ORABANDA MINING

Papertalk Borefield Native Vegetation Clearing Purpose Permit Application

December 2025

PROJECT OWNER & Tenement Holder	Ora Banda Mining Limited PO Box 1868 SUBIACO WA 6904 ABN: 97 097 650 194	Carnegie Gold Pty Ltd Level 2, 1 Hood Street SUBIACO WA 6008 ACN:097 650 194
CONTACT DETAILS	Perth Office: Phone:+61 (0)8 6365 4548 Email: admin@obmltd.com.au Andrew Czerw – Chief Development Officer	
COMMODITY	Gold	
PROJECT DESCRIPTION	The Papertalk Borefield, located on L30/37 and L30/86 is the primary low salinity water source for the Davyhurst Gold Operations (**DGO**) following its treatment through the Gold Plant RO Unit. The Borefield is situated 6km north east of the Davyhurst Processing Plant and has recently received Mining Act Approval to extend the borefield to the east on L30/86 (MP Reg Id 129645). The DGO is located 120 km northwest of Kalgoorlie and 52 km southwest of Menzies, Western Australia, within the Ularring District of the North Coolgardie Mineral Field. The Papertalk tenure is situated within the ex-Credo Pastoral Lease now managed by DBCA for conservation purposes, it has been extensively disturbed by a combination of pastoral and mining activities for over 100 years. The Papertalk Borefield comprises of 4 low salinity production bores that feed the Davyhurst Processing Plant RO Unit for potable water distribution to the Processing Plant, Administration Offices and Camp Facilities under Groundwater Licence 106474(7). Recent Small Operations Mining Proposal Reg Id 129645 approved an extension of this borefield to the east on L30/86. The extension requires an additional 4ha of disturbance to construct the required production bore, bunded pipeline and access track. Recent flora surveys did not identify any threatened or priority flora species or preferred habitat for threatened and priority fauna species that have the potential to occur in this area (JBBC, 2025).	
THIS CLEARING PERMIT (PURPOSE) APPLICATION	Following receipt of advice from DMPE dated 17 February 2026 that the clearing application for the extension of the Papertalk Borefield does not satisfy Referral criteria (11399/1, OBM have submitted a written request that the Referral be treated as a Clearing (Purpose) Application. Clearing for this Purpose Permit Application will use mechanical methods and will commence following receipt of the CPS approval. Native vegetation removed to facilitate construction activities will be stockpiled for area rehabilitation at closure.	
RELEVANT TENEMENTS	Papertalk Borefield L30/86	
DISTRIBUTION	Department of Mines, Petroleum and Energy (DMPE) Native Vegetation Assessment Branch – Perth Digital Copy and Ora Banda Mining Ltd – Perth Corporate Library	
AUTHORIZED FOR SUBMISSION	Andrew Czerw Chief Development Officer Date: 24.02.2026	

Contents

1.0 Introduction

1.1 Project Background

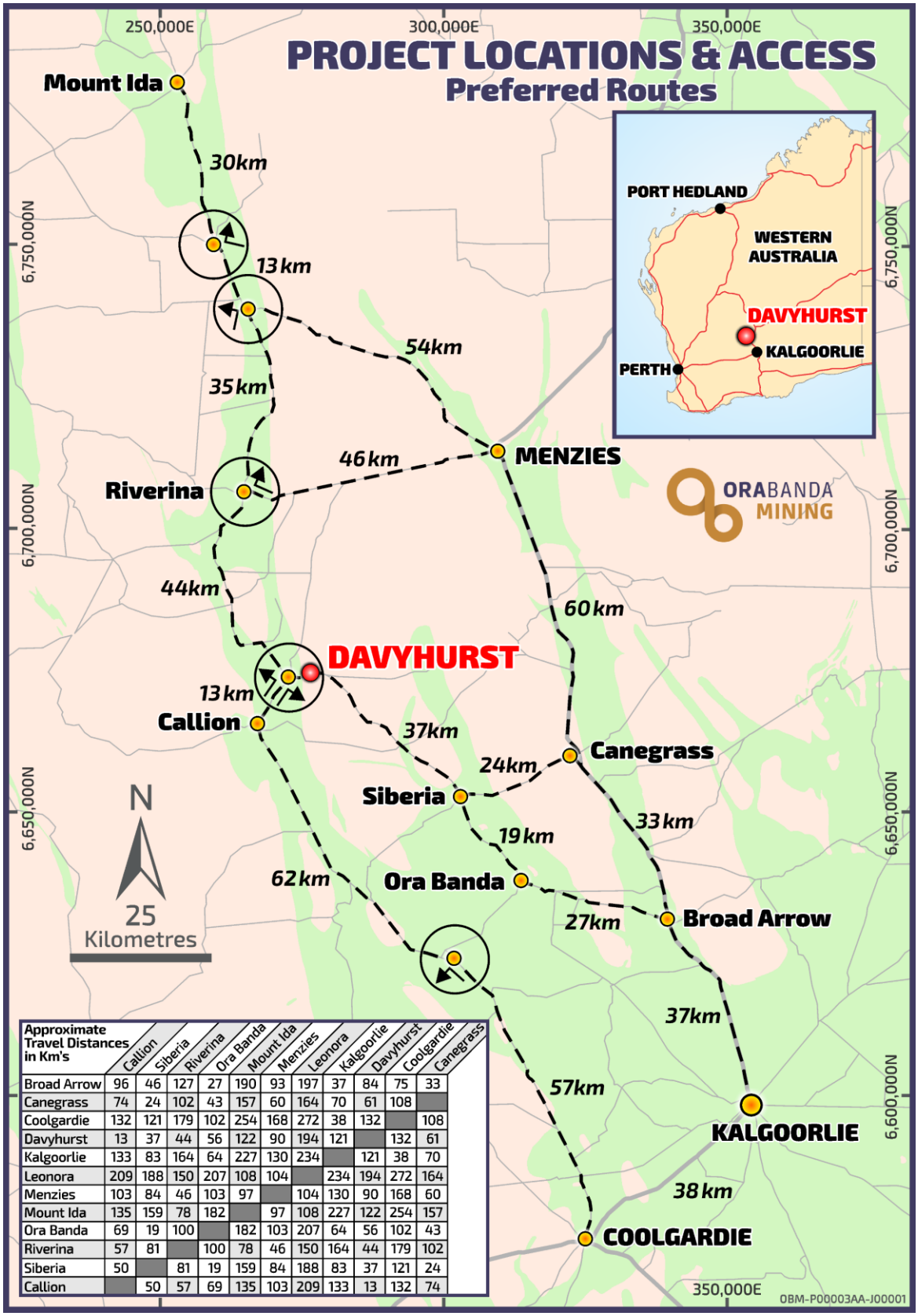
The Papertalk Borefield established in 1996 is situated approximately 6km north east of the Davyhurst Processing Hub which forms part of the broader Ora Banda Mining (OBM, Company) Mining Operations and is the Processing and Administration hub for the current satellite underground operations. Davyhurst is located 120 km northwest of Kalgoorlie and 52 km southwest of Menzies with the North Coolgardie Mineral Field (Figure 1).

The Davyhurst Project includes a number of historic and more recent open cuts, underground mines and processing operations. The Processing and Administration hub for the Project is located with the historic Davyhurst Town Common (R12202) and comprises the Davyhurst Village, Processing Plant, Administration Offices, Power Station and Inpit and Paddock Style TSF (inactive). The completed Open Pits and underground mines are currently in Care and Maintenance. The Papertalk Borefield is situated adjacent to the Town Common, on Unallocated Crown Land (UCL) ex-Credo Pastoral Lease now managed by DBCA.

Ore treatment recommenced at the Project in 2020 following refurbishment of the Processing Plant and the Papertalk Borefield has remained active throughout this period in order to supply the Project potable water. The current life of mine (LOM) is defined as 5 years, although the area is considered highly prospective and further exploration is likely to identify additional resources.

Current Status

The Davyhurst Project is currently undergoing a period of expansion, with two operational satellite underground mines and positive exploration results likely supporting further underground and open pit opportunities in the near future, requiring an expansion of the existing Potable Water Supply Borefield to support the Davyhurst Processing Hub. Minimal clearing of native vegetation for borefield expansion is required on L30/86 and is shown on Figure 2.



Approximate Travel Distances in Km's	Callion	Siberia	Riverina	Ora Banda	Mount Ida	Menzies	Leonora	Kalgoorlie	Davyhurst	Coolgardie	Canegrass
Broad Arrow	96	46	127	27	190	93	197	37	84	75	33
Canegrass	74	24	102	43	157	60	164	70	61	108	
Coolgardie	132	121	179	102	254	168	272	38	132		108
Davyhurst	13	37	44	56	122	90	194	121		132	61
Kalgoorlie	133	83	164	64	227	130	234		121	38	70
Leonora	209	188	150	207	108	104		234	194	272	164
Menzies	103	84	46	103	97		104	130	90	168	60
Mount Ida	135	159	78	182		97	108	227	122	254	157
Ora Banda	69	19	100		182	103	207	64	56	102	43
Riverina	57	81		100	78	46	150	164	44	179	102
Siberia	50		81	19	159	84	188	83	37	121	24
Callion		50	57	69	135	103	209	133	13	132	74

Figure 1: Davyhurst Gold Project Location Plan

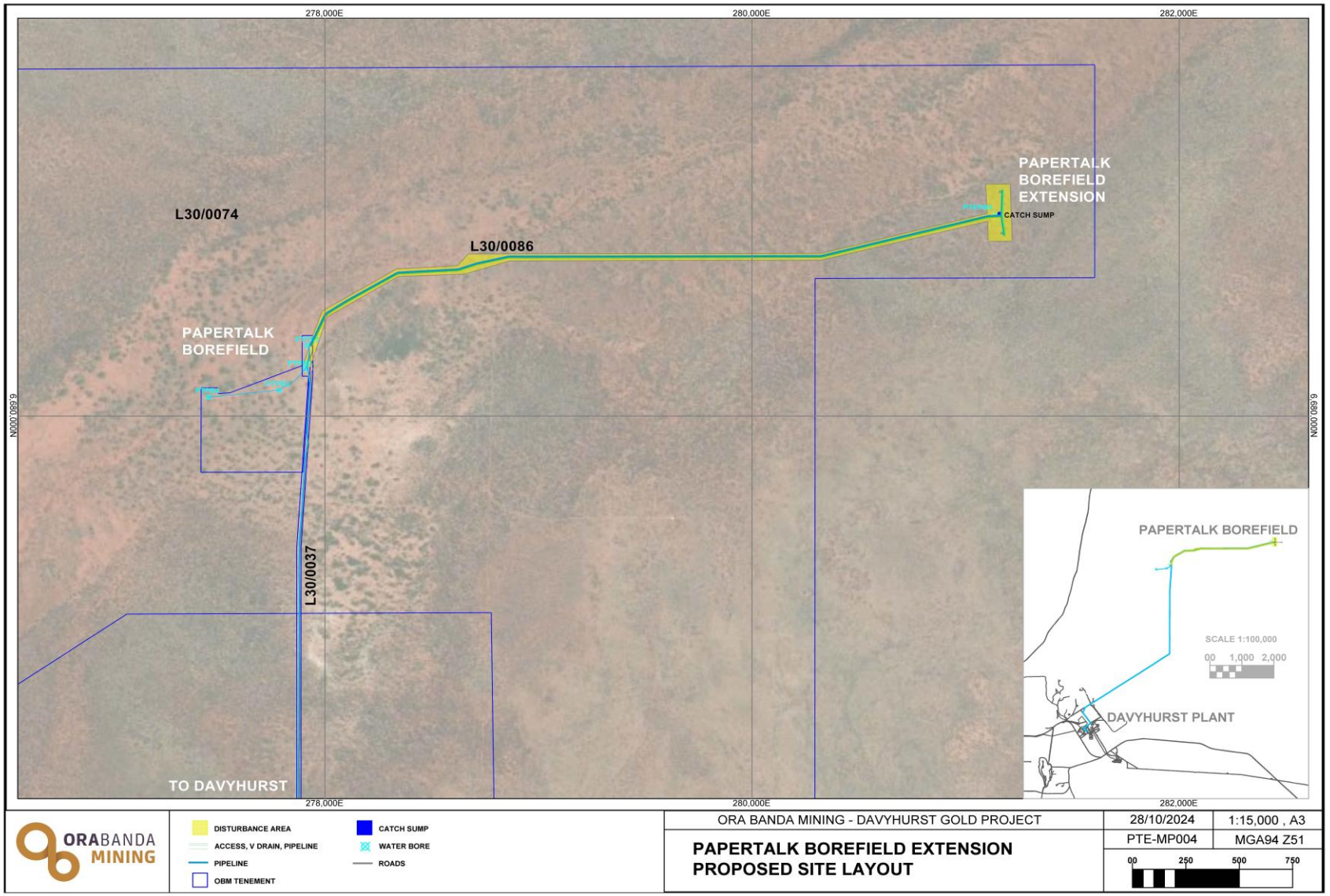


Figure 2: Papertalk Borefield Extension Clearing Permit Application Plan

Table 1: Summary of Papertalk Borefield Approvals

Approval	Department	Current Status
Mining Tenure	DMPE	Tenement conditions associated with L30/86. Tenement is owned by Carnegie Gold Pty Ltd, a wholly owned subsidiary of Ora Banda Mining Ltd, and is in good standing
Development Approval	DMPE	MP Reg Id 129645 in force, Papertalk Borefield Extension
Impact on Threatened Flora, Fauna and Ecological Communities	DBCA	No threatened flora or ecological communities reported in past or recent mine site surveys - Borger (2025), and targeted survey identified no threatened fauna at risk – Biostat (2020), Woolard (2025). The clearing represents an additional 0.01% of the Bunyip Land System (486km² in Waddell PA and Galloway PD (2023).
Heritage	DPLH	No Aboriginal or European registered heritage sites are recorded on the respective ACHIS or Inherit Databases for the Project Area on L30/86, recent heritage surveys undertaken by Marlinyu Ghoorlie did not identify any heritage sites that require management.
Clearing Permits and Authorizations	DMPE	Davyhurst Mine sites and surrounds are extensively disturbed. The proposed 4ha clearing application and internal risk assessment did not identify any medium to high-risk issues that cannot be managed by adopting existing site risk control hierarchies.
Groundwater Well Licences	DWER	5C Licence GWL 106474 (7) in force for dust suppression, mining and Mineral Ore Processing use and camp water supply.

