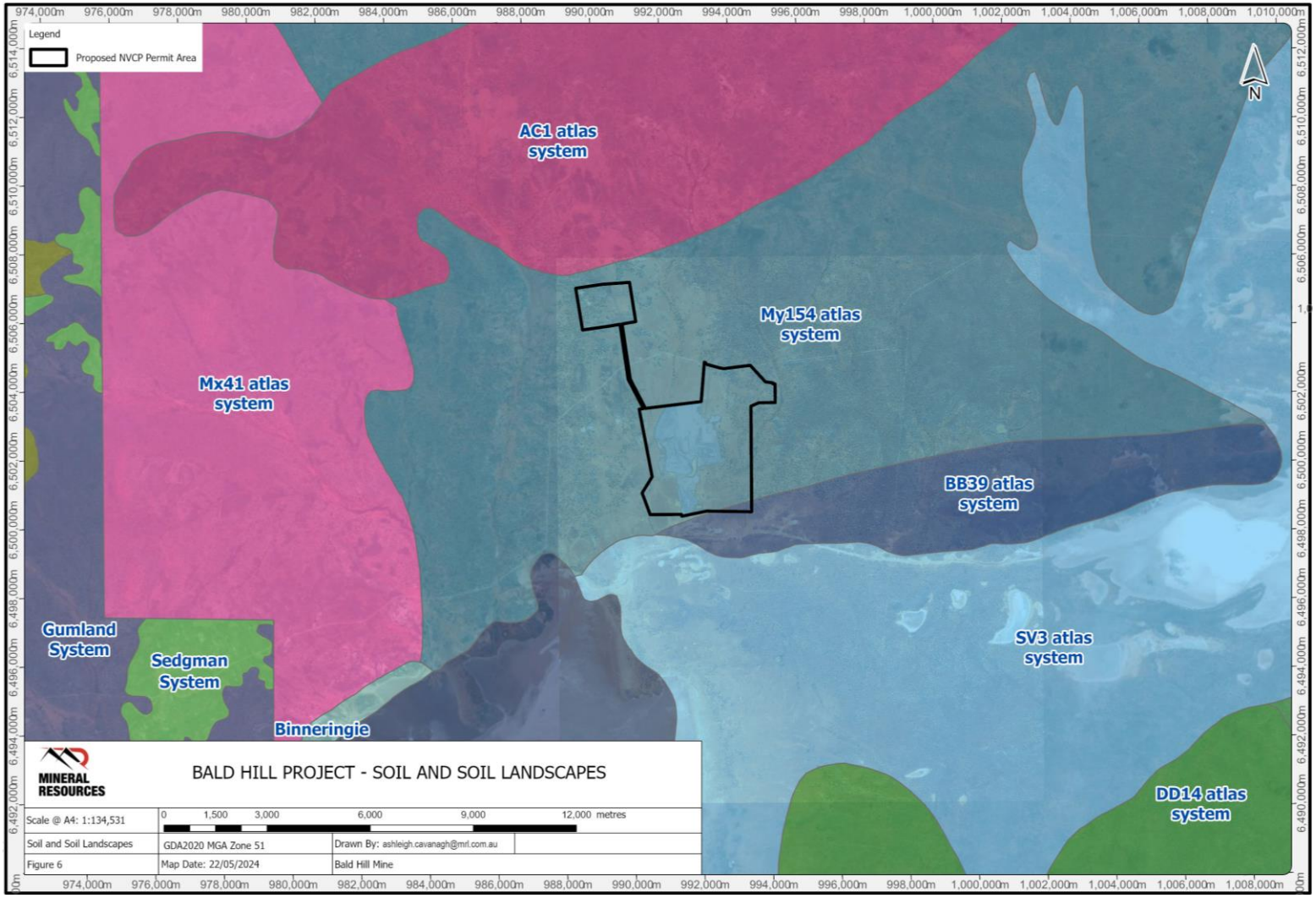

Figure 8: Soils and Soil Landscapes

5.4 Surface Water

Bald Hill is located 3.5 km north of Lake Cowan, on the northern flank of the Lake Cowan valley, about 2.5 km north of Salt Creek (the valley floor) and 10 km south of the catchment divide between Lake Cowan and Lake Lefroy. As a consequence of the narrow width of the northern flank of the Lake Cowan valley at Bald Hill, drainage occurs directly from the catchment divide to the valley floor, forming a north to south linear pattern.

The mine is situated on a low ridge between two southerly-flowing drainage lines, although flooding along the eastern drainage line is unlikely to impact the mine area. Surface water is captured in pastoral dams and used for livestock at several locations around the Bald Hill operations.

The land surface elevation at Bald Hill ranges from 390 mAHD at the catchment divide, through 280 mAHD at Central Pit, to 275 mAHD at Lake Cowan. Local topographic highs, commonly in the form of ridges, are produced by outcrops of resistant bedrock, such as quartz veins and pegmatite dykes (Rockwater, 2018).

Rockwater was commissioned in 2019 to conduct a surface water assessment of the project area, with the main aim of identifying the potential impacts of flood flows on the pit and other mine infrastructure (Rockwater, 2019). One major and two minor catchment areas with the potential to impact the mine were identified in the area. The Probable Maximum Flood (PMF) for the three catchments ranged between 12.60 m^3/s (Catchment B) to 45.68 m^3/s (Catchment A). The Probable Maximum Precipitation (PMP) event was taken to be a 1-in-2000-year rainfall event, with a 0.05% probability of occurring in any year.

An updated Surface Water Assessment **(Appendix C)** to support development proposed within this application and the supporting Mining Proposal (yet to be submitted) was completed in 2024. As a result of this assessment, controls have been recommended to prevent flooding, with controls including ongoing monitoring of the groundwater program as per L8830 and the installation of a diversion bunds and drains to be constructed adjacent to landforms onsite, to mitigate impacts on the mine landform and downstream catchments.

5.5 Groundwater

Golder undertook an H1 level of hydrogeological assessment of the Bald Hill Project in 2016, when the annual groundwater entitlement for the Project was being sought to increase to 1.2 ML (the current annual entitlement). During 2018, Rockwater carried out an H2 level of hydrogeological assessment and a hydrology and groundwater study, including modelling of mounding for TSF2 (Rockwater, 2018).

Most permeability and water supply at Bald Hill is produced by fractures developed within the metasedimentary bedrock. The fractures are typically associated with faults, usually at pegmatite contacts, as can be observed in the walls of Central Pit (Rockwater, 2018).

Groundwater recharge is a very small proportion of rainfall due to the nature of storm events and runoff processes and influences of evaporation and transpiration. Direct recharge occurs in sand plain areas and where bedrock outcrops. Recharge is also likely to be associated with heavy rainfall events where it is supplemented by surface runoff and local flooding. Regional groundwater flow directions closely relate to topography and tend to be towards the salt lakes contained in major regional valleys. Groundwater discharge generally occurs through evaporation from these salt lakes, with a comparatively small discharge also occurring through palaeochannel outflow (Golder Associates, 2016).

Groundwater in the Project area is hypersaline, with samples from the bores ranging from 38,000 to 310,000 mg/L TDS (livestock may tolerate up to 10,000 mg/L TDS). Samples from the same bores have returned pH values ranging from 5.3 to 7.7.

5.6 Land Degradation

Land degradation can result from multiple processes including soil erosion, salinity, nutrient export, acidification, waterlogging, and flooding.

In assessing the Project's risk of land degradation, the landscape units and surface water assessments are considered. The Project and local surrounding area comprise of the Kambalda (265) landscape unit (DPIRD, 2017). Description of these landscape units, with the topographical and lithological features, are listed in **Table 6**.

The impact of potential water logging and flooding of the Project have been assessed as part of previous Surface Water Assessments, as well as proposed controls, are outlined in **Section 5.4**.

There information available suggests that the risk of land degradation occurring as a result of the Project is low.

5.7 Aboriginal Heritage

An archaeological survey was commissioned by Haddington early in the life of the project. The survey found no Aboriginal sites, although scattered artefacts in the surrounding area indicated that traditional owners had passed through on occasion.

A search conducted on 28 July 2021 of the Aboriginal Heritage Inquiry System (Department Planning, Lands and Heritage) revealed the Lake Cowan Marking Stone site (19931) coinciding with M15/400. A Heritage Assessment conducted in 2016 identified the site as being located to the south of M15/400. Accordingly, the Lake Cowan Marking Stone site will not be impacted by the Bald Hill project.

The Bald Hall project was discussed with the Ngadju Native Title claimants for the area during a site heritage survey on 01 and 02 November 2016. The survey covered the area proposed for an extensive exploration program. An additional Archaeological and Ethnographic survey was conducted by the Ngadju Native Title Aboriginal Corporation (NNTAC) on the 28-31 May 2019, covering M15/1840, M15/1851 and the area of proposed disturbance for the camp expansion within L15/384. It was determined by NNTAC that there were no Aboriginal Heritage impediments due to development of the Project. The Native Title Claimants had no objections to the exploration program or the proposed development. The survey reports are available on request but are not for public distribution.

Multiple archaeological and ethnographic surveys have been commissioned and undertaken since 2001 to 2019. In relation to tenement M 15/1840, an archaeological and ethnographic survey was undertaken in 2019 in conjunction with Ngadju Traditional Owners, who were nominated by the Ngadju Native Title Aboriginal Corporation. The purpose was for exploration drilling, mining, and mining infrastructure. The results determined no Aboriginal Heritage places were identified under section 5 of the *Aboriginal Heritage Act 1972* on tenement M 15/1840.

A review of the Aboriginal Cultural Heritage Inquiry System on the Department of Planning, Lands and Heritage (DPLH) website revealed the public boundary of ID 19931 (Lake Cowan Marking Stone) does intersect with tenement M 15/1840, however the boundary administered by DPLH does not intersect the mine plan and therefore ID 19931 (Lake Cowan Marking Stone) won't be impacted by this NVCP application. This is based on the survey results and correspondence between DPLH and MinRes (09/05/2024) and as a result of recent approval application submissions and regulatory stakeholder enquiries with the amendment of the licence (L8830) and Mine Proposal REGID 123366 (May 2024).

MinRes can't provide the exact location of ID 19931 (Lake Cowan Marking Stone) because it is not publicly available, due to cultural sensitives. Rather the Department of Planning, Lands and Heritage holds and administers the exact boundary. As a result, MinRes wrote to DPLH asking if the prescribed premise boundary for the associated Mining Proposal (which matches the NVCP proposed Permit Area) intersected with ID 19931 (Lake Cowan Marking Stone), in which they confirmed the prescribed premise boundary does not intersect the Aboriginal Heritage Site. The information pertained within the survey report is confidential and was prepared for the proponent and Ngadju Native Title Aboriginal Corporation. It was not intended as a public document and cannot be distributed to a third party, with MinRes obligated not to distribute the report externally.

5.8 National Heritage

There are no National Heritage sites within the project area, or that are likely to be impacted by project activities.

6. FLORA, VEGETATION AND FAUNA

6.1 Desktop Assessment

6.1.1 Pre-European Vegetation

The site occurs within the Binneringe Pre-European Vegetation system (DPIRD, 2013). The NVCP footprint intersects the Binneringe 509 system association, described as "Saltbush and/or bluebush with woodland or scattered trees". Flora characteristic of the system association includes low, sparse scrubland dominated by species of *Atriplex, Maireana,* and *Tecticornia* with scattered Salmon gum (*Eucalyptus salmonophloia*) and gimlet (*Eucalyptus salubris*). The majority of the area within the tenements M15/1840 and M15/1851 intersect the Binneringe 676 system association, being saline areas associated with salt lakes with vegetation dominated by halophytes, including *Tecticornia* (DPIRD, 2013).

