Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10643/1
Permit type:	Purpose permit
Applicant name:	Lithco No. 2 Pty Ltd
Application received:	5 June 2024
Application area:	330 hectares of native vegetation
Purpose of clearing:	Expansion of mining operations at Bald Hill Mine Site
Method of clearing:	Mechanical removal
Property:	Mining Leases M15/400, M15/1305, M15/1308, M15/1840, M15/1851 Miscellaneous Leases L15/365, L15/425, L15/384 General Purpose Lease G15/28
Location (LGA area/s):	Shire of Coolgardie
Colloquial name:	Bald Hill Project

1.2. Description of clearing activities

Lithco No. 2 Pty Ltd proposes to clear up to 330 hectares of native vegetation within a boundary of approximately 1,256 hectares for the purpose of expanding mining operations at its existing Bald Hill Mine Site (see Figure 1, Section 1.5). The project is located approximately 54 kilometres southeast of Kambala, within the Shire of Coolgardie.

1.3. Decision on application

Decision:	Granted
Decision date:	25 October 2024
Decision area:	330 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of flora and vegetation surveys and other supporting information provided by the applicant (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- potential disturbance to or removal of *Leipoa ocellata* (malleefowl) and breeding mounds if clearing occurs during *Leipoa ocellata* (malleefowl) breeding season

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values
- potential impacts to watercourses and associated riparian vegetation
- potential land degradation in the form of soil erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- staged clearing to minimise erosion
- identify the presence of *Leipoa ocellata* (malleefowl) mounds and cease clearing activities during *Leipoa ocellata* (malleefowl) breeding season if mounds are identified
- no clearing of creeklines unless for the purpose of access tracks