2.0 This Proposal

This Purpose Permit Application seeks approval for the removal by mechanical means of vegetation up to 4ha from L30/86 to allow for the expansion of the existing Papertalk Borefield. OBM believes based on field studies that this clearing application is related to activities with very low environmental impacts.

This programme will result in clearing of native vegetation by mechanical means, with recovered vegetation tracked rolled and stockpiled in secure locations for later rehabilitation use. Topsoil and rootstock will be recovered and managed in accordance with OBM's Management Procedures, which are outlined in Section 4. Clearing, if approved, is scheduled to commence in Q1 of FY2026, with staged clearing commencing following receipt of approval. A mine life of 5 years is anticipated, although this is likely to be extended due to the high prospectivity of the adjacent tenure.

2.1 Location and Ownership

The proposed clearing is located on L30/86 within the Shire of Menzies Local Government area within the ex-Credo pastoral lease UCL now managed by DBCA. The mining tenure is owned by

Carnegie Gold Pty Ltd, a wholly owned subsidiary of Ora Banda Mining Limited. Carnegie Gold Pty Ltd is the proponent for this Purpose Permit Application.

3.0 Existing Environment

The Davyhurst district is dominated by granite-greenstone terrains of the Yilgarn Craton, which consists of a series of low ranges separated by flat plains derived from colluvium and alluvium deposition. According to the Interim Biogeographic Regionalization of Australia (IBRA), the Project is located north of the boundary between the Murchison Bioregion (Eastern Murchison sub-region) and the Coolgardie Bioregion (Eastern Goldfields sub-region). The Davyhurst site geology comprises a package of metamorphosed mafic and ultramafic rocks, which lies between the Ida and Ballard faults (Siraz, 2008). There are low isolated greenstone stony rises present within the central and western area of the Project and substantial areas intruded by granites.

3.1 Climate

The climate is typical of the south Murchison Area and is characterised by a Semi-desert Mediterranean climate. Dry weather occurs for 9 to 11 months of the year, summers are hot and dry, and winters are mild and wet with unpredictable rainfall. With the prevailing winds ranging east-south easterly, the air has a lengthy passage overland and therefore produces little rain. The presence of summer low pressure systems over the interior, commonly referred to as heat lows, produces intense hot, dry conditions (Payne et. al 1998).

Rainfall

Rainfall is both irregular and highly variable across the district. The mean annual rainfall over a 86-year period (1939 – 2025) for Kalgoorlie Boulder Aero (BOM Station 12038) is 264.7mm, with the wettest months, January to July. Rainfall is also received from degenerating tropical lows during the summer months.

Temperature

Temperatures are generally hot in summer with the Mean daily maximum temperature for Kalgoorlie recorded as 32.6ºC during the period of December through to February, and cool in the winter with the mean for June to August ranging from 5.1ºC to 18.8ºC. (BOM, 2025).

3.2 Landforms and Soils

Papertalk is located 6 km northeast of the Davyhurst mining operation near the historic townsite of Davyhurst. Papertalk Borefield is located just to the south of Papertalk Brook, which is a minor ephemeral drainage line flowing to the east towards Lake Goongarrie. The site is located within the boundaries of the ex-pastoral lease Credo Station which is now managed by the Department of Biodiversity, Conservation and Attractions (DBCA) for the purpose of conservation. Despite DBCA post purchase management initiatives, the area is still subject to grazing by domestic animals (cattle) and feral animals including donkeys, camels and rabbits.

Papertalk is located in the Eastern Murchison sub-IBRA region (MUR1) near the boundary with Eastern Goldfield sub-IBRA region (Coolgardie COO3). Groundwater Dependent Ecosystem mapping (Bureau of Meteorology (BoM)) places the site close to an area mapped as Unclassified Potential

GDE. In general terms the landscape is characterized by incised low hills to the west and broad valleys and washout areas alongside broad ephemeral drainage lines and salinas in the east.

Bunyip Land System

This Land System is characterized as alluvial tracts, commonly with gilgai, draining greenstone and granite hills, supporting mixed halophytic shrublands occupationally with a black oak or eucalyptus overstory. The Papertalk Borefield resource is located within bedrock aquifers associated with the granite boundary, not part of the in bed alluvial system of the Papertalk Brook. Vegetation is described as abundant woody herbs and perennial grasses on gilgai; scattered to moderately close mixed low halophytic shrubland (PXHS) or dominated by Maireana pyramidata (sago bush) (PSAS) or M. sedifolia (CPBS), both with Atriplex vesicaria (bladder saltbush) when in good condition, occasionally with very scattered C. pauper or A. aneura (CPBS) or Eucalyptus salmonophloia (salmon gum) or E. salubris (gimlet) overstorey (Waddell and Galloway, 2023).

Soils

The dominant soils in this area include hard cracking clay on plains remote from gilgai. Self mulching cracking clay in gilgai mounds and depressions.

3.3 Water Resources

Water resources in the Davyhurst District can be described in terms of temporary ephemeral surface waters on playa surfaces and deeper groundwaters (>50m) located in fractured rock aquifers of varying quality and salinity. Permanent natural water storages are not present in the Davyhurst District and surface water cannot be considered as a locally exploitable water resource.

Groundwater

The Project area lies within the Kalgoorlie Hydrogeological Series (SH51-9) 1:250,000 scale map sheet. The major aquifers in the region are present in (a) palaeo drainages and near surface creek alluvials, and (b) within low yielding fractured rock aquifers present in deeper structural positions. Regional groundwaters are typically saline to hypersaline. The Papertalk bores are situated close to the western margin of the Siberia Monzogranite in a fractured bedrock “grit” aquifer where the bedrock has been sheared or faulted. High rates of recharge to the bedrock aquifers are likely to occur along the outer margin of the granite batholith and drainage pathways which lead to the replenishing and refreshening of the groundwater in the bedrock aquifer (Rockwater 2025). Static water levels in the Papertalk bores are typically 35-36m deep. Alluvial aquifers in creek drainages such as Papertalk Brook are shallow, unconfined, transient and unreliable and are not the aquifer that is part of the Papertalk borefield.

Water Quality

Mine site sampling during operations and a recent review by Rockwater (2025) described the groundwaters associated with mines and borefields in the Davyhurst hub as predominantly saline ranging from 40,000 to 45,000mg/L TDS for fracture rock groundwaters. Whereas the granite associated aquifers such as Papertalk typically record a TDS range of 7,000-14,000 mg/L. The latter typically have low metals and nitrate concentrations.

Surface Drainage

The Papertalk Borefield occurs near the western margin of the Davyhurst Catchment, which lies in the headwaters of the Rebecca Drainage Basin. The catchment is bounded to the west by a strike ridge of greenstone rocks. This ridge attains an elevation of about 500m AHD which is about 70m

higher than the existing Papertalk Bores. Drainage within the project region is poorly integrated and ephemeral due to the low relief of the landscape, the hot dry climate and high evaporation.

Potential Impacts

Land management assessment for the Bunyip Land System highlight that Narrow Drainage Tracts and Alluvial Plain terrain units are susceptible to water erosion where perennial shrub cover is substantially reduced (Pringle et. al., 1994, Waddell PA and Galloway PD, 2023), or the soil mantle surface is extensively disturbed. While both of these activities will occur as part of the expansion of support infrastructure, management practices can substantially reduce the risks of environmental harm and can remediate impacts to drainage that have occurred as a part of past activities.

The primary objective is to minimize soil erosion and dust generation and the export of material into ephemeral drainage lines and onto verge vegetation. The following strategies will be implemented to achieve the clearing and rehabilitation objectives:

- Identify areas during pedestrian route traverse of major erosion hazard zones and avoid disturbance of these areas wherever possible;
- Provide environmental supervision and co-ordination of work teams during clearing and topsoil recovery;
- Minimise ground disturbance and restrict clearing to designated areas;
- Schedule any ephemeral creek-crossing construction activities to coincide with no creek flow periods, where practicable;
- Return stripped topsoil and rootstock to the original horizon to promote rapid revegetation and surface stabilisation;
- Keep topsoil stockpiles out of inappropriate areas such as watercourses and areas subject to wetting by poorer quality waters;
- Control access and prevent vehicular movements over topsoil stockpiles;
- Rehabilitate progressively where required and re-spread cleared vegetation selectively to create habitats;
- Reform access roads to similar pre-construction surface conditions, and
- Install erosion control structures along roads and areas of high erosion risk.

The following strategies will be implemented to achieve dust minimisation:

- Minimise clearing and avoid unnecessary machinery movements,
- Rehabilitate and/or stabilise disturbed surfaces as soon as possible, and
- Damp down with water of suitable quality from water trucks as necessary.

Historical evidence from pastoral, exploration and mining activities in the Davyhurst area from the 1960's to the present day, suggests that impacts to offsite drainage systems or water quality have probably occurred to varying degrees. Proposed management control arrangements during clearing will keep impacts to an acceptable level.

3.4 Flora and Fauna

Recent flora surveys have been completed in the Davyhurst Hub environs (JBBC 2016, 2019, 2025) which cover the same vegetation communities as present within the proposed Davyhurst

Processing and administration expansion Projects. Shepherdson Environmental Services completed a flora and vegetation survey of the Golden Eagle Project in 2000 for Croesus Mining and reported the results in *Notice of Intent Reg Id 3584.* Surveys report that vegetation in and around the survey area is highly disturbed, with much of the natural vegetation, particularly the mid storey shrubs, having been removed.
The Davyhurst Project Tenements lie within the Austin Botanical District of the Eremaean Botanical Province (Beard 1976) and in the Murchison IBRA bioregion in the Eastern Murchison (MUR01) IBRA sub-region (Thackway and Creswell 1995). This IBRA sub region comprises the northern parts of the Yilgarn Craton and is characterized by extensive areas of elevated red sandplains with internal drainage, Salt Lake systems and broad plains of red-brown soils and breakaways. Minor areas of granite/ gneiss/ greenstone rock outcrop in the survey area. Vegetation is dominated by mulga (*Acacia aneura* complex) woodlands and is often rich in ephemerals, hummock grasslands (*Triodia* spp.), saltbush shrublands and *Halosarcia* (*Tecticornia*) shrublands.

Flora

Jenny Borger Botanical Consulting (JBBC) completed a flora and vegetation survey of the Papertalk Borefield Extension in January 2025. The ESA and vegetation mapping is shown on Figure 3 for the recent 2025 survey. The study area reported a total of 44 native taxa from 18 families and 29 genera. The majority of taxa were recorded within Fabaceae (8), Cheopodiaceae (6 taxa) Scrophulariaceae (4 taxa), (JBBC, 2025). Seven vegetation communities were described and mapped. Groundwater dependent ecosystems were also assessed within the proposed borefield expansion footprint with no vegetation that would be associated with long term wetter conditions such as denser stands of *Melaleuca* or riparian *Eucalyptus* (e.g. *E. camaldulensis* subsp. *obtusa*) or plants associated with wetlands (e.g. *Duma florulenta*) identified.

No vegetation representative of priority or threatened ecological communities was described for the Davyhurst Environmental Survey Area (ESA). No Priority or weed species were recorded in the survey area.

The condition of the vegetation varied from degraded to very good with the majority of the surveyed vegetation rating good to very good. Multiple impacts were observed, and include historic and current mining impacts, and evidence of feral animal grazing impacts (JBBC, 2025).

No Threatened Ecological Communities as defined by the DBCA and the *EPBC Act (1999)* were recorded within the survey area. No Priority Ecological Community as listed by the DBCA was recorded within survey area and current desktop and field survey evidence, suggests no floral habitat of regional significance will be permanently impacted by the proposed clearing activities.

Recommendations in respect to the management of weed spread, minimisation of disturbance to natural runoff flow patterns, and confirmation of taxa suitable for use in minesite rehabilitation trials, were identified in the recent field work and these will be incorporated into the Site Environmental Management Plan. Further flora and vegetation information is referenced in *Assessment of potential riparian vegetation in the proposed Papertalk Borefield Extension area and supporting vegetation and flora survey for the potential presence of the Arid Bronze Azure Butterfly and Inland Hairstreak Butterfly - L30/86* in Attachment A.