6.1.2 EPBC Protected Matters

An EPBC Act Protected Matters Report was completed on 8 March 2024 and is provided within **Appendix B**, providing general guidance on matters of national environmental significance and other matters protected by the EPBC Act within a 20 km radius of the proposed NVCP boundary. Results of the report are summarised within **Table 7** below.

Table 7: EPBC Protected Matters Report Results

Matter	Results	Details
Matters of National Significance		
World Heritage Properties	None	-
National Heritage Places	None	-
Wetlands of International Importance (RAMSAR)	None	-
Great Barrier Reef Marine Park	None	-
Commonwealth Marine Area	None	-
Listed Threatened Ecological Communities	None	-
Listed Threatened Species (Species or species habitat may or likely to occur within the search radius)	Six	• *Aphelocephala leucopsis* Southern Whiteface (V) • *Calidris acuminata* Sharp-tailed Sandpiper (V) • *Calidris ferruginea* Curlew Sandpiper (CE) • *Falco hypoleucos* Grey Falcon (V) • *Leipoa ocellata* Malleefowl (V) • *Pezoporus occidentalis* Night Parrot (E)
Listed Migratory Species (Species or species habitat may or likely to occur within the search radius)	Six	• *Apus pacificus* Fork-tailed Swift • *Motacilla cinerea* Grey Wagtail • *Actitis hypoleucos* Common Sandpiper • *Calidris acuminata* Sharp-tailed Sandpiper (V) • *Calidris ferruginea* Curlew Sandpiper (CE) • *Calidris melanotos* Pectoral Sandpiper
Other Matters Protected by the EPBC Act		
Commonwealth Lands	None	-
Commonwealth Heritage Places	None	-
Listed Marine Species (Species or species habitat may or likely to occur within the search radius)	Ten	• *Actitis hypoleucos* Common Sandpiper • *Apus pacificus* Fork-tailed Swift • *Bubulcus ibis as Ardea ibis* Cattle Egret

Matter	Results	Details
		• *Calidris acuminata* Sharp-tailed Sandpiper (V) • *Calidris ferruginea* Curlew Sandpiper (CE) • *Calidris melanotos* Pectoral Sandpiper • *Chalcites osculans as Chrysococcyx osculans* Black-eared Cuckoo • *Merops ornatus* Rainbow Bee-eater • *Motacilla cinerea* Grey Wagtail • *Thinornis cucullatus as Thinornis rubricollis* Hooded Plover, Hooded Dotterel
Whales and Other Cetaceans	None	-
Critical Habitats	None	-
Commonwealth Reserves Terrestrial	None	-
Australian Marine Parks	None	-
Habitat Critical to the Survival of Marine Turtles	None	-
Extra Information		
State and Territory Reserves	One	Ngadju Indigenous Protected Area within the search radius.
Regional Forest Agreements	None	-
Nationally Important Wetlands	None	-
EPBC Act Referrals	One	Improving rabbit biocontrol: releasing another strain of RHDV, southern two thirds of Australia within the search radius.
Key Ecological Features (Marine)	None	-
Biologically Important Areas	None	-
Bioregional Assessments	None	-
Geological and Bioregional Assessments	None	-

A search of the Department of Parks and Wildlife (DPAW) NatureMap database in 2018 (Ecotec, 2018) reported 134 flora and fauna species recorded within a 20 km radius of the project location, including 83 species of flora and 51 species of fauna. Notable records included:

- One species listed as Rare or likely to become extinct (*Leipoa ocellata* – Malleefowl)
- One species listed as Priority 3 (*Allocasuarina eriochlamys subsp. grossa*, included in Table 5)
- Three species listed as Priority 4, one of which has more recently been revised to P1 (*Eucalyptus kruseana, Eucalyptus x Brachyphylla* and *Lepidosperma lyonsii).*

Table 8 summarises the conservation significant flora species returned from Ecotec (2018) checked for currency.

Table 8: Conservation significant flora desktop results

Conservation Status	Species	Habitat	Annual / Perennial	Suitable Habitat	Likelihood	2024 WA conservation status
P1	*Lepidosperma lyonsii*	Pale orange skeletal sandy loam with banded ironstone gravel and rock, well-drained shallow stony loam with quartz. Gentle hill slopes, upper slopes of large hills.	Perennial	No	Unlikely	P1

Conservation Status	Species	Habitat	Annual / Perennial	Suitable Habitat	Likelihood	2024 WA conservation status
P3	*Allocasuarina eriochlamys subsp. grossa*	Stony loam, laterite clay. Granite outcrops.	Perennial	No	Unlikely	P3
P4	*Eucalyptus kruseana*	Sandy loam. Granite outcrops and hills.	Perennial	No	Unlikely	Species remains P4
	Eucalyptus x brachyphylla	Sandy loam. Granite outcrops.	Perennial	No	Unlikely	P4

An export from the Dandjoo Biodiversity Data Repository (Dandjoo, 2024) with a 20 km buffer from the Bald Hill Mine Site does not present the records of the above species within the search radius. No records of any conservation significant species were returned within the Dandjoo search.

A search of Atlas of Living Australia in 2024 using the same 20 km radius returned 174 species, including 111 species of flora and 63 species of fauna. This included two additional Priority 3 flora species not included in Ecotec (2018).

- *Phlegmatospermum eremaeum* (P3)
- *Calytrix plumulosa* (P3).

An assessment of suitable habitat for these additional species, based on information in their respective species profiles on FloraBase (2024), is presented in **Table 9** below.

Table 9: Additional Priority species records from 2024 database searches

Conservation Status	Species	Habitat	Annual / Perennial	Suitable Habitat	Likelihood
P3	*Phlegmatospermum eremaeum*	Stony loam.	Annual	No	Unlikely
	Calytrix plumulosa	Yellow sand with lateritic gravel, red loam.	Perennial	No	Unlikely

None of the Priority flora returned from database searches are associated with the saline soils and halophytic scrub vegetation typical of the NVCP area, and as such are unlikely to occur within the proposed NVCP area.

6.2 Consultant Surveys

6.2.1 Ecotec (2017) Flora and Vegetation Assessment of the Bald Hill Project Expansion Areas

Previous owner and operators Alliance Minerals Assets Ltd and Tawana Resources Ltd commissioned Ecotec to conduct a flora and vegetation assessment to determine any threatened or otherwise conservation-significant flora exists within the project area and describe/assess the condition of the vegetation within the areas to be impacted by expansion of the operation (Ecotec, 2017)**(Appendix D)**. The flora and vegetation assessment were conducted on the 29 and 30 March 2017. The assessment was conducted over two days as a targeted search for any threatened or otherwise conservation significant species, as well as providing general description of the vegetation types present in the area. The sites were selected based on planned project disturbance and changes in the vegetation identified from satellite imagery. The assessment of each site was conducted as a releve of the surrounding area.

The general findings of the investigation are summarised as follows:

- No threatened or conservation significant flora was identified.
- The flora species recorded are generally common and widespread in the surrounding region.
- Several introduced species were identified, and are also common and widespread within the region.

- Vegetation in the survey area is generally in degraded condition as a result of grazing activity.
- Species present in the *Maireana* Low Shrubland and Eucalypt Open Woodland vegetation types are common and widespread in the surrounding region.
- Four vegetation types were identified during the assessment (presented in **Figure 9**), including:
  - *Maireana* Low Shrubland
  - *Eucalyptus* Open Woodland
  - *Callitris preissi* Open Low Woodland
  - *Tecticornia* Low Shrubland
- No threatened flora species were located and not considered likely to be present due to lack of suitable habitat and extensive cattle grazing.
- Vegetation within the area is heavily grazed and the diversity of the flora species is low.

Further information on the four identified vegetation types is summarised within **Table 10** below.

Table 10: Summary of Ecotec (2017) Field and Assessment Results

Vegetation Type	Description	Species Identified	Introduced Species	Condition Assessment
***Maireana* Low Shrubland**	The most common vegetation type in the Bald Hill Project area, comprising of *Maireana brevifolia* and *M. sedifolia* over a variety of herbaceous species. Scattered larger Acacia shrubs and Eucalyptu trees were present.	• *Acacia tetragonophylla* • *Atriplex nummularia* • *Eucalyptus flocktoniae* • *Eucalyptus griffithsii* • *Eucalyptus salmonophloia* • *Maireana brevifolia* • *Maireana sedifolia* • *Solanum lasiophyllum* • *Solanum orbiculatum* • *Schlerolaena spp.*	Introduces species *Salvia verbenaca* was abundance at the time of the assessment. Other introduced species identified within this vegetation type include: • *Carthamus lanatus* • *Citrullus lanatus*	Diversity of flora species is low. The vegetation type is considered to be in Degraded condition according to Keighery (1994).
***Eucalyptus* Open Woodland**	The vegetation type is seen to be surrounding the Bald Hill Project at a distance of 1.5 – 2 m. *Eucalyptus salmonophloia* (Salmon Gum) and *E. salubris* (Gimlet) are the most common tree species present, with *Atriplex versicaria* the most common understory species.	• *Atriplex versicaria* • *Eremophila scorparia* • *Eucalyptus celastroides* • *Eucalyptus flocktoniae* • *Eucalyptus lesouefii* • *Eucalyptus salmonophloia* • *Eucalyptus salubris* • *Maireana brevifolia* • *Maireana sedifolia* *Melaleuca sp.* • *Solanum lasiophyllum* • *Solanum orbiculatum* • *Schlerolaena spp.* • *Rhagodia drummondii*	Lower prevalence of introduced flora is apparent.	The vegetation type is subject to grazing, however the vegetation is generally in Good condition according to Keighery (1994).

Vegetation Type	Description	Species Identified	Introduced Species	Condition Assessment
***Callitris preissi* Open Low Woodland**	Located south of the Project footprint on the higher ground of the salt lake fringes. Soils are sandy loam. Other common species within the vegetation type include *Acacia ligulate* and *Dodonaea viscosa subsp. angustissima*.	• *Acacia ligulate* • *Callitris preissi Gunniopsis* • *Dodonaea viscosa subsp. angustissima.*	-	Although there is a high degree of cattle activity within this vegetation type, vegetation condition is generally Good according to Keighery (1994).
***Tecticornia* Low Shrubland**	Found extensively in the lower-lying areas to the south of the Project and comprises a number of *Tecticornia* and *Frankenia* species. Soils are typically saline and may be inundated following large rainfall events.	• *Disphyma crassifolium* • *Gunniopsis quadrifida* • *Pittosporum phylliraeoides* • *Tecticornia spp.*	-	Due to the unpalatability of the vegetation (low grazing potential) the vegetation is considered in Good condition according to Keighery (1994).