1.5. Site map

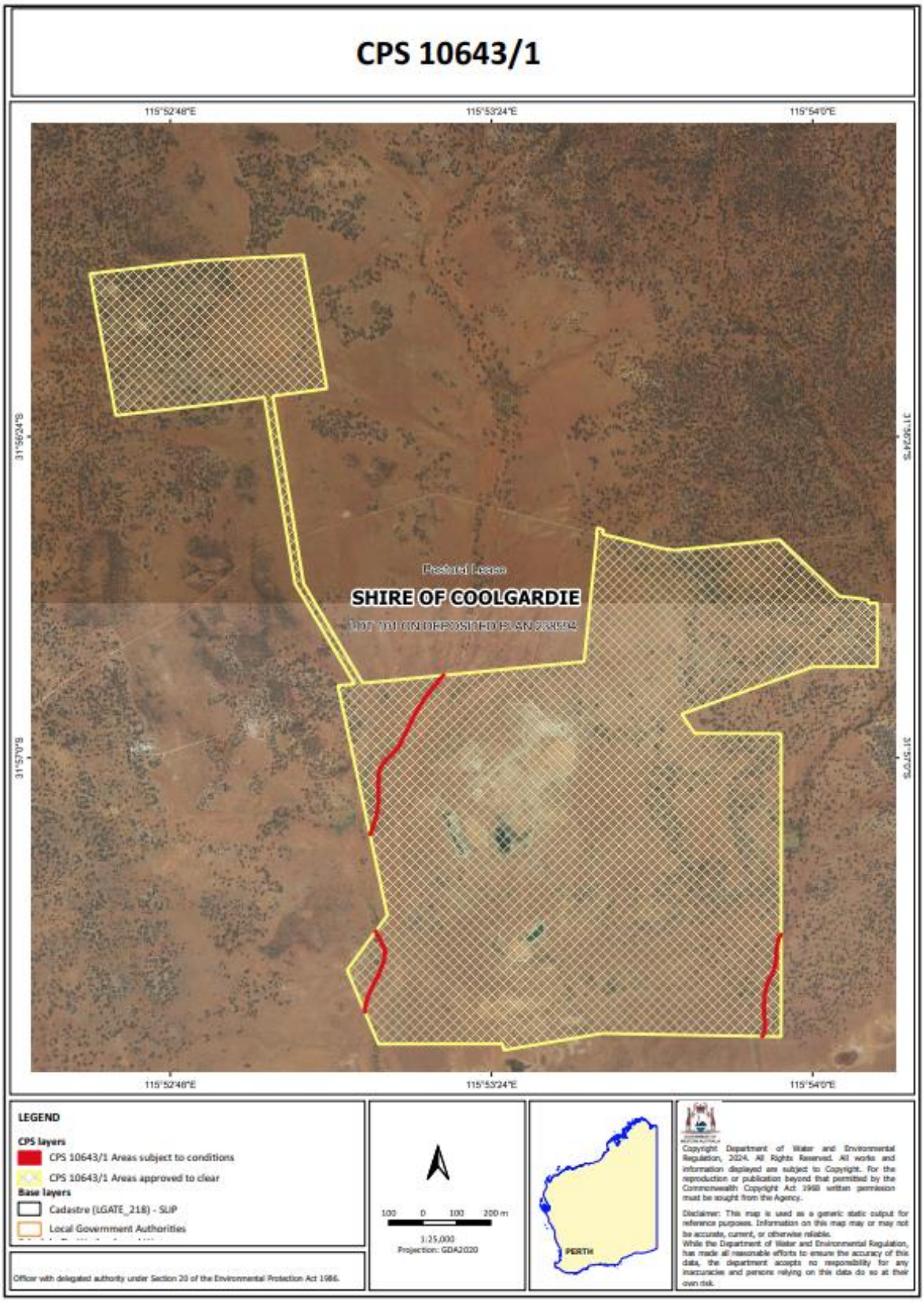

Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. The area coloured red indicate(s) area(s) within which clearing activities must not be undertaken and specific conditions apply.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)
- *Soil and Land Conservation Act 1945* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant advised that potential impacts of the proposed clearing would be managed through the implementation of the applicant's Bald Hill Environmental Management System (MinRes, 2024). The applicant has implemented the following avoidance measures:

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

The applicant has also proposed the following mitigation measures in relation to the proposed clearing:

- The areas to be cleared must be clearly delineated on figures. In the field, the boundaries of the area to be cleared must be clearly demarcated using stakes and flagging, or other suitable method delineating the clearing area will be walked and marked with survey pegs and flagging tape to ensure only the surveyed area is cleared
- All vehicles, plant and equipment are restricted to within the clearing limits. Environmental awareness training is completed by personnel involved in the clearing activities (including identification of flora and fauna within the area where relevant).

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix B) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard avoid and minimise, staged clearing, erosion and fauna management conditions.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Mining proposal approved under the *Mining Act 1978*
- Works approval and licence issued under Part V Division 3 of the EP Act
- Licence to construct or alter wells under the *Rights in Water and Irrigation Act 1914*
- Licence to abstract water under the *Rights in Water and Irrigation Act 1914*.

It is the permit holder's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Energy, Mines, Industry Regulation and Safety to determine whether a works approval, water licence, or any other licences or approvals are required for the proposed works.

It is noted that the proposed clearing may impact on *Leipoa ocellata* (malleefowl) and *Pezoporus* occidentalis (night parrot), which are a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Energy, Environment and Water (DCCEEW) for environmental impact assessment under the EPBC Act. The proponent is advised to contact the DCCEEW for further information regarding notification and referral responsibilities under the EPBC Act.