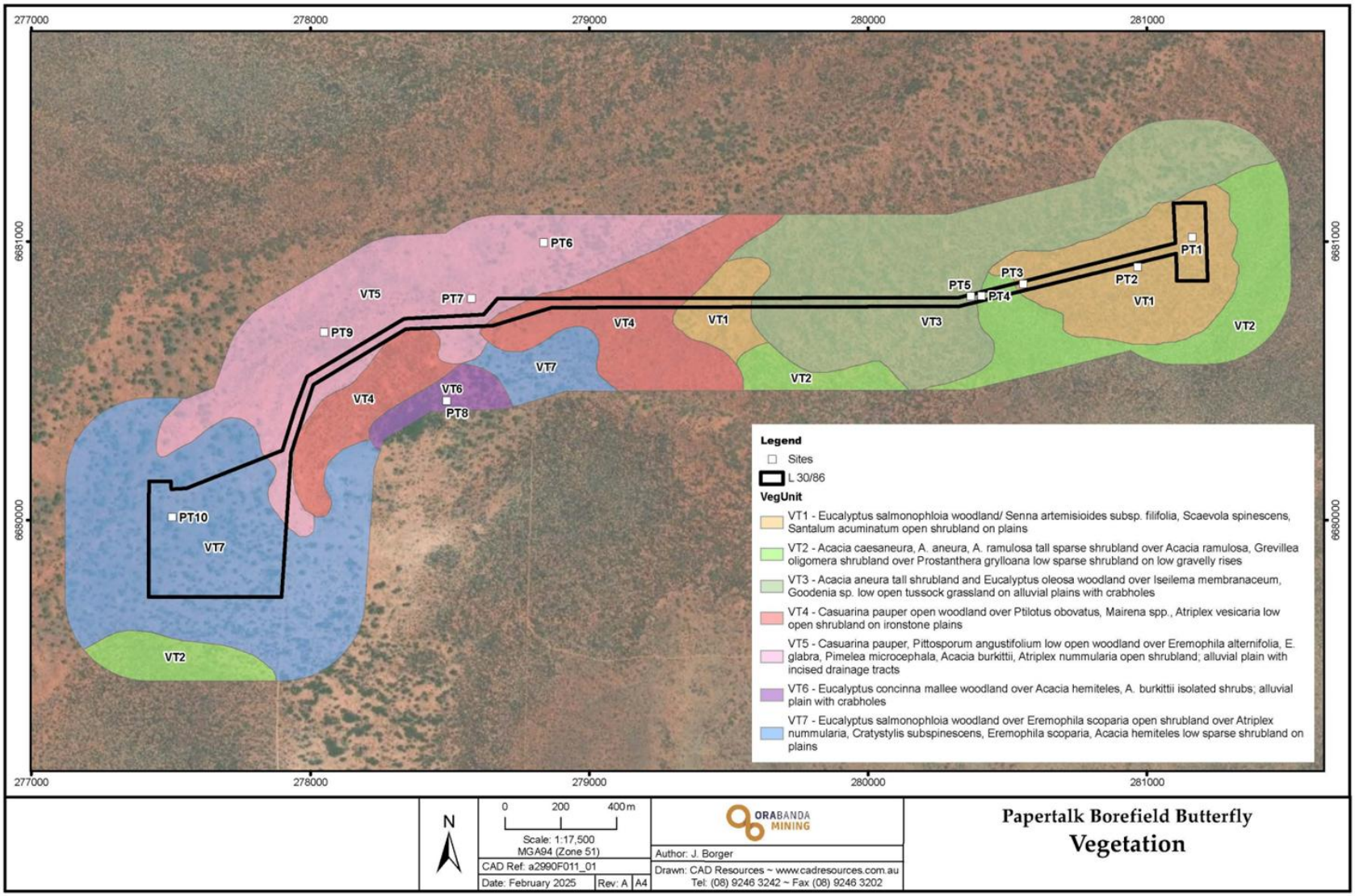


Figure 3: Papertalk Borefield Extension Vegetation Communities

Fauna

Shepherdson Environmental Services was commissioned in 2000 by Croesus Mining to undertake a desktop and field study of the Davyhurst Project area in accordance with the requirements documented in *EPA Guidance Statement No 56 and Position Statement No. 3.* More recently, OBM commissioned BioStat Pty Ltd to undertake desktop and field assessments to support clearing applications in the Davyhurst, Callion, Waihi, Siberia and Riverina mine areas (Biostat 2020).

The focus of this study was to investigate the likelihood of malleefowl *(Leipoa ocellata)* occurring in the planned disturbance envelopes and the habit value of the vegetation delineated for clearing at the respective minesites. In addition, the investigations also required an assessment of residual habitats and their value to other gazetted threatened fauna such as the (Curlew Sandpiper- *Calidris ferruginea*), Night Parrot *(Pezoporus occidentalis),* Princess Parrot *(Polytelis alexandrae)*, the Chuditch *(Dasyurus geoffroii)* and the likelihood of occurrence of other conservationally significance species such in general.

The Biostat assessment found that the remnant vegetation within the areas surveyed was mostly in a fair to degraded condition, with the main vegetation type being described as Eucalypt Woodland tending to Open Woodland in the highly disturbed areas. Due to the high level of mining and pastoral disturbances evident throughout the Project areas, resulting in presence of limited shrub species, factors such as the lack of cover, limitation on food sources and nesting sites will likely place limits on the range of native fauna that could be potentially inhabit the areas.

Malleefowl (*Leipoa occellata*) is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Schedule 3 of the *Western Australian Biodiversity Conservation Act 2016* (BC Act). No active malleefowl mounds have been observed in the highly disturbed Davyhurst Processing Hub environs or during pedestrian searches of the proposed Papertalk Bore pipeline route (WCPL 2025).

Curlew Sandpiper- (*Calidris ferruginea).* Status - Critically Endangered. The Curlew Sandpiper is associated with coastal mudflat areas but can sometimes be observed at inland ephemeral lakes (fresh or saline). No suitable habitat for this species was encountered during the survey.

Night Parrot (*Pezoporus occidentalis*). Status - Endangered. The night parrot has only recently been "rediscovered" in its historical distribution. It prefers areas of large spinifex hummocks in long unburnt grassland habitats – habitats not recorded in the Golden Eagle area. The likelihood of this nomadic species being present in the Davyhurst Hub environs is ranked as low.

Princess Parrot (*Polytelis alexandrae*). Status – Vunerable. This species is restricted to the central arid interior of South Australia, Northern Territory and Western Australia. It is unlikely to be recorded in the development area.

Chuditch (*Dasyurus geoffroii*). Status – Vunerable. Historical records exist from the eastern portion of the Greater Western Woodlands and Goldfields region. Much of the habitats that supported these species in the past has been highly modified or cleared. If they have persisted, the species is likely to be found in very low densities.

Arid Bronze Azure Butterfly *(Ogyris subterrastris petrina).* Status – Critically Endangered. The Arid Bronze Azure Butterfly *(Ogyris subterrastris petrina)* has an obligate association with the light brown variety of Sugar Ant *(Camponotus sp.nr terebans).* DBCA recently released Survey Guidelines for the critical habitat features to determine potential occupancy of the ABAB. These features

include: - (a) vegetation communities of mature Smooth Barked Eucalypts (*Eucalyptus salmonophloia, E. salubris*) mixed woodland over an open understorey, (b) presence of large underground colonies of the host ant, (c) other SBE's to be examined for large basal ant colonies include - *E. loxophleba subsp. lissophloia, E. sheathiana, and E. capillosa subsp. Wandoo, and* (d) the presence of red brown loamy soils.

A survey was completed to determine the presence of the ABAB host ant species, *Camponotus terebrans* . A total of 22 trees were sampled within the 6.59ha corridor that contained the suitable preferred habitat of the ABAB. No presence of large any colonies were identified therefore the likelihood of the ABAB being present in the area is considered low.

Inland Hairstreak *Jalmenus aridus*) is a Priority 1 listed butterfly endemic to Western Australia. Guidance information for surveying for IHB was based on the WA Museum Records (Eastwood et. al. (2023). No DBCA Guidance material was found. *Senna artemisioides* subsp. *filifolia, Acacia tetragonophylla, Eremophila* spp.*, Scaevola spinescens and Maireana spp.* are present within the survey areas; however, the structure of the vegetation does not closely resemble that described by Eastwood et. al. (2023). No signs of the associated ants, *Froggattella kirbii* were observed.

Introduced Animals

A total of seven introduced mammals could potentially occur in the habitats of the Papertalk Project Area; of most concern within the Murchison bioregion are the introduced herbivores; the european rabbit, feral goat, donkey and camel which have the most widespread impact on fauna habitats through grazing and trampling. Feral cats and foxes are present, and these represent a threat to small ground dwelling fauna.

A series of recommendations were provided in the Biostat (2020), Ecotec (2021) and JJBC (2025) reports that will assist in minimising the impact on the habitats of a range of animals during clearing and mining associated operations.

Conservation Significance

The significance of the biota of the Davyhurst area was assessed in three contexts – State, regional and local levels. As no Conservation Significant Flora or fauna taxa or Threatened Ecological Communities have been recorded during past and current field surveys, the proposed extension of the Davyhurst support infrastructure has no significance at a State level. Of the fauna which potentially occur in the area, Biostat (2020) and Ecotec (2021) identified species of conservation significance that regulatory agencies have suggested may have the potential to occur in the Davyhurst area. The Mallee fowl (Leipoa ocellata), Curlew Sandpiper (Calidris ferruginea), Night Parrot (Pezoporus occidentalis), Princess Parrot (Polytelis alexandrae), Arid Bronze Azure Butterfly (Ogyris subterrestris petrina) Inland Hairstreak (Jalmenus aridus) and Chuditch (Dasyurus geoffroii) are Scheduled species under the Western Australian *Biodiversity Conservation Act (2016)* and Regulations (2018)

Of the Scheduled species identified in the desktop study, all are in urgent need of conservation attention and Action Plans, involving a range of conservation activities in conjunction with predator eradication are being managed by the DBCA with some success.

The presence of Schedule 1 terrestrial fauna in the Davyhurst mine area is considered highly unlikely, due to the lack of suitable habitat, a long history of land disturbance from grazing, timber

cutting, mining and processing, permanent night light exposure, continuous 24/7 noise and equipment movements. While inactive, old Malleefowl mounds are recorded east of the Hub, their presence has not been recorded during recent botanical and fauna surveys (JBBC 2016, 2019, 2025) associated with near mines.

The LOM is of short duration (approximately 5 years) and the impact of the clearing on small, regional fauna is expected to be minimal, with the return of many terrestrial species back into disturbed areas after site decommissioning and rehabilitation. Threatening processes identified in the CALM Biodiversity Audit in 2002, include vegetation clearing and fragmentation, grazing pressure, feral animals (goats, foxes and cats), changed fire regimes, weed spread, salinity, mining and poaching bird species. The proposed clearing of 4ha for borefield infrastructure represents disturbance to an additional 0.01% of the Bunyip Land System (covering 486km² in the eastern Goldfields - Waddell PA and Galloway PD (2023). In addition, the Bunyip LS is represented in Goongarrie National Park conservation estate in the Region (Pringle et. al. 1994).

Management Plans to mitigate and manage those processes relevant to mining, have been developed and are being implemented as part of the of current mining activities.

There is no evidence that floral or faunal habitat of regional significance will be significantly impacted by the proposed clearing for Project expansion.

4.0 Measures to avoid and mitigate clearing impacts

Mitigation measure already adopted as part of current planning, which have identified the potential to intersect drainage zones include: (a) pre-disturbance pedestrian surveys and environmental risk assessments to identify avoidance terrain, (b) timely completion of baseline studies to inform planning, (c) promotion of utilization of existing cleared areas, and where feasible, placement of infrastructure in historically degraded mining/pastoral areas, and (d) adopt progressive clearing practices as required for Project development stages.

Planning Controls

Mitigation measure already adopted as part of the current mining operations include: (a) utilisation of existing cleared areas, (b) where feasible, placement of infrastructure in historically degraded mining/pastoral areas, (c) adopt progressive clearing practices as required for Project development stages.

Operational Controls

Operational impacts can be managed through:

a) minimization of disturbance and clearing by clearly defining infrastructure areas, topsoil and tree trash stockpile areas and identification of avoidance areas,
b) monitoring and controlling weed spread,
c) reducing impacts to soils and verge vegetation by using best quality ground water during dust suppression,
d) controlling the clearing process by clearing in a direction towards sparsely vegetated areas, and only clearing areas that will be utilized within 6 months,
e) progressive rehabilitation of redundant disturbed areas during operations.recovery

and stockpiling of vegetation trash for habitat establishment and progressive rehabilitation of mining disturbed areas no longer required for the Project.

f) Undertake monthly inspection of pipeline track and initiate timely erosion control works to minimize road runoff and off formation siltation (MRWA 2010)

Mitigation measure already adopted include:

a) utilisation of existing cleared areas,
b) where feasible, placement of infrastructure in historically degraded mining areas, progressive clearing as required for project development stages, and

recovery and stockpiling of vegetation trash for habitat establishment and progressive rehabilitation of mining disturbed areas.

Table 2: Summary of Findings against the 10 clearing principles

No.	Principle / Assessment
1	**Clearing Principle** *Native vegetation should not be cleared if it comprises a high level of biological diversity.* **Assessment:** Proposal is unlikely to be at variance with this Principle The application area does not contain any conservation significant flora or Priority Ecological Communities (PECs) The species diversity would not be considered high with a total of 44 native taxa from 18 families and 29 genera. Comparing results with other regional surveys there is a deficit of grasses and annual species which is largely a result of pastoral and mining impacts over > 100 years as well as a drier, warmer climate through much of 2024/25. No threatened or priority flora species were recorded.
2	**Clearing Principle** *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.* **Assessment**: Proposal is unlikely to be at variance with this Principle Vegetation communities within the Davyhurst Project area are well represented within the broader region. Any fauna habitat occurring within the survey area is therefore well represented within the wider region. Described habitat for the IHB is present in limited numbers. The main two flora species associated with IHB – *Senna artemisioides* subsp. *filifolia* and *Acacia tetragonophylla* are present; however the populations are sparse, and many of the *Acacia* have been heavily grazed and are present as low shrubs. In respect to ABAB, 22 smooth bark eucalypt species were assessed within the survey area and no large sugar ant (*Camponotus* sp. nr. *terebrans*) colonies were identified. Other conservation significant fauna species potentially present include *Leipoa ocellata* (Malleefowl) listed as Vunerable - Fauna that is rare or is likely to become extinct under Section 19(1) c of the Biodiversity *Conservation Act 2016*. *Leipoa ocellata* is found in semi-arid and arid, mallee and acacia shrublands (Benshemesh 2007) and inactive mounds have been identified in the broader Davyhurst area (Biostat 2020) and could be present in the proposed ESA development areas. Loss and fragmentation of habitat are listed as major threats to this species. Although the proposed clearing area (4 ha)

	comprise some of the described habitat types, pedestrian searches did not identify any evidence of Malleefowl presence. All fauna habitat in the ESA surveyed area has been subject to some degree of mining, township or pastoral disturbance. Clearing of native vegetation within the Davyhurst Project area is therefore not considered to pose a significant threat to the survival of any threatened fauna species
3	**Clearing Principle** *Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.* **Assessment:** Proposal is not at variance with this Principle No threatened flora has been recorded within the proposed Papertalk Borefield extension area.
4	**Clearing Principle** *Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a threatened ecological community.* **Assessment:** Proposal is not at variance with this Principle There were no Threatened or Priority Ecological Communities identified within or adjacent to the Papertalk Borefield expansion areas.
5	**Clearing Principle** *Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.* **Assessment:** Proposal is not at variance with this Principle The application area falls with the Murchison Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 100% of the pre-European vegetation remains (GWA 2018), although this does not take into account passive clearing through pastoral grazing. The area to be cleared is not considered to be significant as a remnant of native vegetation as the surrounding area has not been extensively cleared and the vegetation association within the Bunyip and adjoining Land Systems is well represented outside the Project area.
6	**Clearing Principle** *Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.* **Assessment**: Proposal is not at variance with this Principle Papertalk Brook is a short ephemeral arid land watercourse that dissipates onto a broad wash plain, and under very intense rainfall condition likely overflows into a salina system, located approximately 19km north east of the bore. No permanent natural waterbodies or wetlands occur within the proposed ESA development area and riparian vegetation is not present (JBBC 2025).
7	**Clearing Principle**