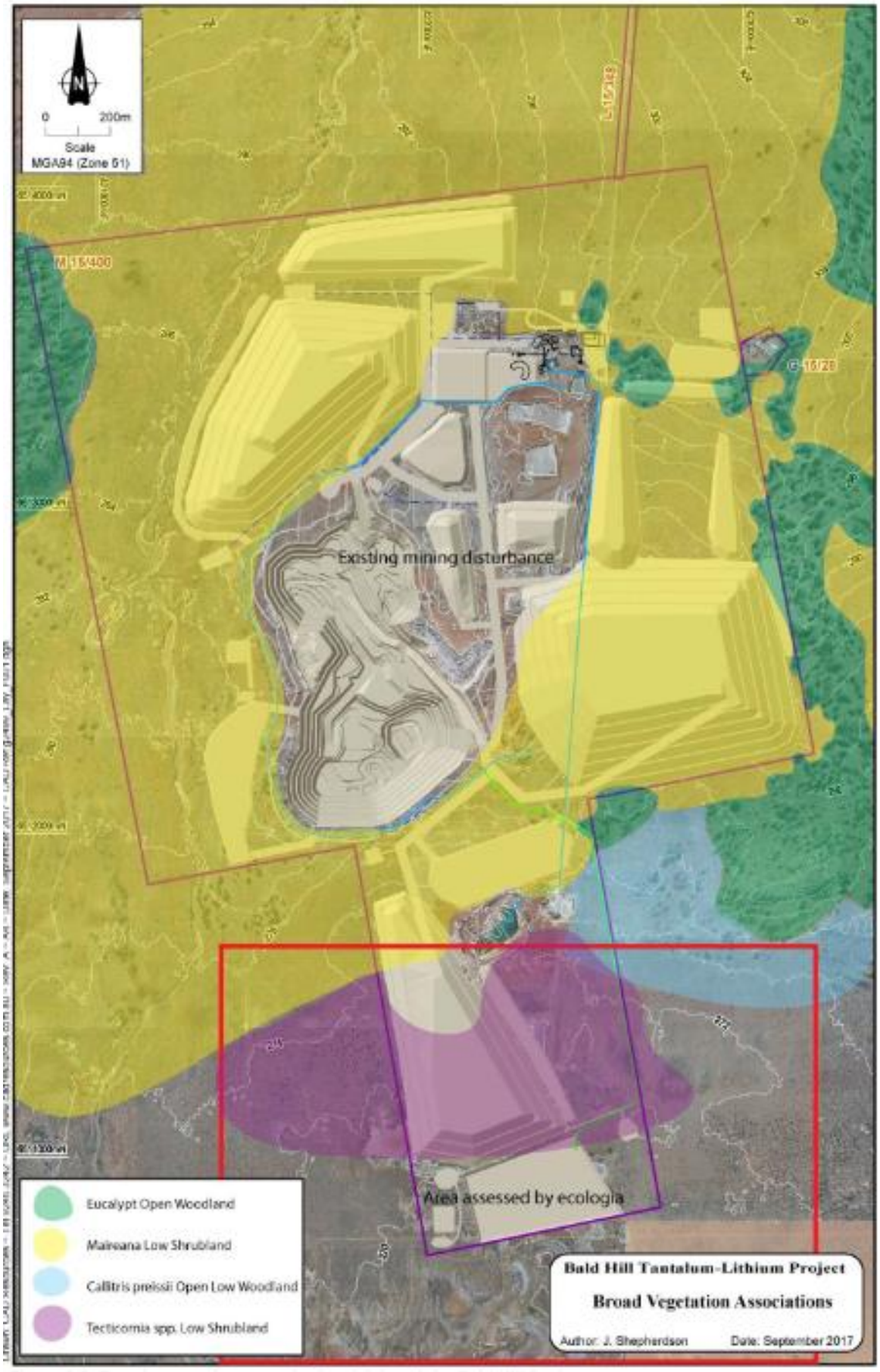

Figure 9: Ecotec (2017) Vegetation Associations

6.2.2 Ecologia (2017) Reconnaissance Flora and Vegetation Assessment

Ecologia was commissioned by Tawana Resources to undertake a reconnaissance flora and vegetation assessment in the vicinity of the Bald Hill Project, with the primary objective being to provide broad contextual information on flora and vegetation communities within the study area (Ecologia , 2017)(**Appendix E**). The assessment comprised of a desktop investigation and field program. The desktop assessment consisted of a 10 km buffer search around around the Project. Habitat preferences and flowering times of suspected species were determined from relevant taxonomic literature to advise the field programme. The field programme was a reconnaissance flora and vegetation survey conducted in the study area of 207 ha on the 23 August 2017. Eleven low-intensity survey sites were targeted during the survey and the study area was assessed to determine broad vegetation communities.

The general findings of the investigation are summarised as follows:

No TECs listed for the Coolgardie IBRA Bioregion. 63 PECs listed for the Goldfields region, with the majority associated with banded ironstone formations or other landforms that do not occur within the study area. Including 33 species are unique invertebrate assemblage occurring in groundwater calcretes (not within study area).

- 23 Threatened and Priority listed species were identified from a search of the NatureMap database, within the vicinity of Lake Cowan.
- No conservation significant species were recorded during the survey.
- Suitable habitat for eight species of conservation significance was recorded within the study area and Mining Proposal disturbance envelope, associated with Salt Lake fringing vegetation.
- Four land systems occur within the Goldfields and are listed as PECs including Boonderoo, Cundlegum, Emu and Ponton land systems. None of these systems occur within the study area.
- Few weed species were present during the field program in low abundance, and were typically confined to the edges of vehicle tracks (eg. *Salvia verbenaca*).
- Four broad vegetation communities were described and mapped within the study area (**Figure 10**), including:
    - *Callitris preissii* scattered low trees over *Dodonaea viscosa subsp. angustissima, Eremophila* spp*. (E. scoparia, E. decipiens)* mid open shrubland, over *Atriplex* spp*. (A. nana, A. vesicaria)* and *Gunniopsis quadrifida* low open shrubland, over *Eragrostis dielsii* scattered tussock grasses.
    - *Tecticornia spp. (T. pergranulata, T. pruinosa, T. ?halocnemoides, T. undulata, T. sp. Dennys Crossing* (K.A. Shepherd & J. English KS 552) and *Frankenia cinerea* low shrubland.
    - *Callitris preissii* low open woodland over *Acacia ligulata* and *Dodonaea viscosa subsp. angustissima* tall open shrubland, over *Ptilotus obovatus* and *Rhagodia drummondii* low open shrubland, over *Eragrostis eriopoda* scattered tussock grasses.
    - *Tecticornia ?halocnemoides, Frankenia setosa, Gunniopsis quadrifida*, and *Maireana amoena* low open shrubland, over *Eragrostis dielsii* scattered tussock grasses.

As part of the desktop assessment, Ecologia (2017) provided a comparison of the Threatened and Priority plant species records from NatureMap database search and the likelihood of occurrence within the study area. Of the 23 Threatened and Priority listed species identified within the search, eight species have a ‘possible’ likelihood of occurring within the study area, as included in **Table 11** below.

Table 11: Summary of Ecologia (2017) Desktop Assessment Likelihood of species occurrence

Species Name	Habitat	Flowering Period
***Calandrinia sp. Widgimooltha* (F. Obbens & E. Rein FO 9/05)**	Saline flats	October
Eremiphila lucida	Clay loam, sandy loam. Adjacent to samphire flats and granite outcrops	October
Ptilotus rigidus	Salt Lakes	-
***Aotus sp. Dundas* (M.A. Burgman 2835)**	Sandy soils and salt-lake dunes	September

Species Name	Habitat	Flowering Period
Newcastelia insignis	Red or yellow sandy soils	September to November
Thysanotus brachyantherus	Clay over limestone, loam and saline/subsaline flats.	October to December
Chrysocephalum apiculatum subsp. norsemanense	yellow or red sand, yellow sandy clay and calcareous soils	January to December
Frankenia glomerata	associated with salt lakes	November

Further information on the identified vegetation types from the field survey is summarised **Table 12** below.

Table 12: Summary of Ecologia (2017) Field and Assessment Results

Broad Vegetation Type/Description	Species Identified	Condition Assessment	Associated Site (Field survey)
Callitris preissii low open woodland over *Acacia ligulate* and *Dodonaea viscosa subsp. augustissima* tall open shrubland on low dunes.	• *Callitris preissii* • *Acacia ligulata* • *Dodonaea viscosa subsp. angustissima* • *Ptilotus obovatus* • *Rhagodia drummondii* • *Eragrostis eriopoda*	Very Good to Excellent Evidence of grazing (Cattle/Kangaroos) >5 years since fire <10% (low) leaf litter distribution and cover	Site 1
Tecticornia spp. (T. pergranulata, T. pruinosa, T. ?halocnemoides, T. undulata, T. sp. Dennys Crossing (K.A. Shepherd & J. English KS 552) and *Frankenia cinerea* low shrubland in saline depressions and on claypans.	• *Tecticornia pergranulata* • *Tecticornia pruinose* • *Tecticornia sp.* Dennys Crossing (K.A. Shepherd & J. English KS 552) • *Tecticornia undulata* • *Frankenia cinerea sens. lat.* • *Atriplex nana* • *Atriplex vesicaria*	Very Good to Excellent Evidence of grazing (Cattle/Kangaroos) >5 years since fire <10% (low) leaf litter distribution and cover	Site 2 Site 6 Site 8
Callitris preissii low open woodland over *Acacia ligulata* and *Dodonaea viscosa subsp. angustissima* tall open shrubland, over *Ptilotus obovatus* and *Rhagodia drummondii* low open shrubland, over *Eragrostis eriopoda* scattered tussock grasses.	• *Callitris preissii* • *Dodonaea viscosa subsp. angustissima* • *Austrostipa scabra* • *Atriplex nana* • *Atriplex vesicaria* • *Acacia kalgoorliensis* • *Eragrostis dielsii* • *Eremophila decipiens* • *Eremophila scoparia* • *Frankenia interioris* • *Gunniopsis quadrifida*	Very Good to Excellent Evidence of grazing (Cattle/Kangaroos) >5 years since fire <10% (low) leaflitter distribution and cover	Site 3 Site 4 Site 5 Site 7 Site 9 Site 10

Broad Vegetation Type/Description	Species Identified	Condition Assessment	Associated Site (Field survey)
	• *Rhagodia drummondii* • *Eragrostis eriopoda* • *Maireana aemoena* • *Maireana flomerifolia* • *Ptilotus obovatus*		
Tecticornia ?halocnemoides, Frankenia setosa, Gunniopsis quadrifida, and *Maireana amoena* low open shrubland, on undulating plain.	• *Tecticornia halocnemoides* • *Frankenia setosa* • *Gunniopsis quadrifida* • *Maireana amoena* • *Eragrostis dielsii*	Very Good to Excellent Evidence of grazing (Cattle/Kangaroos) >5 years since fire <10% (low) leaf litter distribution and cover	Site 11

