



WESTGOLD
RESOURCES LIMITED

SUPPORTING DOCUMENT
BOOMERANG PIPELINE CORRIDOR

PURPOSE PERMIT CLEARING PERMIT APPLICATION

L 51/51 and M 51/92

January 2022

BIG BELL GOLD OPERATIONS PTY LTD

(ACN 090 642 809)

MEEKATHARRA GOLD OPERATIONS

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1.0 Introduction

Big Bell Gold Operations Pty Ltd (BBGO - ABN 84 090 642 809), a wholly owned subsidiary of Westgold Resources Limited (Westgold), owns and operates the Meekatharra Gold Operations (MGO) located approximately 700 kilometres (km) north of Perth along the Great Northern Highway. MGO consists of the Bluebird, Nannine, Reedy's and Paddy's Flat mining areas.

1.1 Background and Purpose

In preparation for underground mining of the Boomerang Pit, groundwater present in the immediate vicinity must first be removed. The Boomerang Pit is situated directly to the south of the Kurara Pit, with both pits currently containing pit water. In order to ensure that underground operations can occur safely, both the Boomerang Pit and the adjacent Kurara Pit are to be dewatered ahead of planned mining activities.

The dewater from these mining voids is to be sent via pipeline (the Boomerang dewatering pipeline corridor) to a discharge point on Lake Annean. The pipeline will be approximately 8 km long stretching from the Boomerang Pit to the southern edge of Lake Annean. Clearing of native vegetation may be required throughout parts of the pipeline corridor. Therefore, BBGO seeks approval of a native vegetation clearing permit under the *Environmental Protection Act 1986* within a clearing permit envelope (application area) of 33.94 hectares (ha) located on tenements L 51/51 and M 51/92 at the North Reedy mining area. Up to a total of 30 ha is proposed to be cleared within the application area. The purpose of the clearing is to construct and operate a dewatering pipeline.

Approval to disturb land on mining tenure will be sought under the *Mining Act 1978* via a mining proposal which is planned to be submitted to DMIRS in early February.

Table 1: Tenement Overview

Tenement	Tenement Holder	Expiry Date	Proposed Activity
L 51/51	Big Bell Gold Operations Pty Ltd	20/11/2023	Dewatering pipeline corridor
M 51/92	Big Bell Gold Operations Pty Ltd	24/07/2028	Dewatering pipeline corridor

1.2 Location

The North Reedy Project is located 50km south west of Meekatharra, in the Murchison region of Western Australia. The Boomerang pipeline corridor is situated on tenements L 51/51 and M 51/92 at the North Reedy mining area (Figure 1).