	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. **Assessment:** Proposal is not at variance with this Principle Two former Pastoral stations in the district are UCL and are being managed for future inclusion in the Conservation estate: - Ex Goongarrie Station 50km to the east and Ex-Credo Station are being managed as Conservation Parks. The latter contains the Clear and Muddy Lakes Nature Reserve (R7634) and Rowles Lagoon Conservation Park (R4274), approximately 47 km south of the Davyhurst Hub development in an adjoining catchment. The proposed clearing is unlikely to impact on the environmental values of any adjacent or nearby conservation areas.
8	**Clearing Principle** *Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.* **Assessment:** Proposal is not at variance with this Principle The Papertalk Borefield extension area has a high level of recent mining, historic township and pastoral disturbance which has occurred over many decades. The current proposed clearing is to support expansion of the existing borefield infrastructure and covers an area of 4 ha. Included are terrain units which have already been historically disturbed and are not likely to contribute to appreciable new land degradation. Clearing impacts can be managed by staged clearing, retaining vegetation buffers where practical and adopting progressive erosion monitoring and rehabilitation practices. Much of the area is flat to undulating and will pose a low erosion risk. Opportunities to enhance environmental biodiversity values through rehabilitation will be adopted.
9	**Clearing Principle** *Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface and underground water.* **Assessment:** Proposal is not at variance with this Principle Drainage in the area is ephemeral with surface water present for limited times during the year following major storm events. There are no permanent water courses, wetlands or Public Drinking Water Sources Areas in the Application Areas. Limited yield fractured rock aquifers do occur in the Papertalk environment within rocks primarily where tectonic action and weathering has created zones of secondary permeability. Groundwater is typically saline (7,000 – 14,000 mg/L TDS), and have limited beneficial uses if not treated.
10	**Clearing Principle** Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding. **Assessment**: Proposal is not at variance with this Principle Rainfall is typically greatest in winter months within the Eastern Goldfields and surface sheet flow only occurs for short periods after heavy storms or after persistent low intensity rainfall. High temperatures throughout the year generally result in a high evaporation rates and surface ponding of runoff is of limited duration. There are no permanent major watercourses or other surface water features in the Davyhurst Hub area with the potential for flooding, and due to the limited size of the proposed disturbance areas, and the presence of built infrastructure, the incidence or intensity

	of increased flooding is limited. The proposed clearing is unlikely to exacerbate the incidence or intensity of flooding

5.0 Sensitive Environmental Receptors

This section provides details of any sensitive (environmental or social) receptors potentially impacted by the proposed expansion of the Papertalk Borefield.

Heritage, Community and Consultation

Searches of the Shire of Menzies-Local Heritage Survey and Listing (2022) and the Department of Planning, Land and Heritage online Aboriginal Cultural Heritage Inquiry System (ACHIS) - Site Register for the relevant tenure – L30/86 within the Shire of Menzies boundary, have identified no registered heritage sites within the proposed Papertalk Borefield Infrastructure expansion.

Aboriginal Cultural Heritage

The Davyhurst Project is situated within the Marlinyu Ghoorlie Native Title Claimant Group area in which OBM have a Heritage Agreement. As per Section 21 of the Agreement, OBM issued a Heritage Notice 2025/1 to the Claimant Group outlining the proposed expansion activities for the DGO and a portion of the area has had surveys completed (Terra Rosa, July 2025) with no heritage sites identified during the recent survey.

European Cultural Heritage

There are no anticipated impacts on areas of significance to European cultural heritage within the Papertalk Borefield extension Project.

OBM continue to undertake a range of community and regulatory consultation programmes. These include correspondence and presentations to the Department of Biodiversity, Conservation and Attractions, Department of Mines, Petroleum and Energy and the Department of Water and Environmental Regulation. Discussions have also been held with Local government – Shire of Menzies and Local Pastoralists in respect to Shire Road use around the Davyhurst Processing Hub.

Weed Management

Several well-known weed species have shown themselves to be well adapted to colonisation of disturbed ground in the Eastern Goldfields. No noxious weed species were identified during the recent site inspection of the proposed extensions to the Project Development Areas (JBBC 2016, 2019, 2025). Operational management strategies adopted to stop weed spread include:

- Materials (i.e. soil) should not be removed from sites for reuse where weed infestations are evident without prior spraying;
- Require as a Site condition that all earthmoving equipment and vehicles are washed down prior to the initial transport to site and are soil free;
- Existing infestations in the general Project area and stockpiles will be brought to the attention of the Mine Management for action;
- Undertake progressive rehabilitation of disturbed areas, (where feasible) to assist in reducing weed spread by promoting competition from local native species, and;
- Mine personnel are made aware of weed issues through the Site Induction Programme.

Land Discharge

Saline water discharge from the proposed borefield expansion will be managed through placement of the pipeline within bunded v notch drains, daily borefield inspections and use of automatic pressure cut out devices. There is a minimal risk for liquid waste such as hydrocarbons to enter the environment during land clearing and stockpiling operations. Servicing of earth moving equipment will only be permitted in designated areas and spill cleanup equipment are standard requirements for all earthworks contractors on OBM Tenure.

Closure and Rehabilitation Management

The Australian and New Zealand Minerals and Energy Council and the Minerals Council of Australia have jointly produced a high-level framework for the development of Closure Plans. The Davyhurst Project Mine Closure Plan was approved by DMIRS in 2015. Aspects arising from the closure and rehabilitation of the proposed expansion project were discussed in the Small Operations Mining Proposal approved in April 2025.

The MCP guidelines recommend that final mine rehabilitation and decommissioning should ensure:

- That Stakeholders have their interests considered during the mine closure process and that the process of closure occurs in an orderly cost effective and timely manner;
- That the cost of closure is adequately represented in company accounts and the community is not left with a liability;
- There is clear transparent accountability and adequate resources for the implementation of the Closure Plan.
- The establishment of a set of indicators (i.e. completion criteria) that will demonstrate the successful completion of the closure process be developed prior to plan implementation, and
- That all statutory requirements are met.

Rehabilitation Concepts

Rehabilitation is defined as the implementation of procedures resulting in the return of an area to a sustainable biological condition such that it does not require ongoing maintenance.

The primary objectives for the closure and rehabilitation of the Davyhurst Processing site and infrastructure are outlined below. These are:

- Ensure risks to public safety are minimised and that the community do not inherit any road closure liabilities.
- The site is returned to a condition that will support current land uses.
- Stable topographic conditions are established that will support, a self-sustaining indigenous vegetation community consistent with the Land System and final land use objectives.
- Minimise off site impacts by removing deleterious materials, controlling infiltration, erosion, sedimentation and the degradation of existing drainages.

- Employ rehabilitation methods that are technically effective and cost efficient, rely on standard and proven engineering practices that do not require ongoing maintenance to ensure performance.
- Ensure the protection and conservation during rehabilitation works of any identified elements of the cultural and conservation estate within the mining leases.

Temporary Care and Maintenance
In the event of a Temporary Mine Closure, the transition from operations to Care and Maintenance status will be an orderly and managed process in accordance with the provisions of the approved C & M Plan.

6.0 References

Biostat Pty Ltd. 2020. *Vegetation Clearing - Fauna Assessment*. Unpublished report prepared for Ora Banda Mining, March 2020.

Jenny Borger Botanical Consulting (2016) Level 1 Vegetation and Flora Survey of Proposed Disturbance Areas at the Davyhurst Mine Site, Service Corridor and Battery Borefield. Eastern Goldfields Pty Ltd

Jenny Borger Botanical Consulting (2019), Targeted Vegetation and Flora Survey of the Proposed Waihi Mining Project and adjacent areas. A report for OraBanda Mining Limited

Jenny Borger Botanical Consulting (2025) Assessment of potential riparian vegetation in the proposed Papertalk Borefield Extension area and supporting vegetation and flora survey for the potential presence of the Arid Bronze Azure Butterfly and Inland Hairstreak Butterfly - L30/86. A report prepared for Ora Banda Mining Ltd.

Brad Goode and Associates (2020), Preliminary Advice on the results of the Archaeological Survey of the Riverina Proposed Road Realignment, Riverina Waste Landform, Riverina Camp Sewerage, Riverina Camp, Riverina Camp Road, Waihi (North) Proposed Haul Road, Waihi (South) SOM Realignment, Davyhurst TSF Cell B, Callion Proposed haul Road, Callion SOM Realignment and Siberia Proposed Camp Project Areas, Northwest of Kalgoorlie, Western Australia for Ora Banda Mining Ltd

Bureau of Meteorology (2025) Climate Averages for Kalgoorlie web accessed August 2025, www.bom.gov.au

Cowan M and Parkin T (2012). Vetebrate Survey of Credo Station. Goldfields Region A report to the Bush Blitz Program, Australian Biological Resources Study. Department of Environment and Conservation, Perth WA

Cowan M (2001) Coolgardie 3 (COO3 – Eastern Goldfields subregion) in May J E & McKenzie N L (eds) Biodiversity audit of Western Australia's 53 biogeographical subregions in 2002. Department of Conservation and Land Management, Perth WA

Department of Biodiversity, Conservation and Attractions (2020a), Guideline for the Survey of arid bronze azure butterfly (ABAB) in Western Australia.

Department of Biodiversity, Conservation and Attractions (2020b), Arid bronze azure butterfly (ABAB) survey in Western Australia - additional information.
Department of Biodiversity, Conservation and Attractions (2024a) List of Priority Ecological Communities endorsed by the Western Australian Minister for the Environment, DPaW Perth WA

Department of Biodiversity, Conservation and Attractions (2024b) List of Threatened Ecological Communities endorsed by the Western Australian Minister for the Environment, DPaW Perth WA

DPLH (2025) Aboriginal Cultural Heritage Inquiry System. Department of Planning, Lands and Heritage. https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS (Accessed 10/07/2025).

Eastwood R, Jacks A, Williams A A.E, Petersen L, and Cameron J (2023). Current distribution, preferred habitat, behaviour, and biology of the Inland Hairstreak, Jalmenus aridus Graham and Moulds, 1988 (Lepidoptera: Lycaenidae) in the Eastern Goldfields region of Western Australia. Records of the Western Australian Museum 38.

Ecotec WA. (2021), *Riverina Area – Fauna and Habitat Survey, January 2021*. A report prepared for Ora Banda Mining Ltd

Gibson N and Langley M A (2012) Vascular flora of Credo Station and adjacent reserves. A report to the Bush Blitz Program, Australian Biological Resources Study. Department of Environment and Conservation, Perth WA

MRWA (2010) Handbook of Environmental Practice for Road Construction and Maintenance Works.

Pringle, H J, Gilligan, S A, and van Vreeswyk, A M.,1994. *An inventory and condition survey of rangelands in the northeastern Goldfields, Western Australia*. Department of Primary Industries and Regional Development, Western Australia, Perth. Technical Bulletin 87.

Rockwater(2025) Davyhurst Gold Project Potable Water Supply. Monitoring Review of Papertalk Borefield. Report for Assessment for Ora Banda Mining Ltd. April 2025.

Shire of Menzies (2022) Local Heritage Survey-Primary Report -Local Heritage Survey and Heritage Listing prepared by Heritage Intelligence (WA)

Shepherdson Environmental Services (2000). Flora and Fauna of the Golden Eagle Area - M30/05. Report to Consolidated Minerals NL.

Thackway R and Cresswell I D (2017), *An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves, Version 7.0* Canberra: Australia Nature Conservation Agency

Terra Rosa Consulting (2025) The archaeological and ethnographic site avoidance assessment of the Ora Banda Mining Limited Davyhurst Riverina Project area conducted with Marlinyu Ghoorlie Traditional Owners. A confidential report prepared for Ora Banda Mining Limited.

Waddell PA and Galloway PD (2023) 'Land systems, soils and vegetation of the southern Goldfields and Great Western Woodlands of Western Australia', Technical bulletin 99, vol 1, Department of Primary Industries and Regional Development, Western Australian Government

Williams, A. E, Williams M. R, & R.A, Coppen (2018) Conservation of the Arid Bronze Azure Butterfly *(Ogyris subterrestris petrina)* and host sugar ant *(Camponotus terebrans). Summary Report Conservation Science DBCA May 2018.*

WCPL (2025) Papertalk Borefield Extension Project – Targeted Survey information for the Arid Bronze Azure Butterfly, Inland Hairstreak and Malleefowl - Technical Memorandum - Report Prepared by Woolard Consulting Pty Ltd for Ora Banda Mining Ltd

Attachment 1: Assessment of potential riparian vegetation in the proposed Papertalk Borefield Extension area and supporting vegetation and flora survey for the potential presence of the Arid Bronze Azure Butterfly and Inland Hairstreak Butterfly - L30/86 (JBBC, 2025)

Assessment of potential riparian vegetation in the proposed Papertalk Borefield Extension area and supporting vegetation and flora survey for the potential presence of the Arid Bronze Azure Butterfly and Inland Hairstreak Butterfly

L30/86

A Report prepared for OraBanda Mining Ltd

2025

Contents

1.0 Introduction

1.1 Background

Ora Banda Mining Ltd (OraBanda) submitted a Mining Proposal (Registration ID 129645) to the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on the 31 August 2024. DEMIRS requested further information for the Mining Proposal and Mine Closure Plan regarding:

- Surveys for the Arid Bronze Azure Butterfly (ABAB)
- Given the intersections with both potential riparian vegetation and DBCA managed CALM act former pastoral lease, Ora Banda Mining may require a native vegetation clearing permit
- Surveys for the Inland Hairstreak butterfly, *Jalmenus aridus*, potential habitat were also requested (at a later date)

The proposal covers an area located in tenement L30/86 within the Papertalk Brook area (Papertalk) to extend the Papertalk Borefield (Figure 1) and includes a road and new bore site. This report covers the assessment of the vegetation to determine the presence of riparian vegetation and to map the vegetation along the proposed route and bore site to assist with ABAB and Inland Hairstreak butterfly habitat mapping. A field survey was undertaken by a botanist (Jenny Borger; Jenny Borger Botanical Consulting (JBBC)) on the 16th January 2025. Existing bores are located in the western end of the area. A survey for the presence of ants associated with the butterflies was conducted by Leanne James (Environmental Consultant) and Colin Woollard (Environmental Consultant).

