



WESTGOLD
RESOURCES LIMITED

BIG BELL GOLD OPERATIONS PTY LTD
(ACN 090 642 809)

MEEKATHARRA GOLD OPERATIONS

SUPPORTING DOCUMENT: ALBURY HEATH & EURO
PROJECT CLEARING PERMIT APPLICATION

M51/892

August 2021

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1.0 Introduction

Big Bell Gold Operations Pty Ltd (BBGO), a wholly owned subsidiary of Westgold Resources Limited (Westgold), owns and operates the Meekatharra Gold Operations (MGO). MGO are located approximately 700 kilometres (km) north of Perth along the Great Northern Highway in the Murchison region of Western Australia. MGO is comprised of the Bluebird/Yaloginda, Nannine, Reedy's and Paddy's Flat mining precincts.

BBGO proposes to develop the Albury Heath and Euro Projects (referred to hereafter as the application area) which falls within the Yaloginda mining precinct. The location of the proposed application area is shown on Figure 1, the tenements on which clearing is to occur is provided in Table 1.

Table 1: Tenement Overview

Tenement	Tenement Holder	Expiry Date
M 51/892	Big Bell Gold Operations Pty Ltd	04/03/2042
M 51/823	Big Bell Gold Operations Pty Ltd	04/06/2034
M 51/796	Big Bell Gold Operations Pty Ltd	04/06/2034
M 51/491	Big Bell Gold Operations Pty Ltd	07/03/2036
M 51/459	Big Bell Gold Operations Pty Ltd	04/02/2035
M 51/445	Big Bell Gold Operations Pty Ltd	19/01/2035
M 51/427	Big Bell Gold Operations Pty Ltd	07/07/2034
L 51/107	Big Bell Gold Operations Pty Ltd	05/01/2042
L 51/104	Big Bell Gold Operations Pty Ltd	21/10/2040
L 51/77	Big Bell Gold Operations Pty Ltd	26/01/2042
L 51/35	Big Bell Gold Operations Pty Ltd	24/03/2022