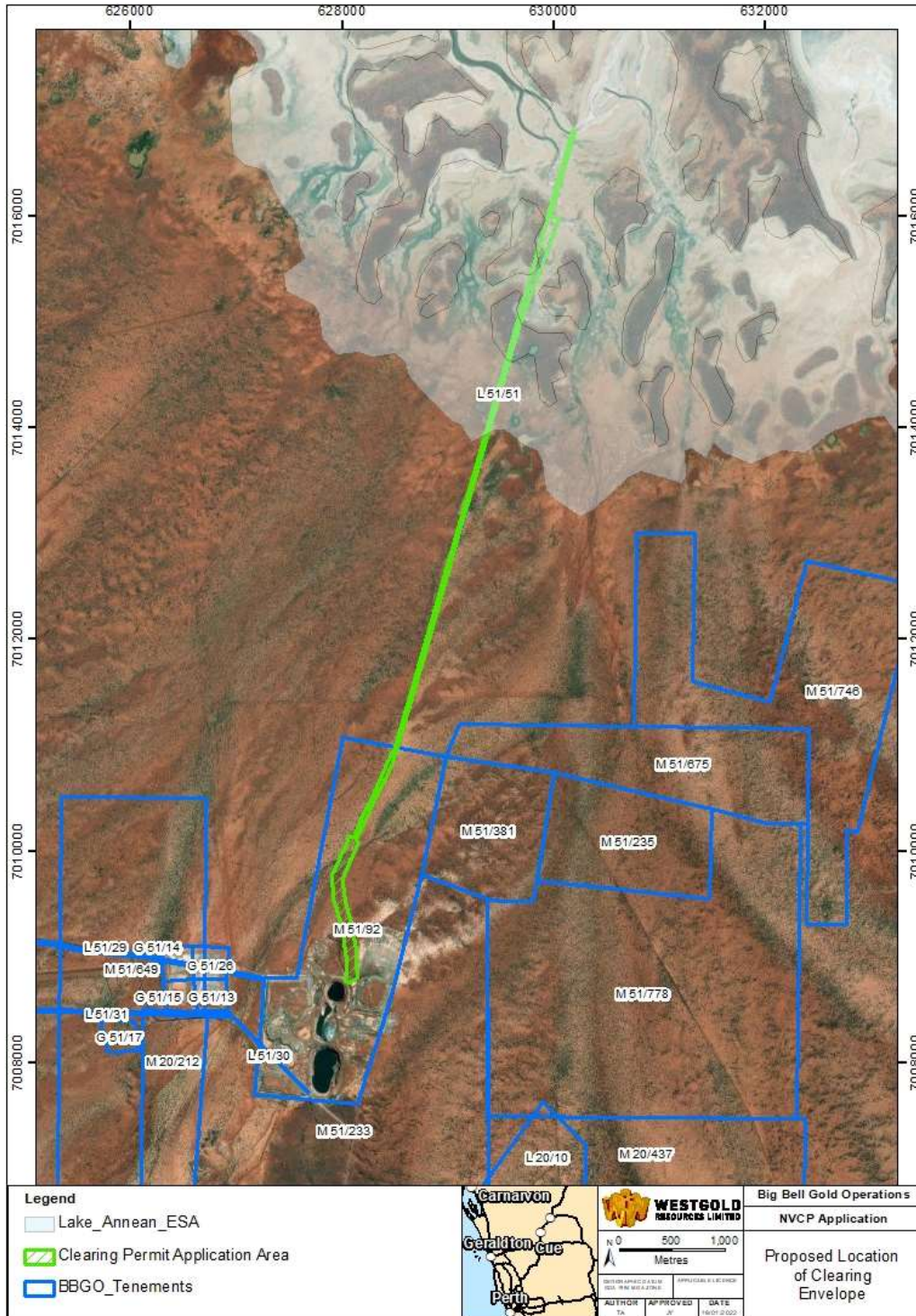


Figure 1: Project Location

2.0 Existing Environment

2.1 Landform and Soils

Boomerang is located in the Murchison region of Western Australia, which is made up of 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 majority (87.7%) of the proposed pipeline corridor is located within the Western Murchison subregion with a 1.5km section (12.3%) on the south end located in the Eastern Murchison subregion. The Western Murchison subregion is characterised by Mulga low woodlands which are often rich in ephemerals on outcrops and fine textured Quaternary alluvial and eluvial surfaces mantling granite and greenstone strata of the northern part of the Yilgarn Craton. The East Murchison subregion is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Vegetation is dominated by Mulga woodlands often rich in ephemerals (Stantec Australia, 2022).

Land systems across the arid and semi-arid tropical regions were progressively classified and mapped, according to geomorphology, soil and vegetation. The application area intersects two land systems; Carnegie and Yanganoo. 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	Description of Land Type	Extent in Application Area (ha)	Land System Extent in WA (ha)	% of Land System in Envelope
Carnegie System	Salt lakes with fringing saline alluvial plains, kopi dunes and sandy banks, supporting halophytic shrublands and acacia tall shrublands.	10.37	1,769,829	0.0006
Yanganoo System	Almost flat hardpan wash plains, with or without small wanderrie banks and weak growing; supporting mulga shrublands and wanderrie grasses on banks.	23.62	2,019,907	0.001

2.2 Hydrology

The application area is partially located within the Lake Annean Environmentally Sensitive Area (ESA), an ephemeral salt lake which is also listed on the Directory of Important Wetlands in Australia. The application area intersects many waterways that are largely ephemeral and generally only flow after heavy rainfall events. Drainage lines are a major feature of the landscape and any clearing of vegetation in these areas would have a negligible impact.

The low annual rainfall, limited surface water flows and high evaporation rate reduces the potential for erosion and flooding risks, and limits potential impacts clearing may have on the quality of surface water.

2.3 Flora and Vegetation

A flora, vegetation and fauna survey of the Boomerang pipeline corridor area was undertaken by Stantec Australia in November 2021 (Attachment 1). The corridor extends 8 km from the Boomerang Pit to Lake Annean. Approximately 5 km intersects native vegetation that has regrown over the previously disturbed corridor and the final 3 km is located within the ESA, Lake Annean (Figure 1). A total of 50 flora taxa from 14 families and 27 genera were identified within the survey area. Of these, one was a Priority listed species, one a species of 'other' significance and one introduced flora species. The most represented families were Chenopodiaceae (20) and Fabaceae (10), with the remaining families recording between one and three taxa.