1.2 Environmental setting

Papertalk is located 4 km northeast of the Davyhurst mining operation near the historic townsite of Davyhurst. Papertalk Borefield is located just to the south of Papertalk Brook, which is a minor ephemeral drainage line flowing to the east towards Lake Goongarrie. The site is located within the boundaries of the ex-pastoral lease Credo Station which is now managed by the Department of Biodiversity, Conservation and Attractions (DBCA) for the purpose of conservation. The area is still subject to grazing by domestic animals (cattle) and feral animals including donkeys, camels and rabbits.

Papertalk is located in the Eastern Murchison sub-IBRA region (MUR1) near the boundary with Eastern Goldfield sub-IBRA region (Coolgardie COO3). Groundwater Dependent Ecosystem mapping (Bureau of Meteorology (BoM)) places the site close to an area mapped as Unclassified Potential GDE (Figure 2).

1.3 Climatic conditions

The survey was conducted in January 2025. Ground conditions indicated recent substantial rainfall with the soil moist and the presence of many semi-mature forbs and grasses, with some grasses in flower. Rainfall data from Credo (BoM Station 12259) showed a significant rainfall event on the 13th/ 14th December 2024 with 103 mm recorded. 33.4 mm was recorded at Leonora (BoM Station 12241) from the 9th – 14th December. Rainfall up to the time of survey in January 2025 was 1.8 mm at Credo and 9.4 mm at Leonora. It is likely that the December event extended to the Davyhurst area.

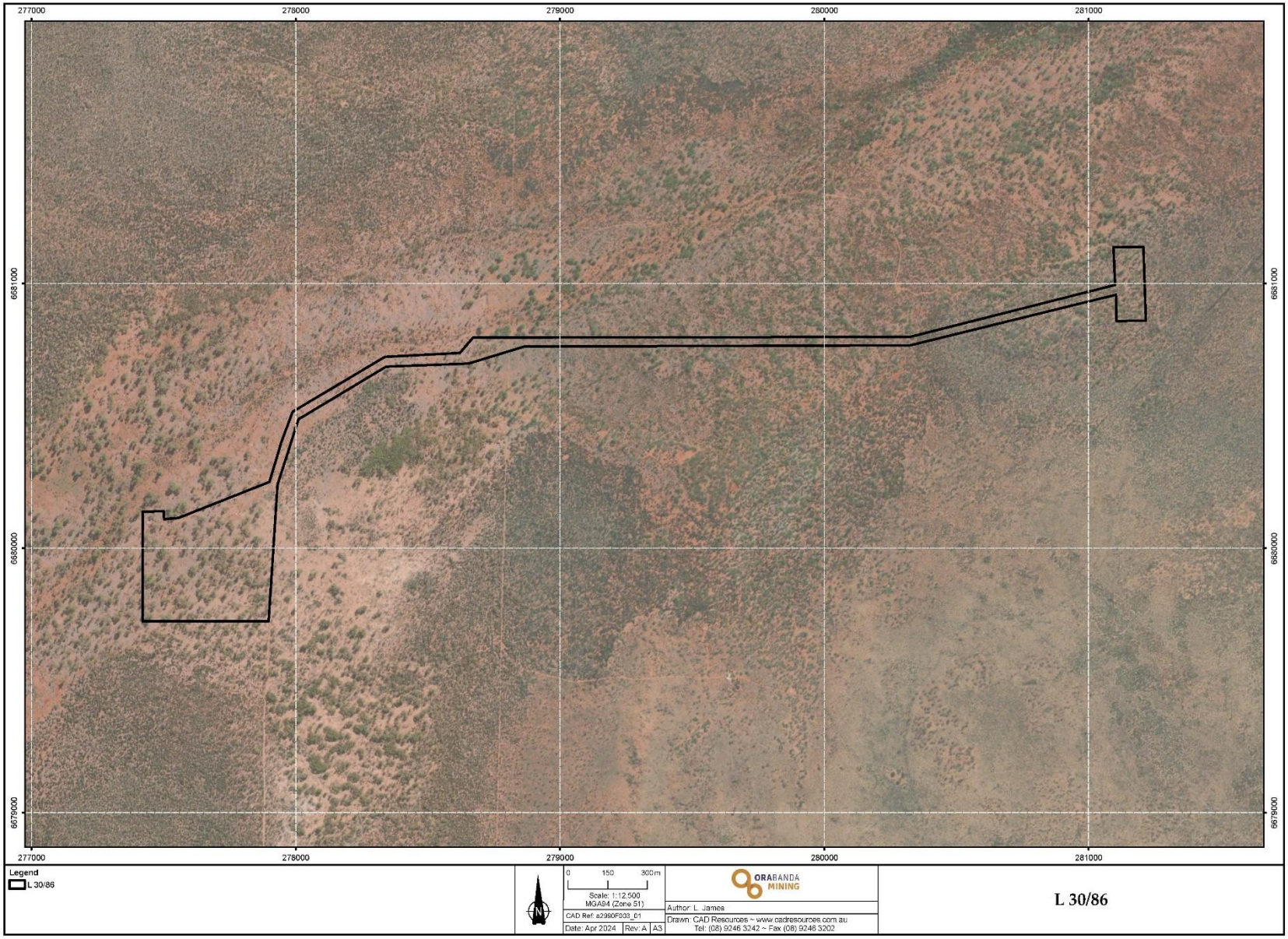


Figure 1: Papertalk Borefield Extension Survey area

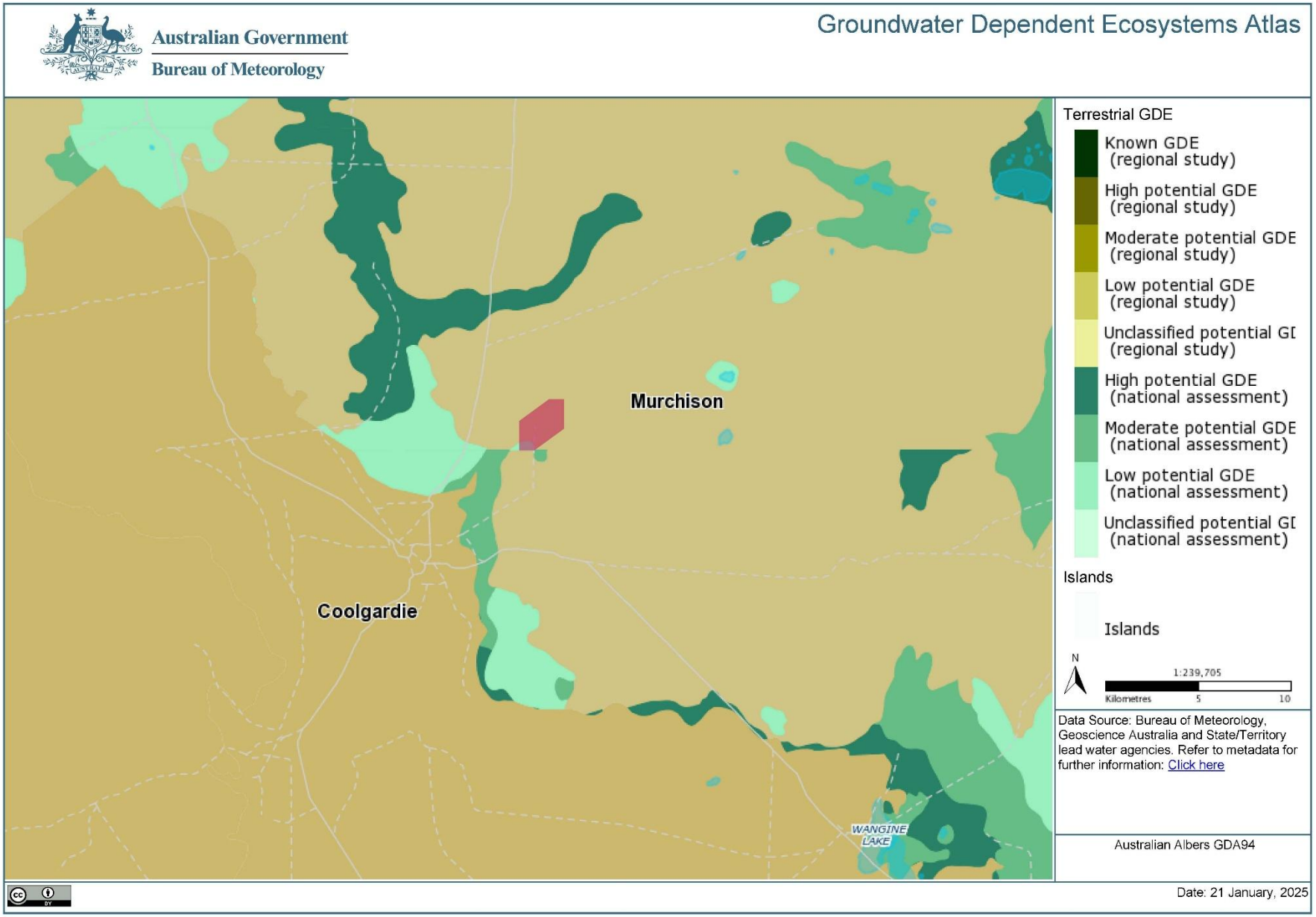


Figure 2: Location of the Papertalk Borefield extension area (pink) with GDE mapping

2.0 Riparian vegetation definition

Riparian vegetation is comprised of plant communities or ecosystems which are restricted to the zone directly influenced by the stream or river (Hancock 1996). Although many Australian rivers and creeks rarely flood, the different soil and groundwater regime along the banks produce vegetation that is distinct from that of surrounding areas. Hancock (1996) also refers to Nilsson's (1992) description "The riparian zone mediates ecological communication between the terrestrial and aquatic habitats. It:

- Maintains bank stability
- Intercepts overland flow from uplands into the river trapping sediment and absorbing nutrients
- Shades and cools the river, suppressing algal blooms in eutrophic waters
- Helps prevent the rise in the water table, thereby moderating tendencies towards salinization
- Exports energy from the dryland to the river to fuel aquatic food webs
- Is a varied vegetation formation in its own right with a selection of species found mainly or only in the riparian habitat"

Water note WN11 (Government of Western Australia, 2025) describes riparian vegetation (also known as fringing vegetation) as that vegetation that grows along the banks of a waterway, extending to the outer edge of the floodplain. It includes the emergent aquatic plants growing at the edge of the waterway channel and the ground cover plants, shrubs and trees within the riparian zone. Riparian vegetation often shows zonation in the plant species present as the environment changes from permanently to seasonally to intermittently inundated habitat within the floodplain of the river. The highly seasonal nature of rainfall in south west Western Australia means that streams are mostly dry for much of the year (seasonal streams).

Riparian vegetation in arid areas generally increases in size and density in comparison to surrounding vegetation. Arid zone riparian vegetation may also support species not present in adjacent areas such as Eucalyptus spp. and Melaleuca spp. Astron (2019) undertook assessment of groundwater dependent vegetation at Roy Hill in the Pilbara and described ecohydrological types of vegetation. Riparian vegetation is described as:

Surface flow dependent vegetation (SFDV) is effectively a subset of xerophytic vegetation (defined as terrestrial vegetation that is dependent on water stored in the soil profile) that requires additional water derived from surface water flows. SFDV can, in some instances, also use groundwater. SFDV can occur in a variety of areas in the landscape where soil water is partially recharged by surface water flows. For larger water courses, this includes both the hyporheic zone (the region beneath and alongside a stream bed where there is a mixing of surface water and shallow groundwater) and the flanking transition zone between the active channel and the surrounding uplands, often referred to as the riparian zone. SFDV can also occur within and along smaller drainage lines in which surface water flows infiltrate into the soil.

Groundwater dependent ecosystem mapping (Figure 2) has been included for the study area as it may indicate potential riparian vegetation.

3.0 Results

3.1 Flora

A total of 44 native taxa were recorded from 18 families and 29 genera. The best represented families were Fabaceae (8 species; 2 genera; *Acacia* 6), Chenopodiaceae (6 species; 5 genera), Poaceae (4; 4 genera) and Scrophulariaceae (4; 1 genus, *Eremophila*). The flora was not highly diverse, and expected for the time of year, annuals were mostly absent, except for in patches lower in the landscape – such as crab holes or depressions in the drainage line where water had ponded. Most of the woodland areas had very sparse or isolated forbs such as *Sclerolaena*. One range extension – the grass *Iseilema membranaceum* – was present within VTs 3 and 5.

3.2 Vegetation mapping

A reconnaissance vegetation and flora survey was undertaken on the 16th January 2025 to map vegetation types within the proposal area and to assess the vegetation to the north to determine whether it is riparian. Seven vegetation types were determined and are summarised in Table 1 and mapped in Figure 3.