Big Bell Project: Accelerator/Indicator Clearing Permit Application

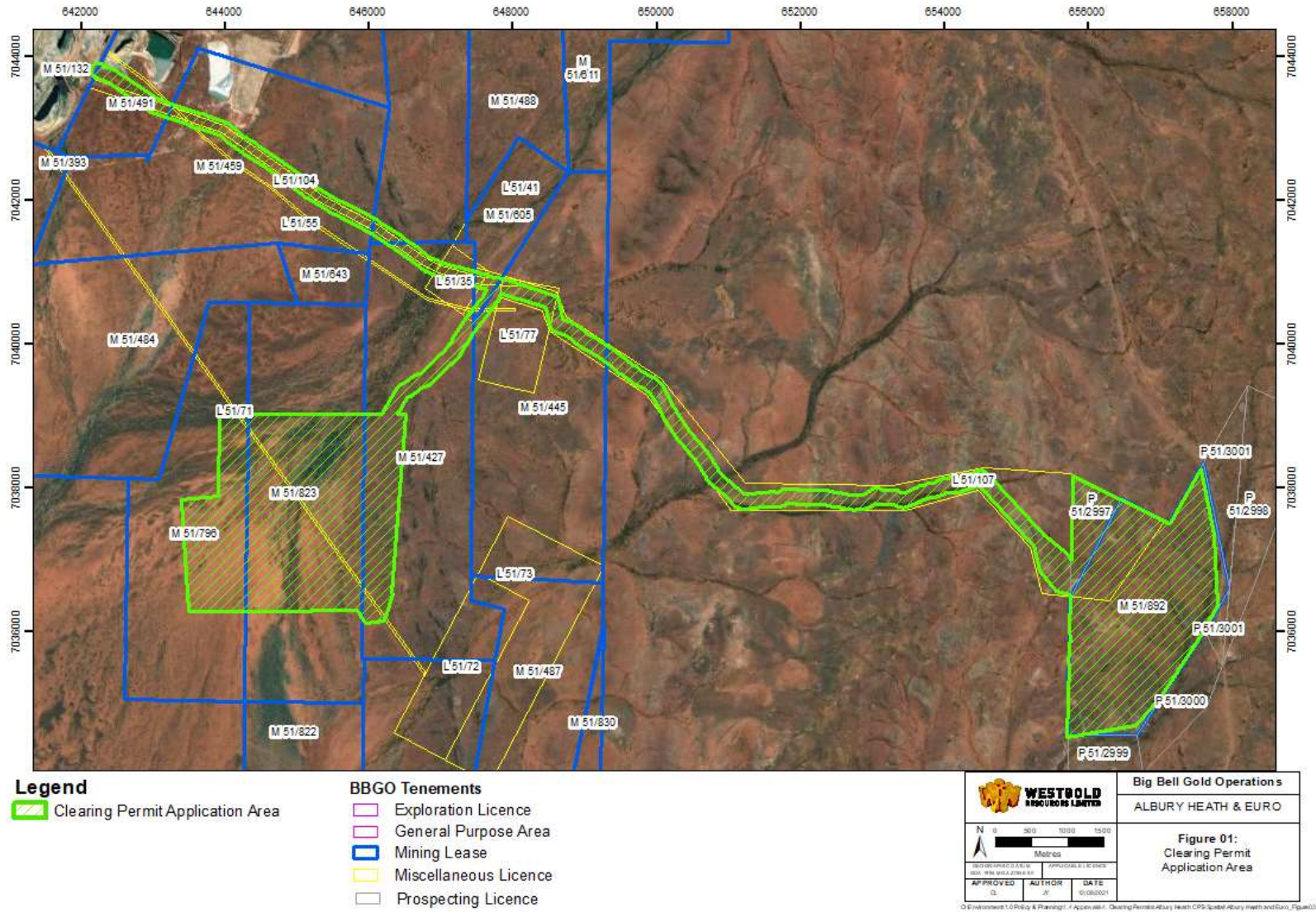


Figure 1: Project Location

2.0 Description and Purpose of Clearing

Up to 450 ha of native vegetation is proposed to be cleared within a clearing permit boundary area of 1,709 ha. The clearing is required to facilitate the development of active mining and allow for the construction of mine site infrastructure. Mine site infrastructure may include:

- Open pits;
- Waste rock dumps;
- ROM pads;
- Workshop and office areas;
- Low-grade ore and topsoil stockpiles;
- Water and fuel storage areas;
- Laydown and hardstand areas;
- Haul and access roads; and
- Other ancillary or supporting infrastructure.

3.0 Existing Environment

3.1 Landscape and Soil

The application area is located in the Murchison region of Western Australia, which is characterised by low Mulga woodlands over low hills and mesas. The Murchison bioregion encompasses the transitional zone between the Eucalypt dominated environs of the south-west Australia and Mulga/Spinifex dominated areas of central Australia (Morton *et al*, 1995).

The application area is primarily located within the Western Murchison subregion. However, as the mining areas are located at the junction of two subregions, there are small areas which are mapped within the Eastern Murchison subregion. The Western Murchison subregion consists of low Mulga woodlands with ephemeral flora species over extensive hardpan wash plains and outcrops (Spectrum Ecology, 2020). The East Murchison subregion features large areas of elevated red desert sandplains with minimal dune development and breakaway complexes. Vegetation is dominated by Mulga woodlands with ephemerals (Cowan *et al*, 2001).

Land systems across the arid and semi-arid tropical regions were progressively classified and mapped, according to the geomorphology, soil and vegetation. The application area intersects four such land systems; Gabanintha, Jundee, Wiluna and Yandil. Details of land systems and associated regional scale soil types impacted by proposed clearing activities are provided in Table 2.

Table 2: Land Systems

Land System	WA Soils	Description of Land Type (Curry et al, 1994)	Extent in Application Area (ha)	Land System Extent in WA (ha)	% of Land System in Application Area
Gabanintha	272Ga Stony Soil	Greenstone ridges, hills and footslopes supporting sparse acacia and other mainly non-halophytic shrublands.	442	251, 519	0.176%
Jundee	272Ju Red Shallow Loam	Hardpan plains with variable gravelly mantles and minor sandy banks supporting weakly groved Mulga shrublands.	150	662, 286	0.023%
Wiluna	272Wi Red Shallow Loam	Gently undulating gravelly plains on greenstone, laterite, and hardpan, with low stony rises and minor saline plains; supporting groved Mulga and bowgada shrublands and occasionally Chenopod shrublands.	589	260, 027	0.227%
Yandil	272Yn Red-brown Hardpan Shallow Loam	Hills, ranges and small plateaux on slate and basalt with cobble strewn footslopes supporting stunted Mulga shrublands.	564	495, 976	0.114%