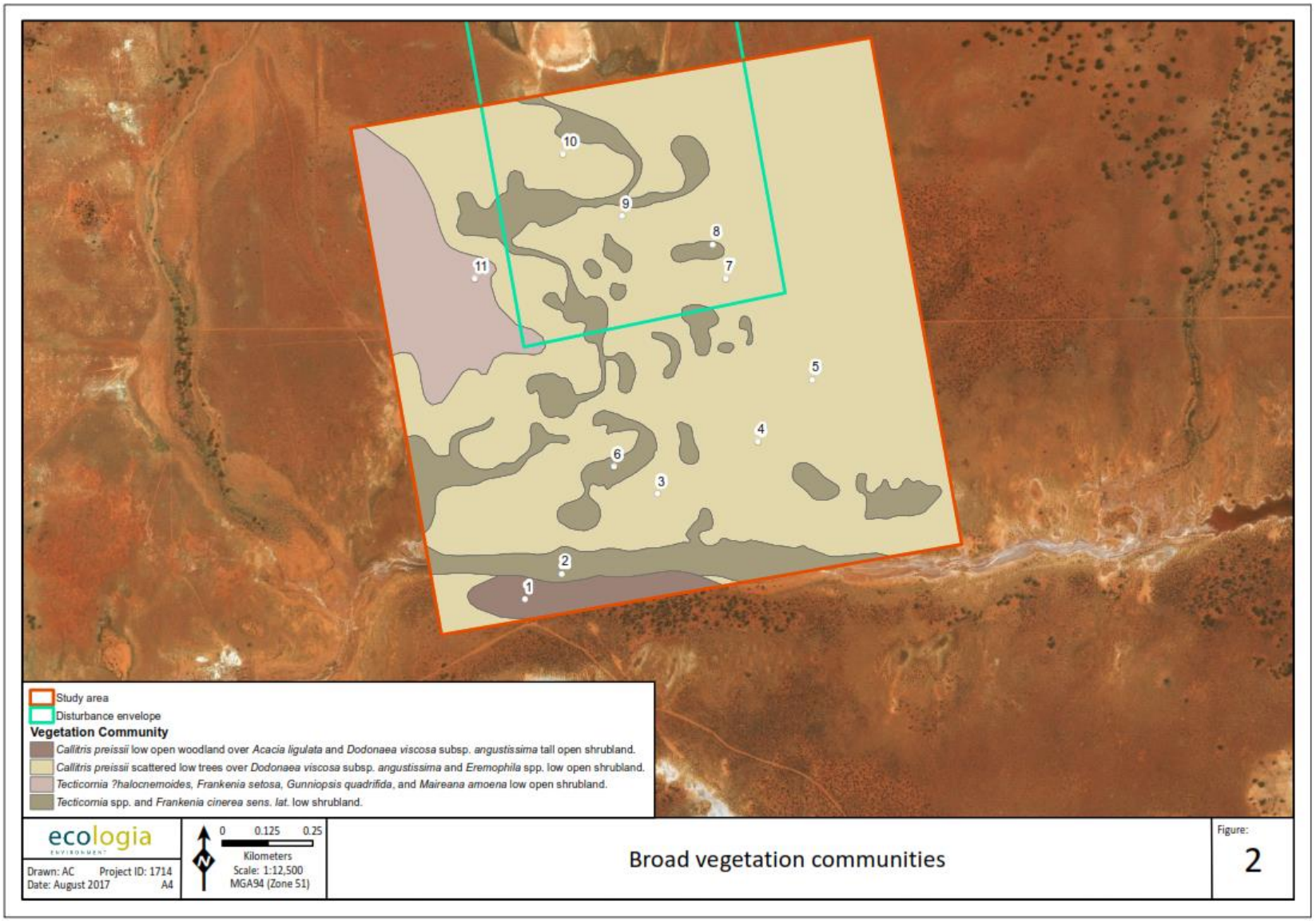

Figure 10: Ecologia (2017) Broad Vegetation Communities

6.2.3 Biostat (2017) Fauna Risk Assessment

Biostat was commissioned by HRM Resources Australia Ltd to develop a note outlining the findings of data and literature searches and the assessment of fauna listed under State (*Wildlife Conservation Act 1950*) and Federal legislation (*Environment Protection and Biodiversity Conservation Act 1999*) (Biostat, 2017)(**Appendix F).** The assessment considered potential areas of concern for fauna relating to the development of the Bald Hill project in the form of a desktop assessment. A summary of the results of the assessment is provided below:

- No TECs are located in the search boundary.
- No DPAW (now, DBCA) managed lands including reserves and conservation parks within the search radius.
- Vegetation communities indicated habitats were typical for the area.
- No available information on invertebrate fauna, including stygofauna and troglofauna. Desktop assessments available for neighbouring sites.
- Proximity to the ephemeral Lake Cowan system would increase the potential number of migratory waterbird species, with most of the species listed under legislation being of a low likelihood of occurrence in the project area.
- The Rainbow bee-eater and Fork-tailed swift can be seasonally abundant within the search radius.
- No available information on mammal and herpetofauna in the vicinity of the site. Surveys undertaken at surrounding sites suggest relatively diverse ground herpetofauna and depauperate ground mammal fauna.
- The proposed development area is unlikely to impact on broader terrestrial vertebrate fauna populations.
- Based on the available biological information there are no potential high or medium risk operations that should cause anything more than short term impacts on the Project area.

Biostat (2017) completed an assessment determining the potential occurrence of identified species at the Bald Hill Project that have been listed under Federal and State legislation, this has been summarised in Table 13 below.

Table 13: Biostat (2017) Species listed under Federal and State legislation and Potentiall Occurrence

Species	Status		Potential Occurrence
	EPBC Act 1999	WC Act 1950 and DPaW Priority Species	
Calidris ferruginea **Curlew Sandpiper**	Critically Endangered Migratory Species JAMBRA International Agreement CAMBRA International Agreement ROKAMBA International Agreement	Schedule 3 (Vulnerable) Schedule 5 (Protected under international agreements)	Unlikely to Low May use pondage areas within the Project Area as a non-permanent transitory.
Pezoporus occidentalis **Night Parrot**	Endangered	Schedule 1 (Critically Endangered)	Extremely Unlikely Commonly associated wth hummock glasslands and dense tussock grasslands. Found in very few locations across Australia.
Leipoa ocellata **Malleefowl**	Vulnerable	Schedule 3 (Vulnerable)	Unlikely Restricted to lower rainfall areas and predominantly absent from the higher rainfall areas.
Apus pacificus **Fork-tailed Swift**	Migratory Species JAMBRA International Agreement CAMBRA International Agreement ROKAMBA International Agreement	Schedule 5 (Protected under international agreements)	Seasonally High Likely to be recorded flyring over the study area, especially during the onset of storms. Almost entirely aerial.

Species	Status		
	EPBC Act 1999	WC Act 1950 and DPaW Priority Species	Potential Occurrence
Motacilla cinerea **Grey Wagtail**	Migratory Species	Schedule 5 (Protected under international agreements)	Unlikely A vagrant recorded on very few occasions across Western Australia.
Ardea modesta **Eastern Great Egret**	Migratory Species AMBRA International Agreement CAMBRA International Agreement	Schedule 5 (Protected under international agreements)	Moderate to Low Commonly associated with northern Australia, usually occurring in shallow waters, both fresh and salt, including estuaries.
Ardea ibis **Cattle Egret**	Migratory Species JAMBRA International Agreement CAMBRA International Agreement	Schedule 5 (Protected under international agreements)	Unlikely Sporadic distribution in more arid areas, more likely to be recorded around better-watered areas of the State. Prefers damp grasslands and pastured often associated with Cattle.
Thinornis rubricollis **Hooded Plover**	Migratory Species	DPaW Priority 4 – Rare,near threatened and other taxa in need of monitoring	Moderate to Low More commonly associated with coastal areas but may be present around Lake Cowan after good rains.
Merops ornatus **Rainbow Bee-eater**	Migratory Species	Schedule 5 (Protected under international agreements)	Seasonally High Prefers lightly wooded country near water and preferably with sandy soils suitable for its breeding burrows.

6.2.4 Ecotec (2018) Reconnaissance Flora, Vegetation and Fauna Habitat Survey

Ecotec undertook a reconnaissance survey producing a list of flora species encountered throughout the survey and identifying broad vegetation types and condition within the project area (Ecotec, 2018)(**Appendix G**). A desktop assessment was undertaken as part of the survey in December 2018, with a revision in February 2019 including results from the field program. Fieldwork was undertaken on the 5 and 6 of December 2018. The field work consisted of a series of releves throughout the survey area. The survey locations were selected based on changes in vegetation and topography. An assessment of vegetation, flora species and fauna habitat were undertaken in the areas surrounding each selected survey point.

Flora and Vegetation

A consideration of habitat suitable for conservation significant flora was applied throughout the survey.

A summary of the survey methods and results is provided below:

- 12 releves were undertaken within the survey area (**Figure 11**).
- 83 species of flora from 24 families were recorded during the survey.
- The most abundant species during the survey was Chenopodiaceae with 19 species recorded.
- No conservation significant flora was recorded during the survey.
- A small area of granite outcrop in the north-western extent of the survey area potentially provides suitable habitat for *Eucalyptus kruseana* and *E. x brachyphylla,* however, neither were located within the area during the survey.
- Six introduced flora species were recorded during the survey.
- Two broad vegetation types dominated the study area, including:

- Open *Eucalyptus* woodland over Chenopod shrubland (northern half of the surveyed area).
- Salt lake fringing vegetation (southern portion of the survey area).

- Small, isolated patches of *Acacia* shrubland associated with elevated areas. Vegetation condition in these areas was Very Good to Excellent, with little evidence of grazing.
- The open *Eucalyptus* woodland vegetation in the northern portion of the site displayed evidence of grazing and observed to be very intensive near the dams. Vegetation composition considered likely to have been considerably altered by cattle grazing. Vegetation condition is generally good, however poor around damns where cattle congregate.

Due to the survey being undertaken late in the year, some annual species are unlikely to have been present, or were in the late stages of their life cycle. Given the high level of grazing disturbance across the area and resultant vegetation condition, it is expected that the majority of flora species occurring within the study area have been recorded during this survey.

Conservation significant flora identified within the desktop investigation and their likelihood of occurrence is summarised in **Table 14.**

Table 14: Ecotech (2018) Conservation sigficiant flora returned from Desktop Assessment

Species	Suitable Habitat	Conservation Status	Suitable Habitat	Likelihood
Allocasuarina eriochlamys subsp. grossa	Stony loam, laterite clay. Granite outcrops.	P3	No	Unlikely
Eucalyptus kruseana	Sandy loams. Granite outcrops and hills.	P4	No	Unlikely
Eucalyptus x brachyphylla	Sandy loam. Granite outcrops.	P4	No	Unlikely
Lepidosperma lyonsii	Pale orange skeletal sandy loam with banded ironstone gravel and rock, well-drained shallow stony loam with quartz. Gentle hill slopes, upper slopes of large hills.	P4	No	Unlikely

Habitat types identified and the vegetation condition according to the Keighery (1994) scale is outlined in **Table 15** as identified by Ecotec (2018).

Table 15: Extent of Vegetation Communities in Survey Area

Habitat	Vegetation	Condition
Acacia Shrubland	*Acacia acuminata* shrubland over mixed small shrubs and herbs.	Very Good to Excellent[2]
Open Woodland	Open *Eucalyptus* woodland over and *Atriplex* and *Maireana* shrubland.	Good[1]
Creek Line	*Eucalyptus* woodland over *Eremophilla* and *Atriplex* shrubland.	-
Salt Lake Fringe	*Callitris preissi* and *Dodonaea viscosa* over *Tecticornia* herbland.	Very Good

Note: 1. Vegetation considered to be poor around dams where cattle congregate.
2. Little evidence of grazing

A summary of the site data and associated flora species, including presence of introduced species identified, is summarised in **Table 16**.