Appendix A. Site characteristics

A.1 Site characteristics

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td>Local context</td><td>The area proposed to be cleared is part of an expansive tract of native vegetation in extensive land use zone of Western Australia. It is surrounded by large areas of uncleared land.
Spatial data indicates that the local area (20 kilometre radius from the application area) retains approximately 99 per cent of the original native vegetation cover.</td></tr>
<tr><td>Ecological linkage</td><td>The application area is not considered a significant ecological linkage. The vegetation immediately surrounding the application area and the majority of the region remains uncleared.</td></tr>
<tr><td>Conservation areas</td><td>The application area is not located within a conservation area. The nearest legislated conservation areas are Randell Timber Reserve, located 46 kilometres north of the application area, and Binaronca Nature Reserve, located 46 kilometres west of the application area.</td></tr>
<tr><td>Vegetation description</td><td>Three flora and vegetation surveys were undertaken within and around the application area by:
Ecotec (WA) Pty Ltd (Ecotec) – March 2017
ecologia Environment (Ecologia) – August 2017
Ecotec – December 2018.
Ecotec identified a total of four vegetation types within the survey area (Ecotec, 2017):
<table>
<tr><th>Vegetation type</th><th>Description</th></tr>
<tr><td>Maireana low shrubland</td><td>The most common vegetation type in the Bald Hill Project area, comprising of Maireana brevifolia and M. sedifolia over a variety of herbaceous species. Scattered larger Acacia shrubs and Eucalyptus trees are found throughout this vegetation type.</td></tr>
<tr><td>Eucalyptus open woodland</td><td>Surrounding the Bald Hill site at a distance of 1.5 – 2 km. Eucalyptus salmonophloia and E. salubris are the most common tree species in this vegetation type, with Atriplex vesicaria the most common understorey species, although this is variable depending on grazing activity. Within this vegetation type are denser stands of Eucalypts, such as E. salubris and E. lesoufii.</td></tr>
<tr><td>Callitris preisii open low woodland</td><td>Callitris preissii open low woodland is located to the south of the mine site on the higher ground of the salt lake fringes. Other common species in the vegetation type include Acacia ligulata and Dodonaea viscosa subsp. angustissima.</td></tr>
<tr><td>Tecticornia low shrubland</td><td>Tecticornia low shrubland is found extensively in the lower-lying areas to the south of the mine site and comprises a number of Tecticornia and Frankenia species.</td></tr>
</table>
Ecologia identified a total of four vegetation types within the survey area (Ecologia, 2017):
<table>
<tr><th>Vegetation type</th><th>Description</th></tr>
<tr><td>Callitris preissii scattered low trees</td><td>Callitris preissii scattered low trees over Dodonaea viscosa subsp. angustissima, Eremophila spp. (E. scoparia, E. decipiens) mid open shrubland, over Atriplex spp. (A. nana, A. vesicaria) and Gunniopsis quadrifida low open shrubland, over Eragrostis dielsii scattered tussock grasses.</td></tr>
<tr><td>Tecticornia spp. low shrubland</td><td>Tecticornia spp. (T. pergranulata, T. pruinosa, T. ?halocnemoides, T. undulata, T. sp. Dennys Crossing (K.A. Shepherd & J. English KS 552) and Frankenia cinerea sens. lat. low shrubland.</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>
<table>
<tr><td>Callitris preisii low open woodland</td><td>Callitris preissii low open woodland over Acacia ligulata and Dodonaea viscosa subsp. angustissima tall open shrubland, over Ptilotus obovatus and Rhagodia drummondii low open shrubland, over Eragrostis eriopoda scattered tussock grasses.</td></tr>
<tr><td>Tecticornia low open shrubland</td><td>Tecticornia ?halocnemoides, Frankenia setosa, Gunniopsis quadrifida, and Maireana amoena low open shrubland, over Eragrostis dielsii scattered tussock grasses.</td></tr>
</table>
Ecotec identified a total of three vegetation types within the survey area (Ecotec, 2018):
<table>
<tr><th>Vegetation type</th><th>Description</th></tr>
<tr><td>Eucalypt open woodland</td><td>Eucalypt open woodland over Chenopod shrubland dominates the northern half of the surveyed area. Comprises a variety of widely spaced common Goldfields Eucalyptus species (E. salmonophloia, E. griffithsii, E. lesouefii, E. oleosa subsp oleosa) over Maireana and Atriplex species.</td></tr>
<tr><td>Salt lake fringing</td><td>Generally comprises widely spaced tall shrubs (including Callitris preissii and Dodonaea viscosa subsp. angustissima) over herbland dominated by Tecticornia (samphires), Maireana and Atriplex species.</td></tr>
<tr><td>Acacia shrubland</td><td>Small and isolated patches of Acacia shrubland dominated by Acacia acuminata.</td></tr>
</table>
</td></tr>
<tr><td>Vegetation condition</td><td>
The 2017 survey undertaken by Ecotec determined the vegetation in the survey area to be in the following conditions (Ecotec, 2017, Keighery, 1994):
<table>
<tr><th>Vegetation type</th><th>Condition</th></tr>
<tr><td>Maireana low shrubland</td><td>Degraded</td></tr>
<tr><td>Eucalyptus open woodland</td><td>Good</td></tr>
<tr><td>Callitris preissii open low woodland</td><td>Good</td></tr>
<tr><td>Tecticornia low shrubland</td><td>Good</td></tr>
</table>
The 2017 survey undertaken by Ecologia determined the vegetation in the survey area to be mostly in Very Good or Excellent condition (Ecologia, 2017, Keighery, 1994). Ecologia noted that vegetation in the northern section of the study area was in a comparatively poorer condition, although vegetation structure remains intact (Ecologia, 2017).
The 2018 survey undertaken by Ecotec determined the vegetation to be in the following conditions (Ecotec, 2018, Keighery, 1994):
<table>
<tr><th>Vegetation type</th><th>Condition</th></tr>
<tr><td>Eucalypt open woodland</td><td>Good (generally), Poor (near dams where cattle congregate)</td></tr>
<tr><td>Salt lake fringing</td><td>Very Good</td></tr>
<tr><td>Acacia shrubland</td><td>Very Good to Excellent</td></tr>
</table>
The full Keighery (1994) condition rating scale is provided in Appendix C.
</td></tr>
<tr><td>Climate and landform</td><td>The climate of the region the project tis located in is classified as arid to semi-arid, receiving 250-300 millimetres of rainfall annually (Bureau of Meteorology, 2024).</td></tr>
</table>