The one priority level 3 flora taxon (Figure 2), *Tecticornia cymbiformis* was recorded growing on gypsiferous dunes on the Lake Annean playa and the riparian zone of lake islands associated with the TaffuTibFIAhh vegetation type. *Tecticornia cymbiformis* was considered to be locally abundant and likely to occur across the broader saline lake margin habitat of Lake Annean. One flora of 'other' significance; *Tecticornia* aff. *undulata* which displayed an affinity with a recognised taxon, *Tecticornia undulata*; however also had characteristics that separated it from the known species. *Tecticornia* aff. *undulata* was recorded growing in association with the TaffuTibFIAhh vegetation type and with the *Tecticornia cymbiformis* and other non-significant flora species. Stantec (2022) state *Tecticornia* aff. *undulata* is likely to be locally abundant and likely to occur across the broader saline lake margin habitat of Lake Annean.

The *Tecticornia cymbiformis* and *Tecticornia* aff. *undulata* are located 13 metres (m) west of the proposed clearing permit boundary in both occurrences (Figure 2) and are therefore unlikely to be impacted by clearing the Boomerang dewatering pipeline corridor.

Remaining taxa recorded during the field survey were considered to be represented in the local and broader Murchison bioregion. No other priority flora were located within the proposed

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dewatering pipeline corridor and no Threatened or Priority Ecological Communities are located within the Project area.

Six vegetation types were mapped within the survey area (Table 3). The vegetation types recorded within the survey area are characteristic of the Western and Eastern Murchison bioregions and are not considered to be restricted to the survey area. The most extensive vegetation type recorded within the survey area was AcA?pEg, which occurred over approximately 63% of the survey area.