Table 1: Papertalk Borefield extension vegetation types summary

VT1	*Eucalyptus salmonophloia* woodland/ *Senna artemisioides subsp. filifolia, Scaevola spinescens, Santalum acuminatum* open shrubland with patches of *Eucalyptus lesouefii* woodland on plains Condition: mostly very good	
VT2	*Acacia caesaneura, A. aneura, A. ramulosa* tall sparse shrubland over *Acacia ramulosa, Grevillea oligomera* shrubland over *Prostanthera grylloana* low sparse shrubland on low gravelly rises Condition: very good; lower impacts; groundcover still very sparse	
VT3	*Acacia aneura* tall shrubland patches and *Eucalyptus oleosa subsp. oleosa* open woodland *over Iseilema membranaceum, Goodenia sp*. low open tussock grassland on alluvial plains with crabholes Condition: variable; mostly good; active erosion	

VT4	*Casuarina pauper* open woodland over *Ptilotus obovatus, Mairena spp., Atriplex vesicaria* low open shrubland on ironstone plains Condition: Good	
VT5	*Casuarina pauper, Pittosporum angustifolium* low open woodland over *Eremophila alternifolia, E. glabra subsp. glabra, Pimelea microcephala, Acacia burkittii, Atriplex nummularia* open shrubland; alluvial plain with incised drainage tracts Condition: poor to good; active erosion; sedimentation 	
VT6	*Eucalyptus concinna* mallee woodland over *Acacia hemiteles, A. burkittii* isolated shrubs; alluvial plain with crabholes Condition: poor to very good; more impacts at the edges of the vegetation; less in the denser woodland areas; understorey mostly very sparse	
VT7	*Eucalyptus salmonophloia* woodland over *Eremophila scoparia* open shrubland over *Atriplex nummularia, Cratystylis subspinescens, Eremophila scoparia, Acacia hemiteles* low sparse shrubland on plains Very good patches (stands of trees) within poor to good open woodland to isolated trees in open shrubland	

The vegetation condition was mostly good with moderate to high pastoral or feral grazing impacts. Erosion was active in VTs 3, 4, 5 and some areas of 7.

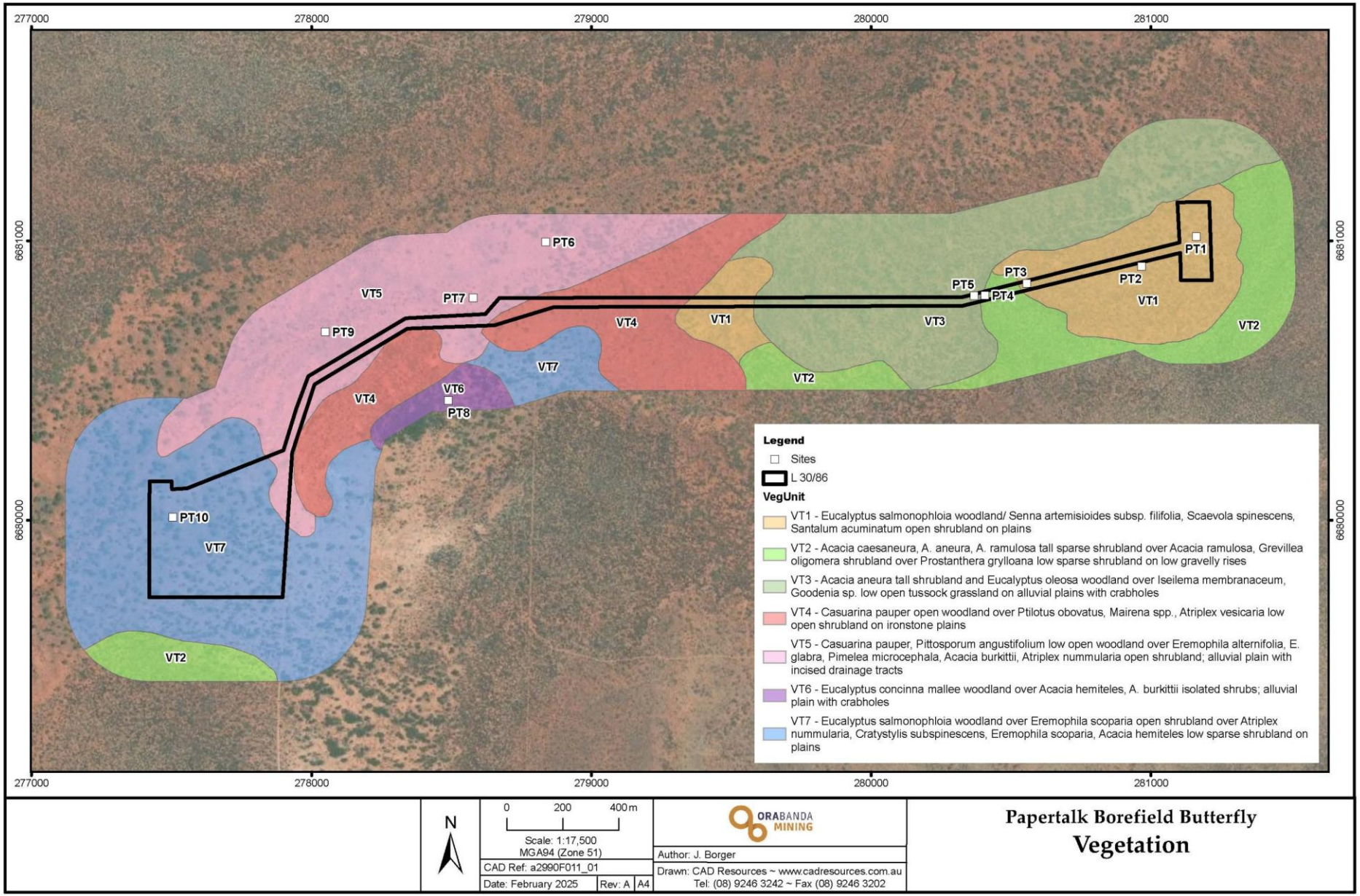


Figure 3: Vegetation mapping for the Papertalk Borefield extension proposal area

4.0 Discussion

Creeks in the Davyhurst area are ephemeral - they have flowing water only during or for a short duration after precipitation events in a typical year. Some may have flows occurring only every other year. Papertalk Brook is a minor drainage line which is partly incised. This may be a result of active erosion in the area due to long term impacts (> 100 years) of pastoral activities. The species present along the drainage line were also present in the alluvial plain (VT 5). The vegetation was mostly sparse along most of the drainage line and not significantly different to the surrounding vegetation.

The incised drainage line varied in width from ~ 1 m to 3 or 4 metres, with large sections filled with sediment – sandy banks or patches of ironstone gravel wash to > 5 m wide with only minor incision. No vegetation that would be associated with long term wetter conditions such as denser stands of *Melaleuca* or riparian *Eucalyptus* (e.g. *E. camaldulensis* subsp. *obtusa*) or plants associated with wetlands (e.g. *Duma florulenta*) were present. It is therefore recommended that there was no evidence of riparian vegetation occurring within the proposed Papertalk Borefield extension area.

5.0 References

Astron (2019) Life of Mine Water Management Strategy Vegetation Risk Assessment. Prepared for Roy Hill Iron Ore Pty Ltd

Bureau of Meteorology (2023) Climate statistics for Australian locations. Monthly climate statistics for Credo ( ) . Accessed January 2025.

(Government of Western Australia – www.wa.gov.au/service/natural-resources/water-resources/aquatic-and-riparian-vegetation - Water Note WN11 – Identifying the riparian zone

Hancock C N, Ladd P G and Froend R H (1996) Biodiversity and management of riparian vegetation in Western Australia. Forest Ecology and Management 85: 239 – 250.

Nilsson's (1992)

Attachment 1: Species list

Family	Scientific Name	
Amaranthaceae	Ptilotus exaltatus	
	Ptilotus obovatus var. obovatus	
Apocynaceae	Leichhardtia australis	
Asteraceae	Cratystylis subspinescens	
	Gnephosis brevifolia	
Casuarinaceae	Casuarina pauper	
Chenopodiaceae	Atriplex nummularia	
	Atriplex vesicaria	
	Enchylaena tomentosa var. tomentosa	
	Maireana triptera	
	Rhagodia drummondii	
	Sclerolaena diacantha	
Euphorbiaceae	Euphorbia drummondii	
Fabaceae	Acacia aneura	
	Acacia burkittii	
	Acacia caesaneura	
	Acacia hemiteles	
	Acacia ramulosa var. ramulosa	
	Acacia tetragonophylla	
	Senna artemisioides subsp. filifolia	
	Senna stowardii	
Goodeniaceae	Goodenia mimuloides (tentative; sterile)	
	Scaevola spinescens	
Lamiaceae	Prostanthera grylloana	
Malvaceae	Sida calyxhymenia	
Myrtaceae	Eucalyptus concinna	
	Eucalyptus lesouefii	
	Eucalyptus oleosa subsp. oleosa	
	Eucalyptus salmonophloia	
Pittosporaceae	Pittosporum angustifolium	
Poaceae	Eragrostis dielsii	
	Iseilema membranaceum	Range Extension west
	Monachather paradoxus	
	Enteropogon ramosus	
Proteaceae	Grevillea juncifolia subsp. temulenta	
	Grevillea oligomera	
Santalaceae	Exocarpos aphyllus	
	Santalum acuminatum	
Scrophulariaceae	Eremophila alternifolia var. alternifolia	
	Eremophila glabra subsp. glabra	
	Eremophila maculata subsp. brevifolia	
	Eremophila scoparia	

Family	Scientific Name	
Solanaceae	Solanum lasiophyllum	
Thymelaeaceae	Pimelea microcephala subsp. microcephala	

Site Locations

Site	Date	Zone	Easting	Northing
PT1	16/01/2025	51J	281161	6681014
PT2	16/01/2025	51J	280965	6680907
PT3	16/01/2025	51J	280555	6680846
PT4	16/01/2025	51J	280405	6680804
PT5	16/01/2025	51J	280367	6680802
PT6	16/01/2025	51J	278836	6680995
PT7	16/01/2025	51J	278576	6680795
PT8	16/01/2025	51J	278488	6680428
PT9	16/01/2025	51J	278048	6680674
PT10	16/01/2025	51J	277503	6680012

Attachment 2: Site descriptions

VT1 Site: PT1 281161 E/ 6680968 N Ele: 417 m	Plain; very gentle slope; aspect ? north Yellowish red (5YR4/6) fine sandy clay loam/ hardpan; surface rock (fine ironstone gravel) 25 – 35 %; litter 40 – 50 %; fallen timber 5 – 10 %; cryptogams (lichen) 10 – 15 % Condition: Very good to excellent around cleared/ rehabilitated drill/ bore location; all strata present (ground cover sparse due to time of year); many spiders present; recruitment of most species occurring. Disturbance: some pastoral impacts, mining related impacts – bore area and tracks Vegetation: Eucalyptus salmonophloia, E. concinna woodland over Eremophila scoparia, Santalum acuminatum tall sparse shrubland over Senna artemisioides subsp. filifolia, Scaevola spinescens, Santalum acuminatum, Acacia hemiteles, Eremophila scoparia open shrubland over Scaevola spinescens, Ptilotus obovatus var. obovatus, Santalum acuminatum, Acacia hemiteles low sparse shrubland Other species: Casuarina pauper, Eucalyptus oleosa subsp. oleosa	
VT1 Site PT2 280965 E/ 6680907 420 m 280897/ 6680905 N	Plain; very gentle slope; aspect ? north Yellowish red (5YR4/6) fine sandy clay loam/ hardpan; surface rock (fine ironstone gravel) 25 – 35 %; litter 40 – 50 %; fallen timber 5 – 10 %; cryptogams (lichen) 10 – 15 % Condition: Excellent; further away from existing tracks and clearing Eucalyptus lesouefii woodland/ open forest patch in Salmon gum woodland Eucalyptus lesouefii open forest over Acacia hemiteles, Senna stowardii open shrubland Other species: Exocarpos aphyllus, Santalum acuminatum	

VT2 Site: PT3 280555 E/ 6680846 N 422 m	Slight rise; some calcrete in area; gentle slope; aspect north Vegetation starting to change to VT2 Eucalyptus salmonophloia isolated trees over Eucalyptus concinna open mallee woodland over Acacia aneura, A. caesaneura, A. burkittii, Grevillea juncifolia, Acacia ramulosa var. ramulosa tall shrubland to tall open shrubland over Senna artemisioides subsp. filifolia, Acacia hemiteles, Eremophila scoparia, Santalum acuminatum sparse shrubland	
VT2 Site: PT4 280405 E/ 6680806 N	Slight rise, reddish yellow sandy clay loam; surface rock (fine ironstone gravel) 50 – 60 %; litter 10 – 30 %; fallen timber 10 – 15 % Condition: Very good; some drought impacts; possible pastoral impacts – no grasses Acacia caesaneura, A. aneura, Grevillea juncifolia subsp. temulenta, Acacia ramulosa var. ramulosa tall shrubland over Acacia ramulosa var. ramulosa, Grevillea oligomera shrubland over Prostanthera grylloana low isolated shrubs	
VT3 Site: PT5 280367 E 6680802 N	Alluvial/ floodplain; gentle slope; drainage to north east; gilgai present (crabholes) Red clay loam to clay; surface rock < 1 %; litter and fallen timber – extensive and deep in some areas; condition: good Acacia aneura tall shrubland on edges, changing to Eucalyptus oleosa subsp. oleosa open woodlands over open shrubland Areas quite moist with patches of forbs and grasses; areas of sodic soils between crabholes Goodenia mimuloides (tentative; germinating/ small plants); Iseilema membranaceum (Small Flinders Grass – range extension west) – common in damp areas	

VT3 PT5 – north	Alluvial flood plain; crabholes Condition: Poor to good; erosion active; pastoral impacts; feral grazing Acacia aneura tall shrubland and Eucalyptus oleosa woodland over Iseilema membranaceum, Goodenia mimuloides (tentative) low open tussock grassland	
VT4	Ironstone gravel plain; very gentle slope; aspect north Casuarina pauper low open woodland over Atriplex vesicaria, Maireana triptera, M. trichoptera low open shrubland	