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td>Soil description</td><td>The application area and its surrounds are located within the Kambalda (265) landscape unit (Tille, 2006). This is characterised by flat to undulating plains (with hills, ranges and some salt lakes and stony plains) on greenstone and granitic rocks of the Yilgarn Craton (Tille, 2006).
The land systems within the application area are mapped as the following (DPIRD, 2024):
<table>
<tr><th>Land system</th><th>Description</th></tr>
<tr><td>My154 Atlas System</td><td>Undulating country on acid volcanic rocks and sedimentary materials</td></tr>
<tr><td>BB39 Atlas System</td><td>Prominent ridges of basic rocks</td></tr>
</table></td></tr>
<tr><td>Land degradation risk</td><td>The application area receives 250-300 millimetres of rainfall each year and groundwater is classified as hypersaline. pH from within the application area is generally acidic and ranges from 5.3-7.7 (MinRes, 2024). The applicant considers that the risk of land degradation occurring as a result of the project is low (MinRes, 2024).
The drainage lines within the application area may be prone to erosion if vegetation cover is removed.</td></tr>
<tr><td>Waterbodies</td><td>The desktop assessment indicated that three minor non-perennial drainage lines intersect the application area. These drainage lines flow towards Salt Creek and then into Lake Cowan, located approximately 900 metres southwest of the application area (GIS Database).</td></tr>
<tr><td>Hydrogeography</td><td>The application area is located within the Goldfields Groundwater Area, which is proclaimed under the Rights in Water and Irrigation Act 1914 (GIS Database).
Groundwater in the application area is hypersaline. The mapped groundwater salinity is >35,000 milligrams per litre of total dissolved solids on the southern side of the application area, and 14,000-35,000 milligrams per litre of total dissolved solids on the northern side of the application area (GIS Database).</td></tr>
<tr><td>Flora</td><td>There are records of 5 priority flora species within 20 kilometres of the application area, none of which are found on the same soil type as the application area (GIS Database). The nearest recorded priority flora species is, Eucalyptus x brachyphylla, a Priority 4 species located approximately eight kilometres southwest of the application area.</td></tr>
<tr><td>Ecological communities</td><td>There are no known threatened or priority ecological communities mapped within the application area. The nearest known threatened or priority ecological community is the Mount Belches Acacia quadrimarginea/Ptilotus obovatus banded ironstone formation, located approximately 36.9 kilometres north of the application area (GIS Database).</td></tr>
<tr><td>Fauna</td><td>There are records of two species of conservation significance within 20 kilometres of the application area, neither of which have been recorded within the application area (GIS Database). The nearest recorded fauna species of conservation significance is a critically endangered species (Pezoporus occidentalis, night parrot) located approximately 9.3 kilometres southwest of the application area. Several records of Leipoa ocellata (Malleefowl) are also located within a 20 kilometre radius of the application area.</td></tr>
</table>