Table 3: Vegetation Types of the Application Area

Vegetation Code	Vegetation Type Description	Vegetation Condition
TaffuTibFIAhh	<p><i>Tecticornia</i> aff. <i>undulata</i> and <i>Tecticornia indica</i> subsp. <i>bidens</i> open samphire over <i>Frankenia laxiflora</i> open low shrubland over <i>Aristida holathera</i> var. <i>holathera</i> (<i>Eragrostis pergracilis</i>) very open tussock grassland.</p> <p>Associated species: <i>Acacia ?ligulata</i>, <i>Calandrinia</i> sp., <i>Calocephalus multiflorus</i>, <i>Dysphania simulans</i>, <i>Gunniopsis rodwayi</i>, <i>Lawrenzia helmsii</i>, <i>Maireana amoena</i>, <i>Maireana lobiflora</i>, <i>Maireana luehmannii</i>, <i>Melaleuca</i> sp., <i>Nicotaina</i> sp., <i>Paspalidium basicladum</i>, <i>Salsola australis</i>, <i>Sclerolaena</i> sp., <i>Solanum lasiophyllum</i>, <i>Swainsona affinis</i>, <i>Tecticornia</i> sp. Dennys Crossing, <i>Tecticornia cymbiformis</i>, <i>Tecticornia</i> aff. <i>undulata</i>, <i>Tecticornia halocnemoides</i> 'large ovate seed aggregate' and <i>Tecticornia peltata</i>.</p>	Excellent
DvaA?IEcfSahC sA?vMpMt	<p><i>Dodonaea viscosa</i> subsp. <i>angustissima</i> and <i>Acacia ?ligulata</i> open shrubland over <i>Eremophila compacta</i> subsp. <i>fecunda</i>, <i>Senna artemisioides</i> subsp. <i>helmsii</i> and <i>Cratystylis subspinescens</i> and <i>Maireana pyramidata</i> open low shrubland.</p> <p>Associated species: <i>Acacia synchronica</i>, <i>Aristida holathera</i> var. <i>holathera</i>, <i>Atriplex semilunaris</i>, <i>Atriplex ?vesicaria</i>, <i>Calandrinia</i> sp., <i>Calocephalus multiflorus</i>, <i>Enchylaena tomentosa</i>, <i>Eremophila forrestii</i> subsp. <i>forrestii</i>, <i>Frankenia laxiflora</i>, <i>Frankenia setosa</i>, <i>Grevillea striata</i>, <i>Maireana triptera</i>, <i>Nicotaina</i> sp., <i>Ptilotus obovatus</i>, <i>Sclerolaena cornisheana</i> and <i>Solanum lasiophyllum</i>.</p>	Excellent
MspCsAaTd	<p><i>Melaleuca</i> sp. tall shrubland over <i>Cratystylis subspinescens</i> and <i>Atriplex amnicola</i> open low shrubland over <i>Tecticornia doliiformis</i> open samphire.</p> <p>Associated species: Poaceae sp. (heavily grazed).</p>	Very Good
AcA?pEg	<p><i>Acacia craspedocarpa</i>, <i>Acacia ?pteraneura</i> and <i>Acacia</i> sp. (aneura complex) tall shrubland over <i>Eremophila galeata</i> and <i>Acacia tetragonophylla</i> open low shrubland.</p> <p>Associated species: <i>Pterocaulon sphacelatum</i>, <i>Ptilotus obovatus</i>, <i>Senna artemisioides</i> subsp. <i>helmsii</i>, <i>Maireana triptera</i>, <i>Solanum lasiophyllum</i>, <i>Cymbopogon ambiguus</i>, <i>?Eragrostis pergracilis</i> and Poaceae sp. (heavily grazed).</p>	Good
AcSas	<p><i>Acacia caesaneura</i>, <i>Acacia</i> sp. (aneura complex), <i>Acacia craspedocarpa</i> and <i>Acacia ?pteraneura</i> open scrub over <i>Eremophila galeata</i>, <i>Acacia tetragonophylla</i> and <i>Senna artemisioides</i> subsp. <i>sturtii</i> open shrubland.</p> <p>Associated species: <i>Maireana pyramidata</i>, <i>Ptilotus obovatus</i>, <i>Cymbopogon ambiguus</i>, <i>Senna artemisioides</i> subsp. <i>helmsii</i> and <i>Maireana</i> spp..</p>	Degraded
ApSsp	<p><i>Acacia pruinocarpa</i> open tall shrubland over <i>Eremophila galeata</i>, <i>Sclerolaena cornisheana</i> and <i>Sclerolaena</i> sp. open low shrubland.</p> <p>Associated species: <i>Acacia tetragonophylla</i>, <i>Acacia ?pteraneura</i>, <i>Acacia</i> sp. (aneura complex), <i>Salsola australis</i>, <i>Solanum lasiophyllum</i>, <i>Ptilotus obovatus</i>, <i>Cymbopogon ambiguus</i>, <i>Maireana luehmannii</i> and <i>*Rumex vesicarius</i>.</p>	Degraded