VT5 Sites PT6 PT7 PT9	Alluvial plain; broad drainage line with narrow incised drainage lines; gentle slope; aspect east Crabholes present Yellowish red fine sandy clay loam; surface rock – variable, patches of ironstone gravel Casuarina pauper, Eucalyptus oleosa subsp. oleosa, Pittosporum angustifolium isolated trees to low open woodland over Eremophila alternifolia var. alternifolia, E. glabra, Pimelea microcephala subsp. microcephala, Acacia burkittii, Atriplex nummularia open shrubland over Cratystylis subspinescens, Sida spp. low open shrubland Casuarina pauper, Pittosporum angustifolium low open woodland over Eremophila scoparia, Pittosporum angustifolium, Exocarpos aphyllus tall sparse shrubland over Acacia tetragonophylla, Eremophila scoparia, Acacia hemiteles, Rhagodia drummondii, Pimelea microcephala subsp. microcephala, Leichhardtia australis open shrubland over Ptilotus obovatus, Senna artemisioides subsp. filifolia, Enchylaena tomentosa var. tomentosa low open shrubland over Eragrostis dielsii, Iseilema membranaceum, Monachather paradoxus, other grass, Goodenia mimuloides (tentative; sterile), Sida calyxhymenia, Ptilotus exaltatus low open tussock grassland Other species: Euphorbia drummondii, Atriplex vesicaria, Senna stowardii	
VT6 Site PT8	Alluvial plain with crabholes; slight rises; Yellowish red clay loam to clay; surface rock (fine ironstone gravel < 5 %; calcrete < 1 %) < 6 %; litter < 5 %; fallen timber < 2 %; cryptogams (lichen) > 80 % Condition: good; pastoral impacts – lack of understorey Eucalyptus concinna mallee woodland over Acacia hemiteles, Acacia burkittii isolated shrubs over Atriplex vesicaria, Acacia hemiteles low sparse shrubland Other species: Ptilotus obovatus var. obovatus, P. exaltatus, Senna artemisioides subsp. filifolia, Maireana triptera, Leichhardtia australis, Eremophila scoparia, Solanum lasiophyllum, Sclerolaena diacantha	

VT7 Site PT10	Plain; some crabholes; reddish brown clay loam; litter in patches > 70 % (under trees) Condition: very good; pastoral impacts, donkeys, rabbits Eucalyptus salmonophloia woodland over Eremophila scoparia open shrubland over Atriplex nummularia, Cratystylis subspinescens, Eremophila scoparia, Acacia hemiteles low sparse shrubland Other species: Scaevola spinescens, Eremophila maculata subsp. brevifolia, Pittosporum angustifolium	

Attachment 2: Fauna Assessment Technical Memorandum - Report Prepared for Ora Banda Mining Ltd (Woolard, 2025)

Woolard Consulting Pty Ltd
PO Box 8069 Angelo St,
South Perth WA 6151
ABN 80 086 875 514
E: colin@woolardconsulting.com.au
T: +61 8 9396 5019

Technical Memorandum Report

To: **Andrew Czerw – Ora Banda Mining Limited**

From: **Colin Woolard – Woolard Consulting Pty Ltd and Leanne James – Leanne James Environmental**

Date: **27/02/2025**

Subject: **Papertalk Borefield Extension Project – Targeted Survey information for the Arid Bronze Azure Butterfly, Inland Hairstreak and Malleefowl**

1.0 Background

Ora Banda Mining Limited (OBM) are planning to extend the Papertalk Borefield to include new bores located on L30/86 within the Shire of Menzies. The Papertalk Borefield managed under Groundwater Well Licence 106474(6) is the main supply of brackish water that is utilised in the Davyhurst Operations RO Plant for potable water use across the Davyhurst Village, Administration and Gold Plant. The Papertalk Borefield was originally established in 1987 by WMC as a water supply for their mining and processing/camp facilities and has been refurbished and operated intermittently for short periods, since that time by several owners. The borefield provides brackish to saline water and is established in a zone of incipiently fractured and disaggregated granite, commonly referred to as "saprolite grit", that locally occurs at the base of the granitic weathering profile on the margins of intrusions (Rockwater 2016). It currently consists of 4 production and 3 monitoring bores and is situated 6km northeast of the Davyhurst Processing Plant just south of the Papertalk Brook, a minor ephemeral drainage line that flows east towards Lake Goongarrie.

A desktop review conducted by Woolard Consulting (WCPL) and Leanne James Environmental (LJE) of the borefield extension corridor as part of Project impact assessment identified that suitable habitat for the conservation significant Arid Bronze Azure Butterfly (*Ogyris subterrestris petrina*), Inland Hairstreak (*Jalmenus aridus)* and Malleefowl (*Leipoa ocellata*) was potentially present in parts of the corridor. A site targeted survey in conjunction with the Papertalk Borefield Extension Flora Survey was conducted to determine the presence of vegetation units that were identified to be potential habitat for these threatened species.

1.1 Study Area

The borefield corridor northeast of the existing Papertalk Borefield lies within an approximately 30m wide, 4km long Miscellaneous Licence L30/86. The corridor was floristically mapped by Jenny Borger Botanical Consulting (JBBC) in 2025 in conjunction with the targeted fauna search conducted by WCPL and LJE, which reported that the most eastern and western section of the proposed disturbance corridor supported vegetation that may be suitable floristic habitat for the Arid Bronze Azure Butterfly (*Ogyris subterrestris petrina*) and the Inland Hairstreak (*Jalmenus aridus)* and should be tested for the pale form host Sugar Ant (*Camponotus sp.nr terebrans),* and *Froggattella kirbii* ant species.

These Vegetation communities were identified as *Eucalyptus salmonophloia* woodland over *Senna artemisioides subsp filifolia* shrubland (VT1) and *Eucalyptus salmonophloia* woodland over *Eremophila scoparia* open shrubland (VT7).

Additionally, both the targeted fauna and flora surveys monitored for the presence of active Malleefowl mounds within the survey corridor. The Papertalk Borefield corridor was overlayed on the vegetation communities surveyed in JBBC (2025) and is shown on Figure 2.

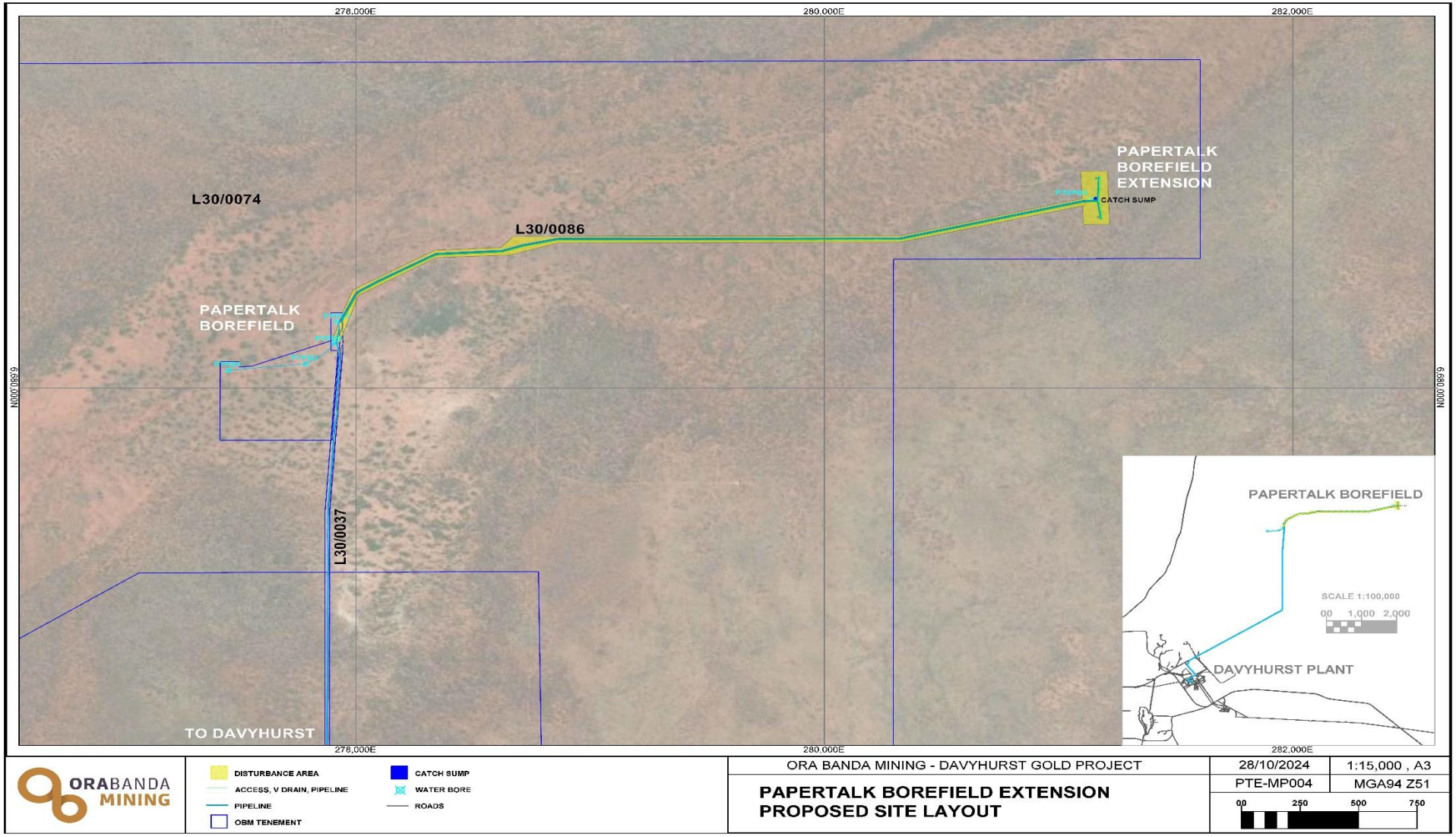


Figure 1: Papertalk Borefield Extension Regional Location Plan

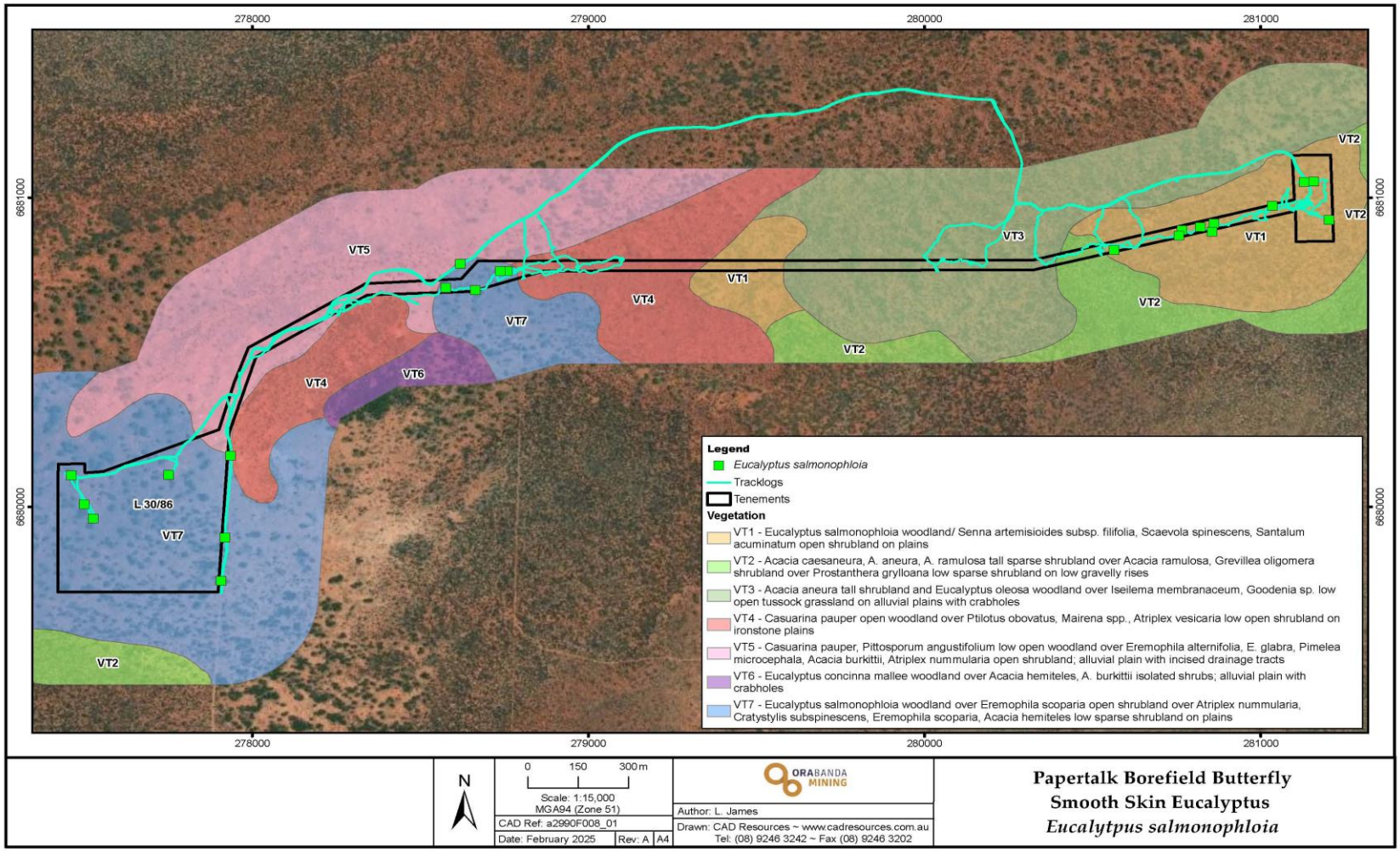


Figure 2: Papertalk Borefield Extension vegetation unit mapping with Threatened Species survey tracks

1.2 Arid Bronze Azure Butterfly (ABAB)

The Arid Bronze Azure Butterfly (*Orgyris subterrestris petrina)* is a Threatened species that is listed as Critically Endangered under the Commonwealth EPBC Act (1999) and the West Australian BC Act (2016). The current conservation rating relates to its low abundance and severely fragmented distribution, with only four known subpopulations being recorded in Western Australia. These subpopulations are at Barbalin Nature Reserve, a second site approximately 100km from Barbalin and two populations north of Kalgoorlie, Western Australia. The original discovery of a subpopulation was located near Lake Douglas 12km southwest of Kalgoorlie; however this population is now considered locally extinct(DBCA 2020a,b).