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain locally or regionally significant flora, fauna, habitats, assemblages of plants. Flora and fauna surveys undertaken in 2017 and 2018 did not identify the presence of any conservation significant flora or fauna within the survey areas. One of the 2017 surveys noted that the flora species identified within the survey area are common and widespread in the region (Ecotec, 2017). The applicant conducted a field survey in 2017 and found that vegetation extent and condition was consistent with the flora and fauna surveys (MinRes, 2024). Vegetation communities in the application area were noted as being heavily degraded due to cattle grazing (MinRes, 2024). No sightings, scats, tracks or diggings of conservation significant species were recorded during the visit (MinRes, 2024).	Not likely to be at variance	No
Principle (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."* Assessment: The area proposed to be cleared does not contain critical or significant habitat for conservation significant fauna. The 2018 survey noted that none of the habitat available in the surrounding area is considered necessary for the survival of any species of conservation significance (Ecotec, 2018). A desktop search indicated that *Leipoa Ocellata* (malleefowl) and *Pezoporus occidentalis* (night parrot), both of which are protected under the EPBC Act, have been recorded within 20 kilometres of the application area. One record of the night parrot is present within 20 kilometres of the application area, noting that this record is from 1996. A 2022 survey did not identify any large old spinifex hummocks in the survey area which could provide roosting and nesting site for this species (Terrestrial Ecosystems, 2022). The species' preferred foraging habitat consists of *Triodia* grassland, noting that *Triodia* species were not recorded in any of the flora and vegetation surveys that were undertaken. The heavy grazing in the application area also reduces the likelihood of the species being present. It is therefore considered unlikely that the night parrot is present within the application area. No malleefowl mounds, tracks or scats were recorded during the 2022 survey, however the species has previously been observed in the bioregion (Terrestrial Ecosystems, 2022). The open habitat within the application area and presence of feral and pest species reduces the possibility of malleefowl being present (Terrestrial Ecosystems, 2022). Malleefowl require an abundance of leaf litter to construct nests (Benshemesh, 2007), which is unlikely to occur in sufficient quantity in the application area due to historic disturbance and heavy grazing. Potential impacts to malleefowl can be managed by a fauna management condition.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain flora species listed under the BC Act. The 2018 survey noted that the habitat within the survey area was not considered particularly suitable for conservation significant flora identified in the database search (Ecotec, 2018).	Not likely to be at variance	No
Principle (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."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened or priority ecological community (Ecotec, 2017, Ecologia, 2017, Ecotec, 2018). The nearest recorded threatened or priority ecological community to the application area is located approximately 36.9 kilometres to the north (GIS Database).	Not at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (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."* Assessment: The extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia and the local area contains 99 per cent of the original native vegetation cover (Commonwealth of Australia, 2001). The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area (GIS Database).	Not at variance	No
Principle (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."* Assessment: Given the distance to the nearest conservation area is 46 kilometres (GIS Database), the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Three minor non-perennial drainage lines intersect the application area and flow towards Lake Cowan, located 900 metres southwest of the application area. Two of the drainage (creek) lines are noted as unlikely to retain water for any length of time following rainfall (Ecotec, 2018). The applicant has stated that drainage lines within the application area will be avoided by the proposed clearing footprint. A condition stating that clearing may not occur within these drainage lines has been included unless for the purpose of access tracks.	May be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."*	May be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Assessment: Tussock grasslands and chenopod shrublands are present within the application area. Van Vreeswyk et al. (2004) notes that these broad vegetation types are grazed preferentially and are often associated with soils that are susceptible to erosion. Van Vreeswyk et al. (2004) observed accelerated soil erosion were most frequently in these vegetation types. Much of the application area has been heavily disturbed by previous mining and exploration activities and vegetation has been extensively grazed (MinRes, 2024). It is therefore unlikely that the proposed clearing will result in significant additional land degradation issues. Potential land degradation and erosion impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.		
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Lake Cowan is located 900 metres southwest of the application area. Three minor non-perennial drainage lines within the application area flow into Lake Cowan, however two of these are noted as unlikely to retain water for any length of time following rainfall (Ecotec 2018). The applicant has stated that drainage lines within the application area will be avoided by the proposed clearing footprint. A condition stating that clearing may not occur within these drainage lines has been included, unless for the purpose of access tracks.	May be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding (GIS Database). The application area and its surrounds are not mapped as a floodplain area or being at risk of flooding.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.

Condition	Description
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Photographs of the vegetation

Photos from the flora and vegetation survey undertaken by Ecotec in March 2017 (Ecotec, 2017).

Photo 1: Maireana low shrubland

Photo 2: Eucalyptus open woodland

Photo 3: Callitris preisii open low woodland

Photo 4: Tecticornia low woodland

Photos from the flora and vegetation survey undertaken by Ecologia in August 2017 (Ecologia, 2017).

Photo 5: Callitris preisii scattered low trees

Photo 6: Tecticornia spp. low shrubland

Photo 7: Callitris preisii low open woodland

Photo 8: Tecticornia low open shrubland

Photos from the flora and vegetation survey undertaken by Ecotec in December 2018 (Ecotec, 2018).

Photo 9: Eucalypt open woodland

Photo 10: Salt lake fringing

Photo 11: Acacia shrubland

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Clearing Regulations- Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- FPM Extent of Flooding (DWER-017)
- FPM Floodplain Area (DWER-020)
- FPM 1 in 100 (1%) AEP Floodway and Flood Fringe Area (DWER-014)

- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- Hydrography WA 250K – Surface Waterbodies (GA 2015)
- Hydrography WA 250K – Surface Water Lines (GA 2015)
- IBRA Vegetation Statistics
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Systems (DPIRD-064)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.2. References

Benshemesh, J. (2007) *National Recovery Plan for Malleefowl*, Department of Environment and Heritage, South Australia. Available from: https://www.dcceew.gov.au/sites/default/files/documents/malleefowl.pdf.

Bureau of Meteorology (BoM) (2024) Bureau of Meteorology Website – Climate Data Online. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 23 October 2024).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

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