3.1 Flora and Vegetation

A flora and vegetation survey of the application area was undertaken by Spectrum Ecology in June 2020 (Attachment 1). A total of eighty taxa from 21 families and 46 genera were recorded during the flora survey. Of these, three were Priority listed species and five were introduced species. A fourth Priority flora species was identified during follow up targeted flora surveys (Spectrum Ecology, 2020). Fabaceae was the most species rich family (17 taxa), followed by Poaceae (13 taxa) and Scrophulariaceae (8 taxa). The most species rich genera were; *Acacia* (13 taxa), *Eremophila* (8 taxa), and *Ptilotus* (6 taxa).

The four Priority listed flora species recorded within the application area include *Heliotropium mitchellii* (P1), *Acacia speckii* (P4), *Grevillea inconspicua* and *Calytrix verruculosa* (P3) (Figure 2). *Acacia speckii*, *Grevillea inconspicua* and *Calytrix verruculosa* were not considered to be significant at a local or regional scale and significant impacts to this species are unlikely. Further to this, all known records have been considered when developing the mine plan and will be avoided (Figure 3).

Due to there being very few known records of *Heliotropium mitchellii* in the local area and region, Westgold commissioned Spectrum Ecology to complete a targeted flora survey in order to better understand potential impacts clearing may have on this species. During the targeted survey Spectrum Ecology (2020) recorded over 5,000 individuals, of which 81% were located outside of the application area. As a result of the large number of individuals recorded during targeted surveys, Spectrum (2020) concluded that *Heliotropium mitchellii* was of low local significance. While impacts to *Heliotropium mitchellii* have been minimised, up to 300 individuals may require removal as a result of proposed clearing. This represents an impact of up to 5.3% of the total number of individuals recorded during recent survey work. However, it must be noted that there are likely to be additional populations of this taxon in the local area and region, and overall percentage impacts will be reduced as survey effort increases.

Six vegetation types were mapped within the application area none of which are considered to be similar or analogous to any Threatened or Priority Ecological Communities. However, two vegetation types found within the application area considered to be of local or regional significance; Vegetation type F3 and F4. Vegetation type F3 is restricted to small pockets within and adjacent to the proposed haul road route (see Figure 3) and does not appear to be widespread in the local area. Mine planning has considered the location of this vegetation type and clearing of Vegetation type F3 can be avoided and will not occur.

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Vegetation type F4 is located on a small rocky rise within the application area and also falls within areas designate for the proposed haul road. This vegetation type offers habitat for flora species of conservation significance, including *Heliotropium mitchellii*. Although this vegetation type may have a restricted distribution within the application area, it is unlikely to be locally restricted given that there are many similar such hills in surrounding areas (Spectrum Ecology, 2020). It must also be noted that the flora and vegetation survey did not extent to areas outside the application area, therefore it is highly likely that this vegetation type would be found in nearby local areas following additional survey effort. Impacts to this vegetation type will be minimised wherever possible and avoidance measures have already been used to ensure that 85% of the vegetation type remains un-impacted from proposed clearing activities.

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Table 3: Vegetation Associations