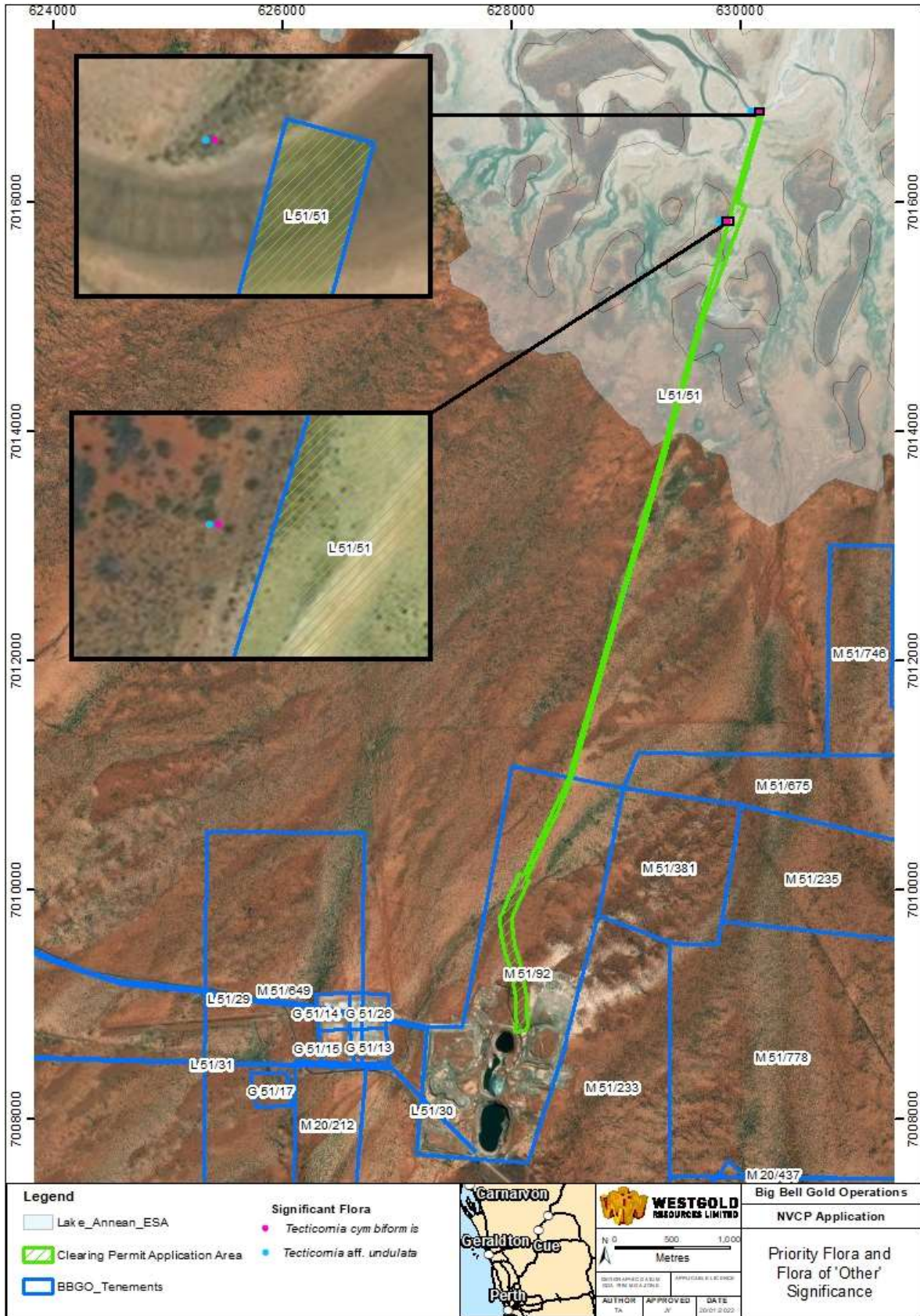


Figure 2: Priority Flora Locations

2.4 Fauna

Stantec Australia (2022) completed a Level 1 fauna assessment over the application area. Four broad terrestrial habitat types were identified within the survey area during the assessment (Table 4). The salt lake habitat and riparian vegetation are likely to provide suitable habitat to some migratory species during inundation of Lake Annean.

A total of 19 vertebrate fauna species were recorded during the survey; five mammals (three introduced), three reptiles and 11 birds. No conservation significant fauna were recorded during the survey (Attachment 1).

Table 4: Broad Fauna Habitats

Broad Fauna Habitat	Description	Habitat Assessment	Area (ha)	Proportion of the Survey Area (%)	Associated Condition
Samphire Dune adjacent to Saline Drainage	<i>Tecticornia</i> aff. <i>undulata</i> and <i>Tecticornia indica</i> subsp. <i>bidens</i> open samphire over <i>Frankenia laxiflora</i> open low shrubland over <i>Aristida holathera</i> var. <i>holathera</i> (<i>Eragrostis pergracilis</i>) very open tussock grassland.	Drainage lines may become inundated following substantial rainfall events which is likely to support migratory bird species. Open low shrubland suitable for reptiles.	9.75	12%	Poor
Inland Sand Dune	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i> and <i>Acacia</i> ? <i>ligulata</i> open shrubland over <i>Eremophila compacta</i> subsp. <i>fecunda</i> , <i>Senna artemisioides</i> subsp. <i>helmsii</i> and <i>Cratystylis subspinescens</i> and <i>Maireana pyramidata</i> open low shrubland. <i>Melaleuca</i> sp. tall shrubland over <i>Cratystylis subspinescens</i> and <i>Atriplex amnicola</i> open low shrubland over <i>Tecticornia doliiformis</i> open samphire. <i>Acacia craspedocarpa</i> , <i>Acacia</i> ? <i>pteraneura</i> and <i>Acacia</i> sp. (<i>aneura</i> complex) tall shrubland over <i>Eremophila galeata</i> open low shrubland.	The densely vegetated areas contained leaf litter and woody debris, which may serve as shelter for mammals and reptiles, and areas with tall shrubs would provide roosting and nesting habitat for birds.	7.36	9%	Good-Poor
Mulga Woodland	<i>Acacia caesaneura</i> open scrub over <i>Senna artemisioides</i> subsp. <i>sturtii</i> open shrubland.	The densely vegetated areas contained leaf litter and woody debris, which may serve as shelter for mammals and reptiles. The habitat was also suitable for roosting and nesting birds.	56.5	67%	Poor
Sandy Plain	<i>Acacia pruinocarpa</i> open tall shrubland over <i>Sclerolaena</i> sp. open low shrubland.	These open habitats lack shelter and complexity and would provide minimal value to fauna.	5.66	7%	Degraded