Table 16: Ecotec (2018) Summary of Field Data

Site Identifier	Habitat	Vegetation Description	Introduced Species	Condition
BH01	Open Woodland	*Eucalyptus salmonophloia* and *E. loxophleba* tall open oodland over *Maireana revifolia* and *Atriplex vesicaria* low open shrubland with mixed herbaceous species.	• **Oncosiphon suffruticosum* • **Salvia verbenaca*	Good - Very good
BH02	Open Woodland	*Eucalyptus griffithsii* open woodland over *Maireana brevifolia* and *M.sedifolia* low open shrubland over mixed herbaceous species.	• **Carthamus lanatus* • **Oncosiphon suffruticosum* • **Salvia verbenaca*	Good – heavy grazing evident
BH03	Open Woodland	*Eucalyptus salmonophloia, E. griffithsii* and E. *oleosa* open woodland over *Maireana brevifolia* and *M. sedifolia* low open shrubland and mixed herbaceous species.	• **Oncosiphon suffruticosum* • **Salvia verbenaca*	Good – heavy grazing evident
BH04	Quartz Outcrop	Scattered *Eucalyptus oleosa* and *Acacia acuminata* and *A. tetragonophylla* shrubland over *Maireana sedifolia* and *Olearia muelleri* very open low shrubland and mixed herbaceous species.	• **Oncosiphon suffruticosum*	Good
BH05	Open woodland and Creekline	Open woodland: *Eucalyptus salmonopholia* and *E. oleosa* tall open woodland over *Eremophila scoparia, Maireana sedifolia* and *M. brevifolia* low shrubland over mixed species open herbland. Creekline: *Eucalyptus oleosa* and *E. griffithsii* woodland over *Eremophila spp*.and *Atriplex nummularia* shrubland.	• **Citrullus lanatus* • **Oncosiphon suffruticosum* • **Sonchus asper*	Excellent
BH06	Salt Lake Margin	*Dodonaea viscosa subsp. angustissima* very open tall shrubland over *Maireana spp, Atriplex spp* and *Frankenia spp* low open herbland.	• **Salvia verbenaca*	Good – evidenceof high cattle activity, rabbits
BH07	Open woodland with patches of Acacia shrubland on quartz outcrop	*Eucalyptus salmonopholia* tall open woodland over *Atriplex vesicaria* and *Maireana brevifolia* low shrubland over occasional *Tecticornia halocnemoides*. Tends to *Acacia quadrimarginea* and *Santalum spicatum* over *Maireana sedifolia* and mixed herbaceous species.	• *Oncosiphon suffruticosum* • *Salvia verbenaca*	Very Good
BH08	Open woodland	*Eucalyptus salmonophloia* very open woodland over *Maireana brevifolia* and *M. sedifolia* open low shrubland and various herbaceous species.	• *Oncosiphon suffruticosum* • *Salvia verbenaca*	Good – evidence of heavy grazing
BH09	Acacia shrubland	*Acacia acuminata* tall shrubland over *Atriplex nummularia* and *A. vesicaria* shrubland over mixed herbaceous species.	• *Oncosiphon suffruticosum* • *Salvia verbenaca*	Very Good

Site Identifier	Habitat	Vegetation Description	Introduced Species	Condition
BH10	Open woodland	*Eucalyptus lesouefii* and *E. oleosal* very open woodland over *Maireana sedifolia* and *M. ?erioclada* open shrubland over mixed herbaceous species.	• *Oncosiphon suffruticosum* • *Salvia verbenaca*	Good
BH11	Open woodland	*Eucalyptus lesouefii* and *E. salmonophloia* very open woodland over *Atriplex nummularia* and A. vesicaria very open shrubland over sparse herbaceous species.	• **Citrullus lanatus* • **Oncosiphon suffruticosum* • *Salvia verbenaca*	Poor – scarce understorey species due to heavy grazing (close to water point); high weed presence.
BH12	Creek line	*Eucalyptus griffithsii* woodland over *Atriplex nummularia* shrubland over *Lycium australe, Enchylaena tomentosa* and *Atriplex vesicaria* low shrubland. Tending to *E. griffithsii* and Callitris preissii open woodland over *Tecticornia indica* and *T. isarticulate* heathland in the south.	• **Carthamus lanatus* • **Oncosiphon suffruticosum* • **Ricinus communis* • **Salvia verbenaca*	Good

Fauna Habitat

Fauna habitat was assessed during releves establishment to determine the likelihood of presence of conservation significant species identified during the desktop assessment. Two main fauna habitats existed within the survey area, including open woodland and Salt Lake margins. *Acacia* shrubland and creek line habitat areas also occurred within the survey area in isolated areas. Due to the area being subject to pastoralism and mining for many years, the local native wildlife population was not diverse. Common native bird species were observed during the survey, including:

- Willie Wagtail (*Rhipidura leucophrys*)
- 28 Parrot (*Barnardium zonarius*)
- Australian Magpie *(Gymnorhina tibicen*)
- Little Crow (*Corvus bennetti*).

No fauna of conservation significance was observed during the survey. There is a possibility of the Rainbow Bee-eater being found seasonally in areas of suitable habitat. Marine and migratory species could potentially be found in Salt Lake and fringing habitat, likely to follow significant rainfall events resulting in the Salt Lakes containing water for extended periods of time.

No habitat present is considered important for the survival of any of the species returned from the database searches. Areas of *Acacia* shrubland observed within the survey area were considered too small and isolated to provide suitable habitat for Malleefowl (*Leipoa ocellata*), although historical records for the species exist further west and south of the site. The western quoll and night parrot are considered extremely unlikely to be present in the vicinity of the project.

There is a high degree of disturbance and the vegetation composition in the area surrounding Bald Hill has been altered. As a result, fauna habitat has been altered, reducing species diversity. None of the habitat available in the surrounding area is considered necessary for the survival of any species of conservation significance. Disturbance within the survey area is therefore considered very unlikely to result in an adverse impact to fauna of conservation significance.

Conservation significant fauna identified within the desktop investigation and their likelihood of occurrence is summarised in **Table 17.**

Table 17: Ecotech (2018) Conservation sigficiant fauna returned from Desktop Assessment

Species	Preferred habitat	Likelihood of occurrence and justification
Dasyurus geoffroii **Western quoll, chuditch**	Preferred habitat is woodland and mallee. Previously occurred throughout arid and semi-arid Australia but is now restricted to forests of south-west Western Australia.	Unlikely No prior records within the survey area. PMST database states “Species or species habitat may occur in the area”.
Leipoa ocellata **Malleefowl**	Preferred habitat is scrubland and woodland dominated by mallee and Acacia species.	Unlikely Two prior records within the 20km search area, well to the west of the site. Insufficient area of suitable habitat in the surveyed area.
Calidris ferruginea **Curlew Sandpiper**	Migratory. Preferred habit is mudflats in sheltered coastal areas, and ponds in salt works and sewage farms. Recorded inland around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand.	Unlikely Possible short-term visitor to salt lakes in the surrounding region.
Pezoporus occidentalis **Night Parrot**	Highly elusive nocturnal ground dwelling parrot found in the arid and semi-arid zones of Australia. Thought to be extinct until 2013. Preferred habitat is dense spinifex or samphire on the margins of salt lakes.	Unlikely No records returned from the NatureMap database within 20km radius. PMST database states “Species or species habitat may occur in the area”. Samphire herbland surrounding salt lakes may provide suitable habitat however high level of disturbance from cattle may limit habitat quality.
Merops ornatus **Rainbow Bee-eater**	Common and widespread species in WA, except the drier interior of the State and the far south-west. Occurs in lightly wooded sandy country, preferring areas near water. It nests in burrows excavated in sandy ground or banks, often at the margins of roads and tracks.	Possible No prior records within the 20km radius, however suitable habitat is present.
9 bird species listed as ‘Protected under an international agreement”	Migratory and marine species, predominantly associated with coastal habitats.	Unlikely Possible short-term visitors to salt lakes in the surrounding region.