Vegetation Type	Land Surface and Landform	Vegetation Description	Extent Mapped in Application Area	Extent Potentially Impacted by Clearing	% of Extent in Application Area Potentially Impacted by Clearing
F1	Flat plain; red brown orange, sandy clay loam; laterite, cobbles of abundant ironstone / granite.	<i>Acacia macraneura</i> or <i>Acacia fusca</i> low isolated trees to open woodland over +/- <i>Acacia grasbyi</i> or <i>Acacia craspedocarpa</i> tall isolated shrubs over <i>Aristida contorta</i> low isolated tussock grasses.	1014	289.8	29
F2	Flat plain; red orange, clay sand; fine ironstone gravel.	<i>Eremophila fraseri</i> subsp. <i>parva</i> mid isolated shrubs over <i>Ptilotus roei</i> low isolated shrubs over <i>Aristida contorta</i> low isolated tussock grasses.	387.2	78.4	20
F3	Flat plain; red orange, clay sand; abundant medium ironstone gravel.	<i>Tecticornia</i> spp. low-mid sparse samphire shrubland over <i>Aristida contorta</i> , <i>Diplachne fusca</i> subsp. <i>muelleri</i> low sparse tussock grassland.	2.0	0.0	0
F4	Low hills; red brown, sandy loam; abundant medium granite gravel.	<i>Acacia aptaneura</i> tall isolated shrubs over <i>Micromyrtus sulphurea</i> , <i>Grevillea inconspicua</i> (P4) low sparse shrubland over <i>Aristida contorta</i> low sparse tussock grassland.	8.0	1.2	15
D1	Drainage line on flats; red brown orange sandy clay; No rocks to abundant medium ironstone gravel.	<i>Acacia aptaneura</i> , <i>A. craspedocarpa</i> , <i>A. macraneura</i> tall open shrubland over <i>A. tetragonophylla</i> mid sparse shrubland over <i>Enteropogon ramosus</i> , <i>Dichanthium sericeum</i> subsp. <i>humilius</i> or <i>Eragrostis cumingii</i> low open tussock grassland.	315.6	76.1	24
D2	Creek bed; red orange sandy loam; Fine creek stones.	<i>Eucalyptus kingsmillii</i> low open woodland over <i>Senna artemisioides</i> subsp. <i>x artemisioides</i> , <i>Acacia burkittii</i> tall open shrubland over <i>Cenchrus setiger</i> low open tussock grassland.	2.5	0.4	16.0

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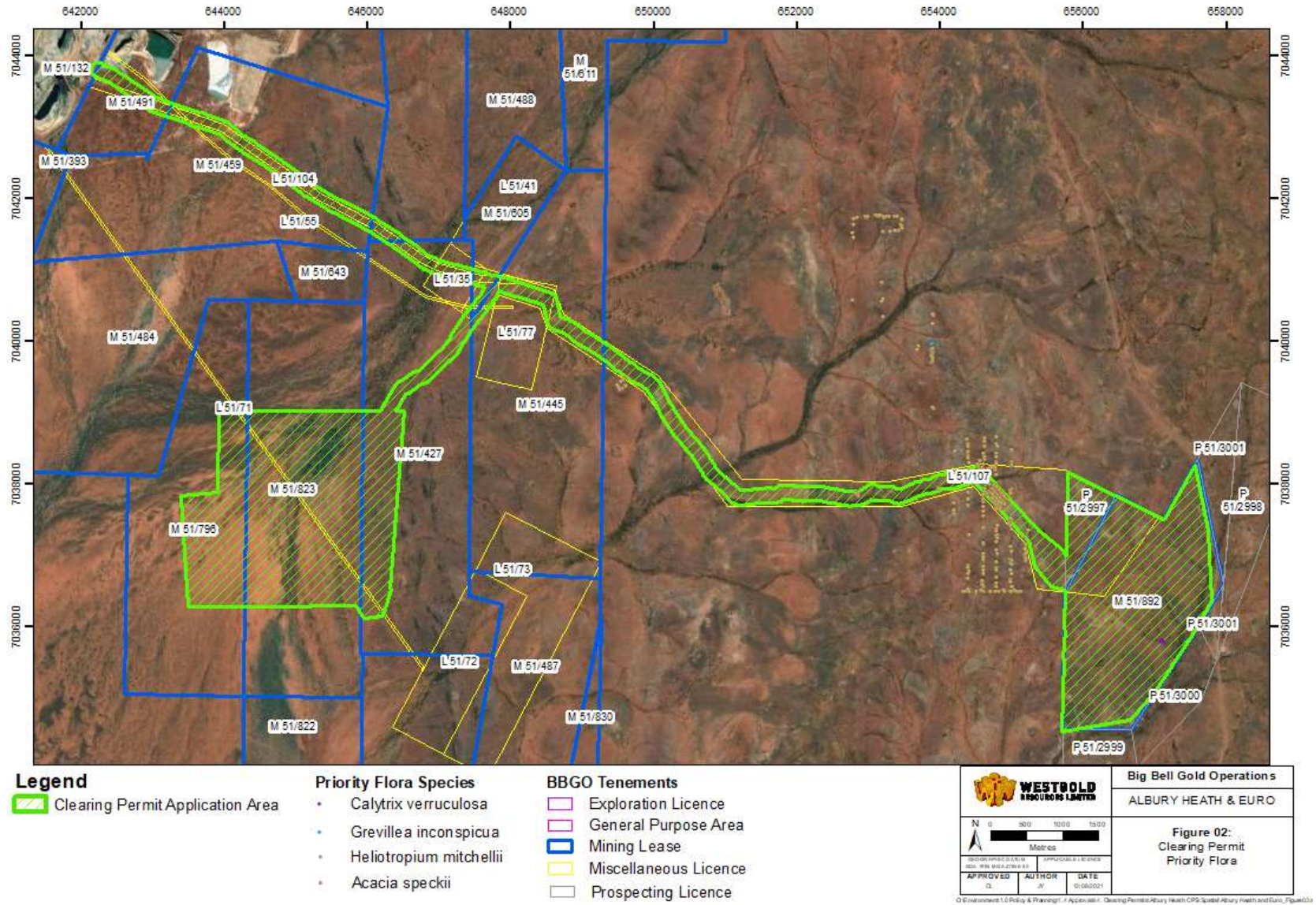