3.0 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 30 ha of native vegetation is not at variance to principles (c), (d), (e) and (h), is 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. A total of 50 taxa from 14 families and 27 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>One priority flora species and one flora of 'other' significance were identified in close proximity (~13 m west) to the application area. These species are outside the clearing permit envelope and will not be impacted by the proposed clearing.</p> <p>A small section (3 km length) of the application area intersects Lake Annean, which is classified as an Environmentally Sensitive Area and is also listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) as a nationally important wetland. Lake Annean is considered to be a good example of a seasonal/intermittent saline/brackish lake and marsh system, and it is also one of the most important breeding sites for the Gull-billed Tern (<i>Gelochelidon nilotica</i>) and the Whiskered Tern (<i>Chlidonias hybrida</i>) in Western Australia. Lake Annean has a mapped extent of 22,158 ha,</p> <p>No more than 10 ha of native vegetation is proposed to be cleared within the Lake Annean section of the application area. However, it must be noted that large portions of Lake Annean are bare and contain no native vegetation. Assuming that up to 10 ha will be cleared, this represents impacts of less than 0.05%. This being considered, significant impacts to the Lake Annean ESA are unlikely to occur as a result of the proposed clearing.</p>	The proposed clearing is unlikely to be at variance to Principle (a).
b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a	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.	The proposed clearing is unlikely to be at variance to Principle (b).

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Principle	Assessment	Outcome
significant habitat for fauna indigenous to Western Australia.	During the fauna survey, no fauna of conservation significance were recorded. Species considered 'likely' or 'possible' 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 only frequent the application area on occasion.	
c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora.	No declared rare or threatened flora species were identified within the survey area and none are known to occur in the local area.	The proposed clearing is not at variance to Principle (c).
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 analogous to any TEC's.	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.	Two Beard vegetation associations have been mapped as occurring within the application area. Both 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 and approximately 3 km of the northern most section is located within Lake Annean, a largely ephemeral salt lake which is listed on the Directory of Important Wetlands in Australia. While the proposed clearing is unlikely to have 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 where possible.	The proposed clearing is 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 30 ha of native vegetation in a highly vegetated 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 principle 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	The application area does not intersect any conservation areas. The closest such area is ex Lakeside lease 72 km south west of the application area. The proposed clearing will not impact on the environmental values of this area.	The proposed clearing is not at variance to Principle (h).

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Principle	Assessment	Outcome
<p>nearby conservation area.</p>		
<p>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.</p>	<p>There are no permanent watercourses within the application area. However, a small section (3 km length) of the application area intersects Lake Annean, which is a non-perennial wetland. No more than 10 ha of native vegetation is proposed to be cleared within this section of the application area.</p> <p>The clearing of native vegetation has the potential to temporarily increase sediment loads entering surface water systems. However, given that the main surface water system in the area is a non-perennial lake, and that internal management measures will be implemented, the proposed clearing is unlikely to result in a deterioration in the quality of surface water.</p> <p>In terms of potential impacts to underground water, the proposed clearing of up to 30 hectares of native vegetation in a highly vegetation landscape is unlikely to result in a deterioration of water quality.</p>	<p>The proposed clearing is unlikely to be at variance to Principle (i)</p>
<p>j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.</p>	<p>With Meekatharra region experiencing relatively low annual rainfall and a high evaporation rate, there is likely to be little surface water flow. Given the above, the proposed clearing is unlikely to cause or increase the incidence or intensity of flooding.</p>	<p>The proposed clearing is unlikely to be at variance to Principle (j).</p>

4.0 References

Morton et al (1995). Refugia for Biological Diversity in Arid and Semi-arid Australia. Department of the Environment, Sport and Territories, Canberra, ACT. Accessed via <http://www.environment.gov.au/archive/biodiversity/publications/series/paper4/>.

Stantec Australia (2022). Boomerang Open Pit Dewatering Discharge Pipeline Reconnaissance Flora and Fauna Survey. Prepared for Westgold Resources. January 2022.