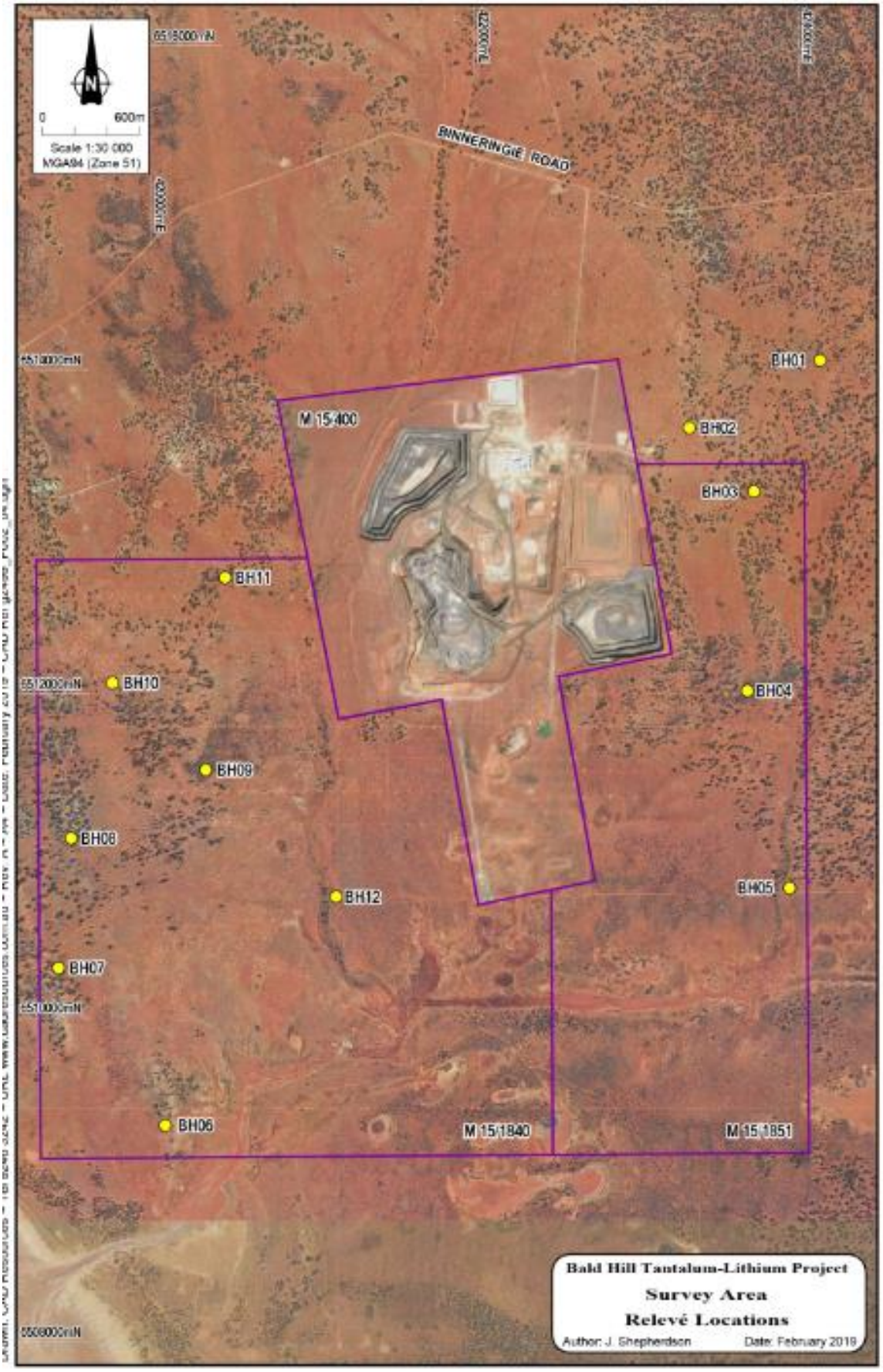

Figure 11: Ecotec (2018) Survey Locations

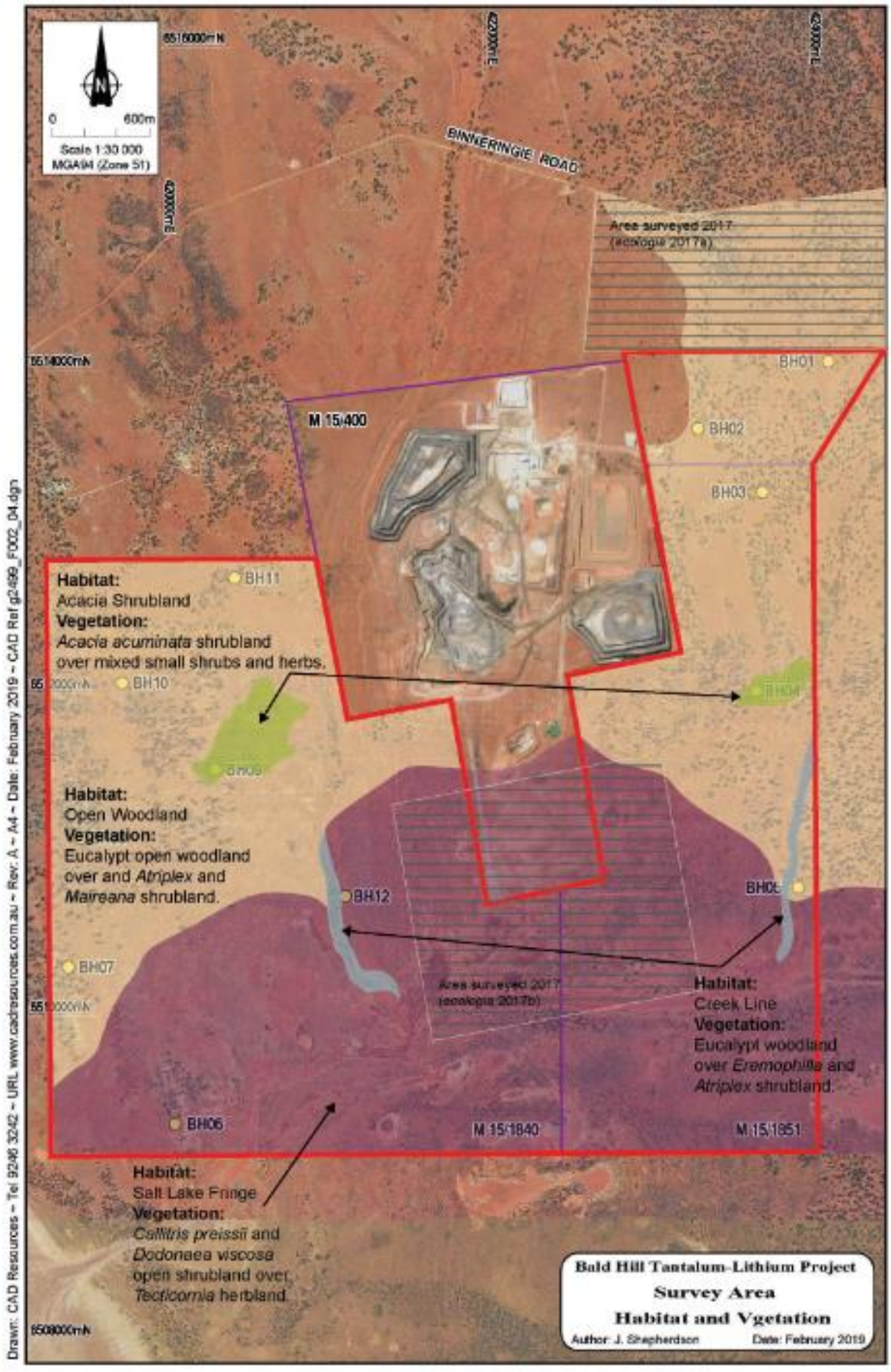

Figure 12: Ecotec (2018) Habitat and Vegetation Mapping

6.2.5 Terrestrial Ecosystems (2022) Basic Vertebrate Fauna Survey and Risk Assessment

Terrestrial Ecosystems were commissioned by Lithco No.2 in 2022 to undertake a Basic Vertebrate Fauna Survey and Risk Assessment, to support proposed mine expansion into tenement M15/1851 (**Appendix H**). The assessment comprised of a desktop and a site inspection (undertaken on the 12 January 2023), assessing the fauna habitat types and condition, landforms, soils and vegetation and time since last fire in the survey area.

Three broad fauna habitats were reported in the project area: mixed shrubland, *Eucalyptus* woodlands over mixed shrubs and chenopods, and chenopod shrubland, as well as disturbed areas.

One migratory, one threatened and two priority species potentially occur in the project area or surrounds, as a result of the desktop search for conservation significant fauna protected by the Commonwealth EPBC Act 1999. An assessment of the potential presence of conservation significant fauna species was provided within the Terrestrial Ecosystems (2022) report and summarised in **Table 18** below.

Table 18: Terrestrial Ecosystems (2022) - Potential presence of conservation signficant fauna species

Species	DBCA Schedule / Priority	Status under Commonwealth EPBCA Act	Review of Priority (2024) (DBCA/EPBC)	Comment on the potential presence of a species
Pezoporus occidentalis **Night Parrot**	Critically Endangered	Endangered	Critically Endangered/ Endangered	Not recorded in other surveys in the area, habitat is not suitable, and the closest recent record is ~550km away, so it is highly unlikely to be in the project area.
Falco hypoleucos **Grey Falcon**	Vulnerable	Vulnerable	Vulnerable/ Vulnerable	Not recorded in other surveys in the area, so it is highly unlikely to be in the project area, and if it was disturbed by vegetation clearing or mining activity it would readily move to an adjacent area.
Leipoa ocellata **Malleefowl**	Vulnerable	Vulnerable	Vulnerable / Vulnerable	Not present in the project area.
Apus pacificus **Fork-tailed Swift**	Migratory	Migratory	Migratory / Migratory	Infrequent visitor to the general region. Vegetation clearing and mining are highly unlikely to impact on this essentially aerial species.
Motacilla cinerea **Grey Wagtail**	Migratory	Migratory	Migratory / Migratory	Suitable habitat is not present in the project area, so it is highly unlikely to be present.
Falco peregrinus **Peregrine Falcon**	OS	-	OS	May infrequently be seen in the project area, and if disturbed by vegetation clearing or mining activity it would readily move to an adjacent area.
Platycercus icterotis xanthogenys **Western Rosella (inland)**	P4	-	P4	May infrequently be seen in the project area, and if disturbed by vegetation clearing or mining activity it would readily move to an adjacent area.
Aspidites ramsayi **Woma**	P1	-	P1	Not previously recorded in other surveys in the vicinity of the project area and is rarely recorded across the region, so it is improbable that it is in the project area.
Nyctophilus major tor **Central Long-eared Bat**	P4		**P3**	Potentially in the project area.

The site investigation recorded no evidence (e.g. mounds or tracks) of Malleefowl in the area. There is a possibility that the Peregrine Falcon (listed as other specially protected fauna), the inland Western Rosella (Priority 4), and the Central Long-eared Bat (Priority 4) may infrequently visit the project area, but these species are not likely residents. Vegetation clearing and mining activities were considered unlikely to significantly impact on these species as they will readily disperse once vegetation clearing commences.

Impacts on vertebrate fauna associated with clearing vegetation in the project area in a landscape or bioregional context are likely to be low as there are vast tracts of similar fauna habitat in adjacent areas.

Survey locations and the mapped fauna habitat is presented within **Figure 13.**

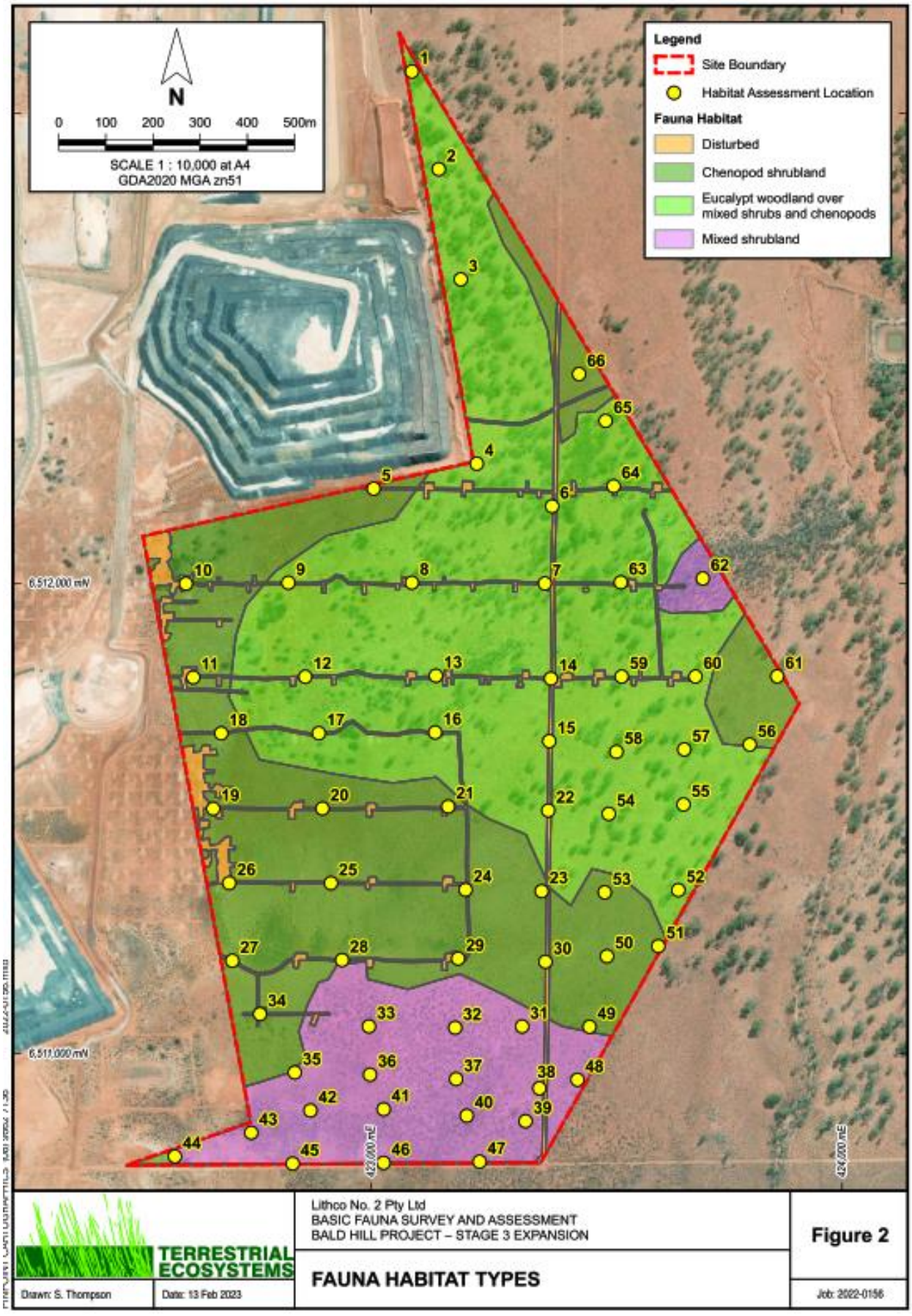

Figure 13: Terrestrial Ecosystems (2022) Fauna Habitats and Survey Points

6.3 Field Survey - Vegetation and Fauna Habitat Condition (2024)

Members of the MinRes Environment Team (including Ecologist, Dr Adam Cross) attended the Bald Hill site on 11 March 2024, to determine the current condition of previously surveyed locations and provide an updated condition report of the vegetation. Photos from the visit, including areas subject to the NVCP are presented within **Figure 14 – Figure 18** below.