Figure 2: Priority flora locations

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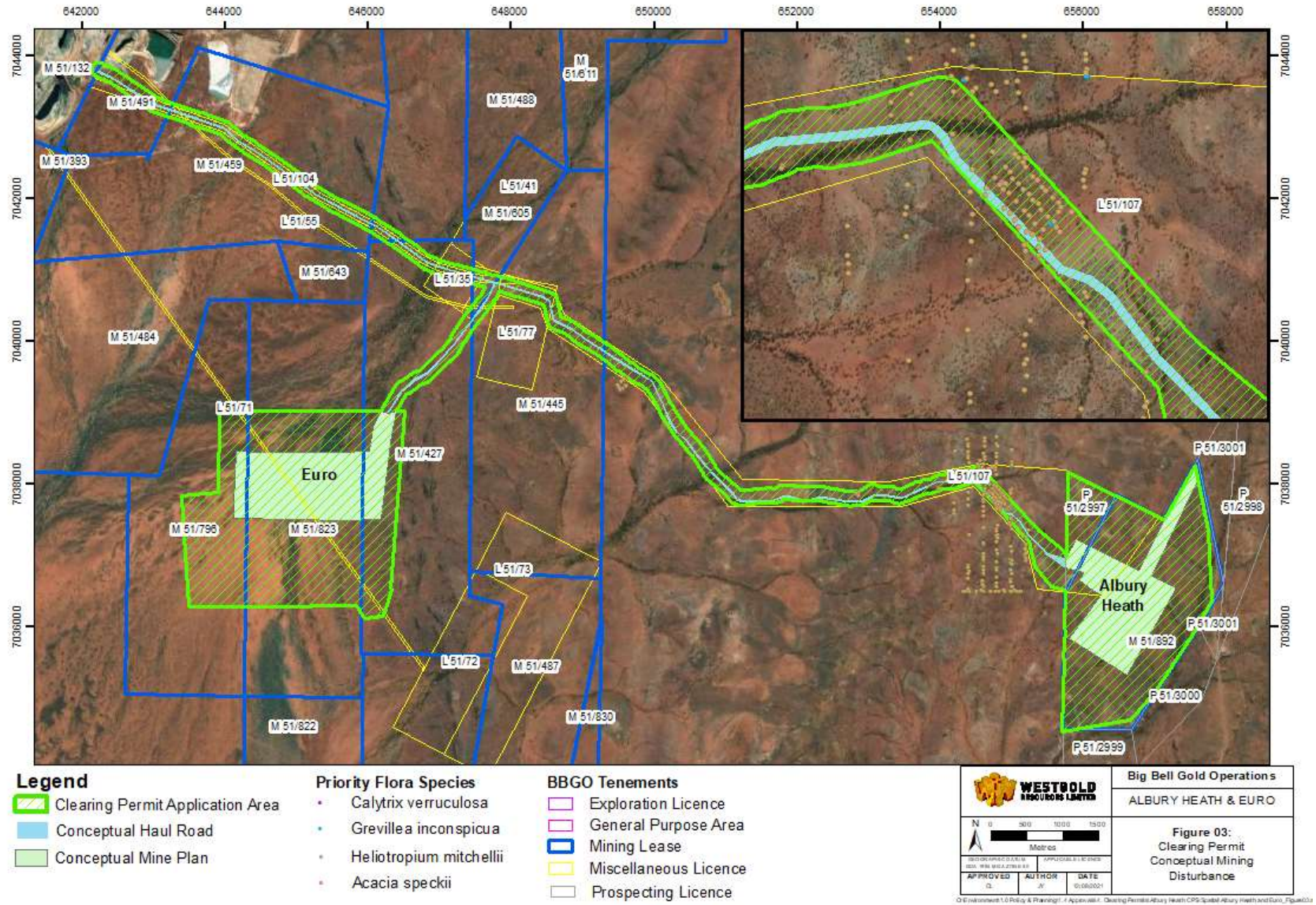