The ABAB has an obligate association with the Pale Brown Sugar Ant (*Camponotus sp. nr. terebrans*), with butterfly larvae living entirely within the ants nest during their development. The ants protect the larvae from predators and are thought to be rewarded with secretions produced by the ABAB larvae. The larvae are cryptic and are extremely difficult to detect. The most critical factor for habitat occupancy by the butterfly is the presence of large colonies of the host ant; only large colonies can support the ABAB because, being a parasitic species, it requires a large number of hosts to exist. The potential distribution of the ant is extensive and encompasses much of the semi-arid zone (rainfall <325mm) south of approximately 26° latitude (McArthur, Adams and Shattuck 1997).

The target vegetation is mature mixed Gimlet (*Eucalyptus salubris*), Salmon Gum (*Eucalyptus salmonophloia*) woodlands on red brown sandy loam soils, with an open understory. In addition to Gimlet and Salmon Gum, other smooth barked eucalypts which may support basal ant colonies include Wandoo (*Eucalyptus capillosa subsp. wandoo*), Smooth barked York Gum (*Eucalyptus loxophleba subsp. lissophloia*) and Ribbon barked Mallee (*Eucalyptus sheathiana*). These should be examined as part of any targeted survey (DBCA 2020 a,b).

Due to the presence of smooth barked Eucalypt trees within the survey area a targeted survey was undertaken on two separate occasions, 22 April 2024 and 16 January 2025, both survey tracks are shown in Figure 2. Due to the obligate association of the ABAB with the host ant, surveys to detect this species need to consider both species. The habitat critical for the ABAB is the optimal habitat for the host ant. If the ant does not occur in a survey area, then ABAB will be absent. However, ant presence does not guarantee that ABAB is present, given that only the larger colonies will support a butterfly population.

1.3 Inland Hairstreak Butterfly

The Inland Hairstreak Butterfly (*Jalmenus aridus*) is a Priority 1 listed butterfly endemic to Western Australia. Their preferred habitat is summarised as open woodland with mature *Senna artemisioides* ssp. *flifolia* shrubs on sandy-loam, clay-loam with or without ironstone pebbles, or even a rocky substrate, often with a variety of flowering shrubs such as *Eremophila*, *Scaveola* and *Maireana*, which are used as nectar sources for adult butterflies. Small larvae are attended by a few *Froggattella kirbii* ants (1‑2), but 10 or more ants may attend final instar larvae, and these ants are found around the base of the *S. artemisioides* ssp. *flifolia (*Eastwood et al. 2023*).*

There are now 10 known locations of the Inland Hairstreak butterflies, within an area of approximately 5,000km^2, but all locations in the DBCA threatened species database are more than 100km from the project area.

The Inland Hairstreak is difficult to survey because the adults are present for only a few weeks each year between October and November. Due to insufficient baseline studies on the species, there are

no methods recommended by DBCA to survey the butterfly. The attendant ant *F. kirbii* has a wide distribution throughout open woodland areas across all Australian mainland states (Shattuck 1999) and the two hostplants, *A. tetragonophylla* and *S. artemisioides* ssp. *filifolia* both have very broad distributions across Western Australia (WA Herbarium 1998). So, the combined presence of the ants and the plants, although critical for the butterfly's survival cannot be used as the sole indicator for a likely breeding site (Eastwood et al, 2023).

1.4 Malleefowl

The Malleefowl (*Leipoa ocellata*) is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and Schedule 3 of the Western Australian *Biodiversity Conservation Act 2016* (BC Act). The species utilises broad habitats including dense shrublands, mulga and mallee woodlands that are generally long unburnt to provide the sufficient leaf litter on the ground for the bird to build their incubation mounds. Their range extends a great distance across southern Australia from Western Victoria to Southwest Western Australia, however due to severe habitat loss and other threats many populations across this range are contracting and are now reduced to isolated areas of remnant habitat. Malleefowl inactive mounds and birds have been sighted within the OBM tenure and are reported to DBCA.

1.5 Scope of Targeted Survey

The scope of works for this project was to undertake a reconnaissance fauna survey in accordance with the EPA Guidance Statement 56 (EPA, 2004) and specific guidelines for surveying for the host ant species released by DBCA in 2020. The survey included:

- Desktop review of DBCA information on the ABAB and host sugar ant, DBCA (2020) and Inland Hairstreak Butterfly.
- A field inspection of habitat suitability along the corridor study area based on JBBC (2025) vegetation traverse mapping of potentially suitable habitat for *Camponotus sp. nr. Terebrans*, presence of *Senna artemisioides* ssp. *flifolia* shrubs on sandy-loam, clay-loam and *Froggattella kirbii* ant species.
- Identification of any habitat of significance to ABAB, Inland Hairstreak and Malleefowl requiring further survey work or impact assessment planning in respect to the corridor.
- Production of a report and maps to identify the presence/absence of *Camponotus sp. nr. terebrans* at all surveyed trees, presence of *Froggattella kirbii* ant species on identified stands of *Senna artemisioides* ssp. *flifolia* shrubs, and the presence of Malleefowl mounds.
- Produce a Report to support clearing of native vegetation within the corridor.

1.6 Survey Limitations

Survey limitations included:

- Ant surveys can be conducted at any time of year, although lower ant activity in winter may result in lower activity levels and may reduce the chances of detection. The optimal time to conduct ant surveys is when the ABAB is active from mid-September to late October. The field surveys were completed on the 22 April 2024 and 16 January 2025. The field survey was therefore completed during an appropriate season.

2.0 Corridor Vegetation Communities

The Vegetation Unit mapping was undertaken by Jenny Borger Botanical Consulting simultaneously with the Threatened Species reconnaissance survey. Seven vegetation types were determined during the field survey undertaken on the 16th January 2025. Soil types are yellow, red sandy clay loam in the east through to red clay loams within the centre alluvial floodplain and red brown clay loams in the west.

Two vegetation units (VT1 and VT7) were identified to be potential habitat for the Arid Bronze Azure Butterfly and one vegetation unit was identified to be potential habitat for the Inland Hairstreak Butterfly (VT7). Malleefowl presence could occur within the VT2 vegetation unit described as *Acacia caesaneura, A. aneura, A. ramulosa* tall sparse shrubland over *Acacia ramulosa, Grevillea oligomera* shrubland over *Prostanthera grylloana* low sparse shrubland on low gravelly rises. VT1 is located in the eastern section of the corridor and a small section within the centre of the corridor and comprises of *Eucalyptus salmonophloia* woodland/ *Senna artemisioides subsp. filifolia, Scaevola spinescens, Santalum acuminatum* open shrubland with patches of *Eucalyptus lesouefii* woodland on plains. VT7 is located within the central and western part of the tenure, comprises of *Eucalyptus salmonophloia* woodland over *Eremophila scoparia* open shrubland over *Atriplex nummularia, Cratystylis subspinescens, Eremophila scoparia, Acacia hemiteles* low sparse shrubland on plains, and is not within the proposed disturbance of the Papertalk Borefield extension (Figure 2).

The regional vegetation is located in the Eastern Murchison sub-IBRA region (MUR1) near the boundary with Eastern Goldfield sub-IBRA region (Coolgardie COO3).

2.1 Threated and Priority Ecological Communities

No Threatened Ecological Communities (TEC) are located within the tenure survey area. Groundwater Dependent Ecosystem mapping (Bureau of Meteorology (BoM)) places the site close to an area mapped as Unclassified Potential GDE, however, does not possess any of the floristic characteristics that represent riparian vegetation.

3.0 Field Survey Methodology

The survey for the presence of suitable colonies of the pale brown sugar ant in the Papertalk Borefield Extension corridor was undertaken in accordance with DBCA (September 2020) Guidance, within the mapped vegetation communities that identified Smooth Bark Eucalyptus trees and stands of *Senna artemisioides subsp. Filifolia.* The Papertalk Borefield Corridor is located on tenure that has been associated with historic and more recent mining, exploration and pastoral activities for over 100 years.

Using Formulae 1 and 2, the number of mature trees required to sample the area and their approximate spacing was calculated (Department of Biodiversity Conservation and Attractions 2020).

Formula 1. Number of sample trees = 10 x $\sqrt{}$ (site area in hectares)

Formula 2. Spacing of tree sampling = $\sqrt{}$ [(site area in hectares x 10,000) / No. sample trees]

There is approximately 6.59ha of suitable Eucalypt woodland in the project area, therefore 25.67 Smooth Bark Eucalyptus tress with a spacing of 50m between each tree was calculated. The survey sampled 22 trees at a spacing of 30m and included all habitat areas with smooth-barked eucalypt trees (Figure 2).

The ant survey comprised the following technique:

- After selecting a sample tree, we disturbed the soil/leaf litter at the base of the tree to a depth of approximately 10cm; and
- Observed for about 20-30 seconds to see if any host ants appear.
- Each Smooth Bark Eucalyptus tree GPS location was noted, photograph taken and tree diameter at approximately 1.5m height was recorded.
- The presence or absence of ant and leafhopper was also recorded.

4.0 Results

Although ants were present in the project area, no *Camponotus terebrans* or *Froggattella kirbii* were recorded. There was no evidence of Malleefowl mounds identified within both the Threatened Species and Flora survey tracks completed during both survey efforts in April 2024 and January 2025. No pale brown sugar ants or nests were reported.

A total of 22 trees were sampled in the 6.59ha corridor that contained suitable Smooth Bark Eucalyptus Vegetation Communities. No presence of large ant colonies was identified.

Inspection of the *Senna artemisioides subsp. Filifolia* stands did not identify any presence of *Froggattella kirbii* ant species and no Malleefowl mounds were identified during the field surveys.

The survey information suggests that the likelihood of direct or indirect impact on the Arid Bronze Azure Butterfly, Inland Hairstreak Butterfly and the Malleefowl is likely to be very limited.

5.0 References

DBCA. 2020a. Arid bronze azure butterfly. Department of Biodiversity, Conservation and Attractions, Kensington, WA. Available at: https://www.dpaw.wa.gov.au/plants-and-animals/threatenedspecies-and-communities/threatened-animals/562-arid-bronze-azure-butterfly (accessed 31/03/2021).

DBCA. 2020b. Arid bronze azure butterfly (ABAB) survey in Western Australia additional information. Department of Biodiversity, Conservation and Attractions. Available at: https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-andcommunities/threatened-animals/562-arid-bronze-azure-butterfly

DBCA. 2020c. Guideline for the survey of arid bronze azure butterfly (ABAB) in Western Australia. Government of Western Australia. Available at: https://www.dpaw.wa.gov.au/images/Guideline%20for%20the%20survey%20of%20arid%20bronze%20azure%20butterfly%20Version%201.pdf

Eastwood, R., A. Jacks, A. A. E. Williams, L. Petersen, and J. Cameron. 2023. Current distribution, preferred habitat, behaviour, and biology of the Inland Hairstreak, Jalmenus aridus Graham and Moulds, 1988 (Lepidoptera: Lycaenidae) in the Eastern Goldfields region of Western Australia. Records of the Western Australian Museum.

Rockwater (2016a). Davyhurst Gold Project -Potable Water Supply. Review of Papertalk Borefield,. Unpublished Report for Eastern Goldfields Ltd. September 2016.

WABSI (2022) Arid Bronze Azure Butterfly Workshop Report

Williams, A. A. E., Williams, M. R. & Coppen, R. 2018. Conservation of the Arid Bronze Azure Butterfly (Ogyris subterrestris petrina) and host sugar ant (Camponotus terebrans): Survey results from Camponotus terebrans sites GIM 01, GIM 03, GIM 09, GIM 10, GIM 11, GIM 13, GIM 14, GIM 51, GIM 66, and GIM 68 south of Southern Cross (2014), and from C. terebrans site east of Merredin. Department of Biodiversity, Conservation and Attractions. Available at:

https://library.dbca.wa.gov.au/static/FullTextFiles/072251.pdf

Appendix 1: Host Ant Survey Datasheet

Site Name	Papertalk Borefield Extension L80/86	Observer	C Woolard, L James
Date	16 January 2025	Weather	37°C, slight wind

Tree	Species	Diameter (mm) at 1.5m above the ground	Easting	Northing	Ants Present	Leaf-hoppers Present
1	*Eucalyptus salmonophloia*	500	281130	6681051	N	N
2	*Eucalyptus salmonophloia*	100	281157	6681052	N	N
3	*Eucalyptus salmonophloia*	700	281203	6680927	N	N
4	*Eucalyptus salmonophloia*	150	281035	6688973	N	N
5	*Eucalyptus salmonophloia*	500	280861	6680916	N	N
6	*Eucalyptus salmonophloia*	300	280856	6680889	N	N
7	*Eucalyptus salmonophloia*	120	280820	6680905	N	N
8	*Eucalyptus salmonophloia*	100	280765	6680894	N	N
9	*Eucalyptus salmonophloia*	1400	280756	6680877	N	N
10	*Eucalyptus salmonophloia*	200	280564	6680830	N	N
11	*Eucalyptus salmonophloia*	700	277461	6680101	N	N
12	*Eucalyptus salmonophloia*	800	277499	6680008	N	N
13	*Eucalyptus salmonophloia*	500	278758	6680763	N	N
14	*Eucalyptus salmonophloia*	300	278738	6680763	N	N
15	*Eucalyptus salmonophloia*	800	278663	6680700	N	N
16	*Eucalyptus salmonophloia*	800	278619	6680786	N	N
17	*Eucalyptus salmonophloia*	300	278575	6680708	N	N
18	*Eucalyptus salmonophloia*	1000	277525	6679963	N	N
19	*Eucalyptus salmonophloia*	300	277750	6680103	N	N
20	*Eucalyptus salmonophloia*	800	227934	6680165	N	N
21	*Eucalyptus salmonophloia*	300	277918	6679900	N	N
22	*Eucalyptus salmonophloia*	300	277906	6679761	N	N