Vegetation extent and condition remains consistent with detail in the reports summarised in **Section 6.2.** Vegetation communities in the NVCP area are species poor and heavily degraded by cattle grazing, comprising mostly low, sparse shrubland of *Frankenia cinerea, F. setosa, Maireana amoena, Gunniopsis quadrifida*, and species of *Tecticornia (T. pergranulata, T. pruinosa, T. halocnemoides, T. undulata, T. sp. Dennys Crossing* (K.A. Shepherd & J. English KS 552) with scattered *Eucalyptus salubris* and *E. salmonophloia.*

No conservation significant species were recorded during the visit. The only fauna observed during the visit was a single *Ctenophorus scutulatus* (lozenge-marked dragon) individual, although numerous scats, tracks, and diggings were present suggesting presence of *Macropus fuliginosus* (western grey kangaroo) and *Varanus gouldii* (sand monitor) in addition to rabbits and cattle.

Figure 14: General Vegetation Condition (M15 /1851)

Figure 15: General Vegetation Condition (M15 /1851)

Figure 16: General Vegetation Condition (Tenement M15/1851)

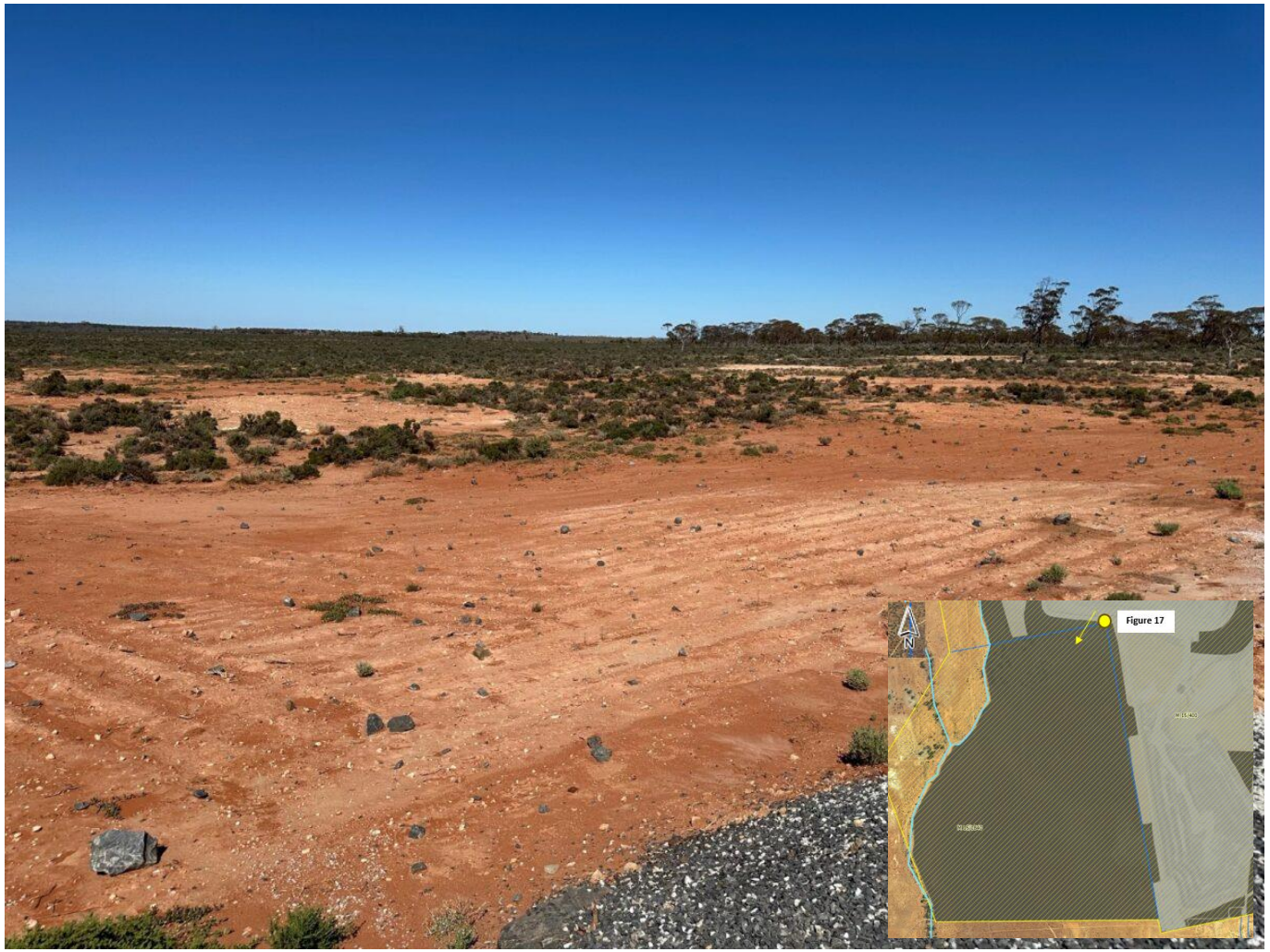

Figure 17: General Vegetation Condition (Tenement M15/1840)

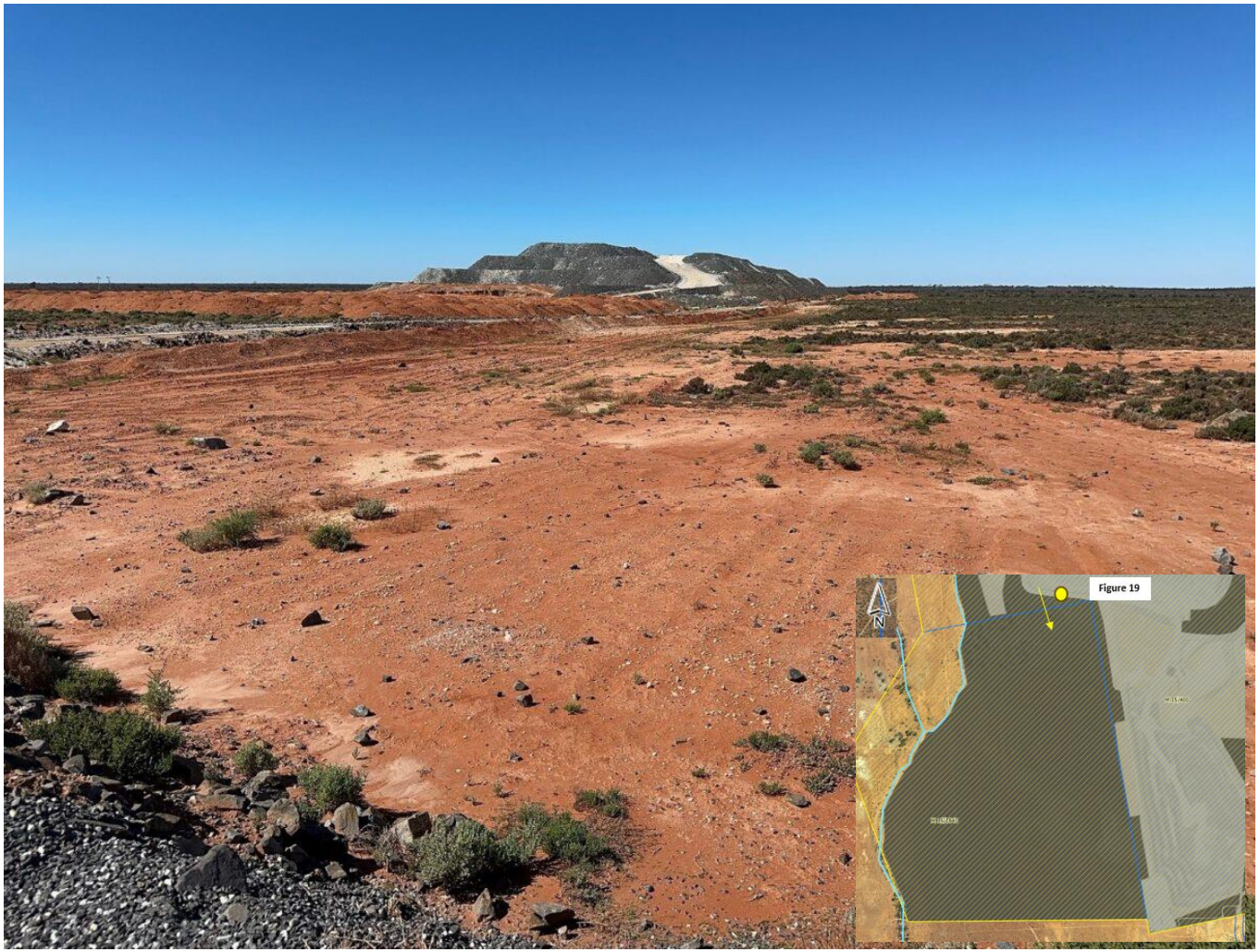

Figure 18: General Vegetation Condition (Tenement M15/1840)

7. AVOIDANCE AND MITIGATION

Potential environmental and social impacts will be managed through the implementation of the Bald Hill Environmental Management System (EMS). The EMS includes a number of Management plans and Procedures that are implemented to ensure onsite works are consistent with relevant regulatory approvals and legislation. **Table 19** outlined key EMS documents and environmental outcomes/conditions applicable to this NVCP.

Table 19: Environmental Management Plans

Document Number	Document Name
MRL-PD-PRO-0001	Land Activity Permit (LAP) & Clearing Procedure
MRL-EN-PRO-0001	Fauna Management Procedure
MRL-EN-PRO-0003	Surface Water Management Procedure
MRL-TS-WIN-0006	Clearing Work Instruction
MRL-EN-PRO-0007	Weed Hygiene and Control
MRL-EN-PRO-0009	Land Rehabilitation Procedure

Mitigation measures employed are intended to avoid impacts as a first instance and include the following measures:

- Where practicable avoid clearing of riparian vegetation. Where a watercourse or drainage line cannot be avoided, existing surface flow will be maintained, or reinstated downstream into natural drainage lines (retaining the existing catchment volumes).
- The original clearing permit area and footprint has been revised to include areas that have been historically cleared.

In considering measures to minimise impacts to any potential environmental factors, the projects conceptual footprint has been revised to avoid drainage lines (where possible).

Land Activity Permit and Clearing Procedure

Strategies to avoid, minimise and manage environmental impacts have been built into the projects Land Activity Permit (LAP) and Clearing Procedure/process. The LAP is a permit completed specific to each task being undertaken onsite, to ensure relevant environmental, heritage, traditional owner, land access and rehabilitation obligations are understood, complied with and that the risks are effectively managed. All clearing will be carried out in accordance with the internal procedure, requiring an approved LAP from key internal stakeholders prior to any clearing being undertaken.