Figure 3: Location of mining infrastructure (conceptual footprint)

3.1 Fauna

Spectrum Ecology (2020) completed a Level 1 fauna assessment over the application area and also assessed the local area (5km radius) to place the fauna habitat in context. During the survey four broad habitat types were identified (Table 4), none of which are considered to be restricted or unique.

A total of 23 vertebrate fauna species were recorded during the fauna survey; two native mammal species, two introduced mammal species, 18 bird species and one reptile. While a number of conservation significant fauna species could potentially utilise the habitat found within the application area, no species of conservation significance were recorded during the fauna survey. All fauna species of conservation significance that are considered “possible” or “likely” to occur within the application area, will not be significantly impacted by the proposed clearing, as there is vast amounts of suitable habitat found in nearby surrounding areas, or they are wide ranging species that may only frequent the application area on occasion (Attachment 1).

Table 4: Broad Fauna Habitats

Broad Fauna Habitat	Description	Habitat Assessment	Area (ha)	Proportion of the Survey Area (%)	Associated Vegetation Type
Open Plain	Mixed density tall <i>Acacia</i> shrubland over low moderately dense to isolated shrubs.	Limited vegetation present for fauna habitat and foraging resources.	1416.9	81.2	F1, F2, F3, F4
Mulga Woodland	Dominated by mixed tall open shrubland of <i>Acacia</i> over <i>A. tetragonophylla</i> mid sparse shrubland and low mixed tussock grassland. Larger creekline is sparse <i>Eucalyptus kingsmillii</i> woodland over tall open shrubland.	Tall <i>Acacia</i> provides habitat for bird species. Tussock grasses, dense vegetation and sandy drainage lines provide suitable habitat for mammals and reptiles.	283.7	16.3	D1, D2
Rock Outcrop	Dominated by tall open shrubland of mixed <i>Acacia</i> with little to no ground cover.	Fauna assemblage similar to Mulga woodland. Large boulders provide shelter for rock dwelling fauna.	0.8	<0.1	F1
Cleared/ Developed	Historic and existing mines and minor dirt roads associated with existing Bluebird mine.	No fauna associated with these areas.	44.1	2.4	-

3.2 Hydrology and Hydrogeology

The application area is located within the Yalgar River sub catchment, with all drainage flowing south towards Lake Annean, an ephemeral salt Lake. The application area intersects many waterways that are largely ephemeral and generally only flow after rainfall events. (Rockwater, 2020). Such drainage lines are a major feature of the landscape and any clearing of vegetation in these areas would have a negligible impact.

The soils of the application area are not prone to waterlogging. The relatively low annual rainfall, limited surface water flows and high evaporation rate further reduces the potential for erosion and flooding risks, and limits potential impacts clearing may have on the quality of surface water.

Groundwater in the area sits at depths of between 35 m to 39.4 m below ground level and has a low hydraulic gradient decreasing to the south towards Lake Annean (Rockwater, 2020). The proposed clearing of up to 450 ha of native vegetation within a clearing permit boundary area of 1,709 ha is unlikely to have any measureable impacts on the quality of groundwater.

4.0 Assessment Against the Clearing Principles

An assessment of the proposed clearing against the ten clearing principles outlined in Schedule 5 of the *Environmental Protection Act 1986* is provided in Table 5. This assessment demonstrates that the proposed clearing of up to 450 ha of native vegetation is not at variance to Principles (c), (d) & (e), may be at variance to Principle (f), and is not likely to be at variance with the remaining clearing principles.

Table 5: Assessment Against Clearing Principles

Principle	Assessment	Outcome
a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	<p>Flora, vegetation and fauna surveys have been completed over the application area.</p> <p>A total of eighty taxa from 21 families and 46 genera were recorded during the flora survey. This is not considered to be representative of an area of high or outstanding biodiversity in the Murchison region.</p> <p>Four priority flora species and two locally/regionally significant vegetation types have been identified within the application area. Of the four species recorded, only the Priority 1</p>	The proposed clearing is unlikely to be at variance to Principle (a).

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Principle	Assessment	Outcome
	<p>species <i>Heliotropium mitchellii</i> warranted more detailed survey effort in order to determine potential impacts. The remaining three Priority species were well known or widespread and can be avoided. A targeted flora survey was undertaken which recorded over 5,000 <i>Heliotropium mitchellii</i> individuals. These results demonstrate that <i>Heliotropium mitchellii</i> is of low local significance and will not be significantly impacted by the proposed removal of up to 300 individuals.</p> <p>While two locally/regionally significant vegetation types have been recorded in the application area, neither are representative of a PEC or TEC. Vegetation type F3 is restricted to small pockets within the application area and does not appear to be widespread in the local area. However, impacts to this vegetation type have been minimised to ensure that 85% of the mapped extent remains un-impacted</p>	
<p>b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</p>	<p>Four broad habitat types were identified in the survey area. None of the habitats are described as significant habitat for fauna indigenous to Western Australia.</p> <p>During fauna survey, no fauna species of conservation significance were recorded. Species considered “possible” or “likely” to occur in the application area will not be significantly impacted by the proposed clearing, as there is vast amounts of suitable habitat found in nearby surrounding areas, or they are wide ranging species that may only frequent the application area on occasion</p>	<p>The proposed clearing is unlikely to be at variance to Principle (b).</p>
<p>c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora.</p>	<p>No declared rare or threatened flora species were identified within the survey area and none are known to occur in the local area.</p>	<p>The proposed clearing is not at variance to Principle (c).</p>

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Principle	Assessment	Outcome
d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.	No TEC's are known to occur within the application area and no vegetation types mapped within the application area were found to be similar or analogous to any TECs.	The proposed clearing is not at variance to Principle (d).
e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	Three Beard vegetation associations have been mapped as occurring within the application area. All are well represented at a state-wide, regional, sub-regional and local government level, with at least 99% of their pre-European extent remaining.	The proposed clearing is not at variance to Principle (e).
f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	There are many minor non-perennial drainage lines that dissect the application area. Such drainage lines are a feature of the landscape and are common and widespread throughout the region. While, the proposed clearing is unlikely to have any significant impacts on vegetation growing in association with a watercourse, some of the aforementioned vegetation will be cleared as a result of proposed activities. To reduce potential impacts, clearing in the vicinity of mapped drainage lines will be minimised wherever possible.	The proposed clearing may be at variance to Principle (f)
g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	The proposed clearing of up to 450 ha of native vegetation in a highly vegetation landscape is unlikely to result or cause appreciable land degradation. To reduce the risk of cleared areas being exposed and prone to wind erosion, areas will only be cleared when construction works are imminent.	The proposed clearing is unlikely to be at variance to Principle (g).
h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The application area does not intersect any conservation areas. The closest such area is Unallocated Crown Land (UCL) 75km north east of the project area that the Department of Biodiversity, Conservation and Attractions (DBCA) has earmarked as an area of interest, no formal protection is offered to the areas under legislation.	The proposed clearing is not at variance to Principle (h).

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Principle	Assessment	Outcome
i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	The proposed clearing of up to 450 ha of native vegetation in a highly vegetated landscape is unlikely to cause deterioration in the quality of surface or underground water.	The proposed clearing is unlikely to be at variance to Principle (i).
j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	<p>The Meekatharra region experiences relatively low annual rainfall and has a high evaporation rate. There is likely to be little surface water flow during seasonal rainfall.</p> <p>The proposed clearing of up to 450 ha of native vegetation with a highly vegetated landscape is unlikely to cause, or exacerbate the incidence of flooding.</p>	The proposed clearing is unlikely to be at variance to Principle (j).

5.0 References

- Cowan. (2001). Murchison 1 (MUR1 – East Murchison subregion). Accessed via <https://library.dbca.wa.gov.au/>
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