Specific conditions are placed on the LAP to ensure the operational team understand compliance and EMS requirements associated with the tasks, outlining specific limitations or requirements. The following management actions will be implemented as part of the LAP to minimise and manage land disturbance impacts:

- Prior to clearing, an internal LAP will be completed and signed off by the Environment, Land Access, Heritage and Native Title internal departments.
- The LAP will identify any additional conditions that apply to the clearing area (including any protected areas/species to be avoided where practicable and applicable).
- The areas to be cleared must be clearly delineated on figures. In the field, the boundaries of the area to be cleared must be clearly demarcated using stakes and flagging, or other suitable method delineating the clearing area will be walked and marked with survey pegs and flagging tape to ensure only the surveyed area is cleared.
- All vehicles, plant and equipment are restricted to within the clearing limits. Environmental awareness training is completed by personnel involved in the clearing activities (including identification of flora and fauna within the area where relevant).
- No burning of vegetation will occur on site.

- All cleared vegetation will be stockpiled for later reuse as part of rehabilitation activities.

These procedures also outline the recovery of soil and subsoil resources for the purposes of stockpiling for progressive rehabilitation activities onsite. A minimum depth of 100 mm soil recovery is required across all disturbance footprints with the expectation that, where possible, deeper soil resources including subsoils (assumed to be between 100 – 300 mm) will be recovered.

Cultural Heritage Controls

All identified heritage sites are managed and protected in compliance with the *Aboriginal Heritage Act 1972* with strict internal procedures and processes in place. Measures implemented to reduce the impacts to Aboriginal Heritage sites include, but are not limited to:

- Avoidance of known heritage sites.
- Internal reviews and approvals (LAP) prior to any new disturbance.
- Cultural awareness training and inclusion into site inductions.
- Demarcation of heritage sites in proximity to operation areas (where relevant).
- Investigation of any authorised tracks of disturbance.
- Ongoing engagement and heritage surveys.

Surface Water Management

The purpose of Surface Water Management Procedure is to provide a framework management of surface water to prevent adverse impacts to surface water resources, either by contamination (including sediment and hydrocarbon/ chemical contamination), controlled or uncontrolled discharges (including stormwater) or disturbance to natural drainage flows. Surface water resources include permanent or ephemeral drainage lines, rivers, creeks, lakes, wetlands, and salt lakes.

Waste Management

The purpose of the Waste Management Procedure is to provide a framework for the management of waste in order to prevent unnecessary and unacceptable detrimental impacts to the environment, and covers landfill management, tyre management and disposal, controlled waste management as outlined in the Environmental Protection (Controlled Waste) Regulations 2004, and recycling. The following management actions will be implemented:

- Ensure waste management onsite is consistent with approvals and legislation (for example the Part V Operational Licence L8830).
- Outline waste types onsite and approved disposal methods.
- Ensure departments have adequate bin types and resources with lids to reduce windblown waste and fauna interactions.

Waste Management

Lithco will aim to ensure that no new species of weed (including both declared weeds and environmental weeds) are introduced into the project area and that the cover of weeds in adjacent undisturbed areas does not exceed the weed cover present prior to commencement of the project. The Weed Hygiene and Control Procedures allows for:

- Framework for managing invasive flora species (weeds) at the Project to prevent the introduction of weeds and/or the spread of weeds onsite. Includes annual weed surveys and control activities.
- Process for ensuring ground engaging equipment and heavy vehicles are decontaminated of any weeds, soil and/or organic matter prior to exiting/entering site.

The following management actions will be implemented to minimise the risk of introduced flora within the Project area:

- All employees and contractors are required to participate in the site induction, which will provide an awareness of weeds, including risk species, and an overview of the weed hygiene process.

- Ensuring any vehicles or earthmoving equipment leaving a mine is cleaned down so that it is free of vegetation or dirt, and, following an inspection, a Weed Hygiene Certificate (WHC) is issued. all vehicles and equipment will be cleaned before mobilisation to the proposed Purpose Permit Area, to remove all dirt and vegetative materials.

Waste Management

Ensuring that hydrocarbon and chemical storage, transport, use, and disposal is compliant with relevant approvals and relevant legislation.

- Correct segregation of hydrocarbons and chemicals.
- Adequate bunding available for hydrocarbon and chemical containers and tanks.
- Details for correct spill response and disposal of contaminated materials.

Other Site Controls

Mine planning and maintenance schedules ensure that all mobile and fixed plant and equipment onsite is regularly serviced, and any potential issues are immediately escalated and repaired. This ensures the necessary controls for noise, vibration and dust are operational and minimising emissions from the Project.

Controls in place to reduce the potential for bushfires from operational activities such as Permits and controls for Hot Works and designated smoking areas. An Emergency Response Team is also onsite and regularly training to respond to potential fires.

Traffic Management Plan and access controls (such as witches' hats and positive communications) to ensure only approved tracks and areas are accessed by onsite staff. The Traffic Management Plan will also designate speed limits to reduce dust generation and potential fauna hits, as well as restrict personnel and vehicle access to mine areas.

8. ASSESSMENT AGAINST TEN CLEARING PRINCIPLES

An assessment has been completed against the Ten Clearing Principles in accordance with Schedule 5 of the EP Act, to determine if there is a likely significant environmental impact as a result of the clearing native vegetation for the purposes of this project, within the proposed application area.

Each principle was assessed in accordance with Department of Environmental Regulation's (DER) "*A Guide to the Assessment of Applications to Clear Native Vegetation*" (DWER, 2014).

In summary, the proposed clearing is not likely to be or at variance to Clearing Principles (A) to (J), as referenced in **Table 20** below.

Table 20: Identified Impacts against Clearing Principles

Clearing Principle	Impact Category	Assessment of Clearing Principle
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity	Vegetation across the Bald Hill Project area and the proposed NVCP footprint does not have a high biological diversity and majority is in a degraded condition due to the long term and ongoing presence of grazing livestock. • There are no ESAs or DBCA managed lands within the NVCP area or in close proximity to the Bald Hill project. • No TECs or PECs identified within the NVCP area. • No declared rare flora has been identified within the proposed NVCP area. • No Groundwater Dependent Vegetation (GDV) or riparian vegetation occur within the NVCP area. • The identified vegetation units do not represent State or Commonwealth listed significant vegetation and mostly in a "Good" to "Degraded" condition. • The identified vegetation and flora are typical and well represented within the area. • The fauna assemblages are unlikely to be considered diverse, as supported by the surveys within the proposed NVCP footprint. • No significant impacts are anticipated on conservation significant species. • *Carthamus lanatus, Oncosiphon suffruticosum, Ricinus communis* and *Salvia verbenaca* weed species were identified within the survey area and is not considered to be a significant threat to biodiversity in the area. • No significant water courses or Wetlands of Conservation significance are located within the proposed NVCP area.	**Not likely to be or not at variance**
(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	Vegetation in the vicinity of the Bald Hill project does not comprise the whole or part of any significant habitat for native fauna. • The identified vegetation and flora are typical and well represented within the area. • The fauna assemblages are unlikely to be considered diverse.	**Not likely to be or not at variance**
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No rare or otherwise conservation significant flora has been located within the project area or survey areas. A number of conservation significant flora are known to inhabit the surrounding region; however, they are not considered likely to be present	**Not likely to be or not at variance**

Clearing Principle	Impact Category	Assessment of Clearing Principle
	in the project area due to the site's high level of historic disturbance and grazing activity. No declared rare flora has been identified within the proposed NVCP area or compiled study areas.	
d) Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a threatened ecological community.	Vegetation within the vicinity of the Bald Hill Project does not comprise the whole, or part of, or is it necessary, for the maintenance of a threatened ecological community. There are no recognised ecological communities in the vicinity of the project. The identified Vegetation units do not represent State or Commonwealth listed significant vegetation.	**Not likely to be or not at variance**
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	No vegetation within the NVCP area has been identified as having significance as remnant vegetation. Vegetation in the NVCP area and broader survey area has been extensively impacted by intensive grazing and is generally in a degraded condition. There are small clusters of mature Eucalypt trees (various common species) in the project area which will be retained, where practical to do so.	**Not likely to be or not a variance**
(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	An ephemeral creek/ drainage line runs in a north to south direction along the western side of M15/400, extending into M15/1840 in the south. It is thought this creek has developed as a result of long-term erosion of a historic track. It does not support riparian vegetation within the tenement area. There is no intent to impact the creek line during the implementation of the proposed NVCP footprint. One creek line is present on the eastern extent of tenement M15/1851, at least 45 m from the proposed NVCP footprint. Another creek line is present through the west of M15/1840, at least 10 m from the NVCP area. As stated within the previous NVCP application for instrument CPS9563/1, the drainage lines within the project area are poorly defined and are only likely to flow following major rainfall events. No distinctive vegetation growing in association with a watercourse was observed during surveys conducted at the project by either Ecotec (2017) or Ecologia (2017). Drainage lines within the footprint are mapped for reference and will be avoided by the proposed clearing footprint. There are no wetlands present in the project area. The Lake Cowan Salt Lake system is located approximately 2 km south of the project. This will not be directly impacted, and management practices (Section 7) are in place to ensure indirect impacts are prevented.	**Not likely to be or not a variance**
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Clearing of vegetation in the area to be developed is not expected to result in future degradation of the surrounding landscape. Surface water management structures will be established to prevent erosion resulting from runoff and general surface water flows, including sediment basins and diversion drains/bunds in general accordance with BG&ER (2024) Surface Water Assessment management recommendations for the Project. Management strategies are in place to minimise the potential for saline water impact to surrounding vegetation.	**Not likely to be or not a variance**
(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	A desktop search has determined that there are no conservation areas within the vicinity of the Bald Hill project, with no DBCA managed lands within 46 km of the project area.	**Not likely to be or not a variance**

Clearing Principle	Impact Category	Assessment of Clearing Principle
(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	The areas to be cleared as part of the NVCP are located at a higher elevation to the mine site footprint, whereby surface water will not drain into the surrounding environment. Surface water management structures have been and will be established to capture runoff from the project area to minimise the potential for contamination of surface water and reduce the outputs to the receiving environment of Lake Cowan to the south. Monitoring of groundwater for contamination resulting from the operation is required under existing DWER licence L8830.	**Not likely to be or not a variance**
(j). Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	The proposed NVCP area is located on a slight elevation in the broader landscape and therefore likely will not be prone to flooding. Clearing of vegetation from the area is not expected to alter this, due to the existing condition of heavily grazed vegetation in the area.	**Not likely to be or not a variance**

Red – Likely to be at variance, Orange – May be at variance, Green – Not likely to be or not at variance

9. REFERENCES

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MINERAL RESOURCES

APPENDIX A
PROOF OF OWNERSHIP

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APPENDIX B
EPBC PROTECTED MATTERS REPORT (2024)

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APPENDIX C
SURFACE WATER ASSESSMENT (BG&ER, 2024)

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APPENDIX D

ECOTEC (2017) FLORA AND VEGETATION ASSESSMENT OF THE BALD HILL PROJECT EXPANSION AREAS

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APPENDIX E

ECOLOGIA (2017) RECONNAISSANCE FLORA AND VEGETATION ASSESSMENT

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APPENDIX F
BIOSTAT (2017) FAUNA RISK ASSESSMENT

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APPENDIX G

ECOTEC (2018) RECONNAISSANCE FLORA, VEGETATION AND FAUNA HABITAT SURVEY

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APPENDIX H

TERRESTRIAL ECOSYSTEMS (2022) BASIC VERTEBRATE FAUNA SURVEY AND RISK ASSESSMENT

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