GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10335/1
Permit Holder:	Monger Exploration Pty Ltd
Duration of Permit:	From 10 January 2024 to 10 January 2034

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of mining exploration.

2. Land on which clearing is to be done

Lot 45 on Deposited Plan 226298, Feysville

3. Clearing authorised

The permit holder must not clear more than 125 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 10 January 2029.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;

(b) minimise the amount of *native vegetation* to be cleared; and

(c) reduce the impact of clearing on any environmental value.

6. Weed management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of weeds:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in one direction to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

8. Vegetation management – watercourse and drainage line surface flow

(a) The Permit Holder shall not clear native vegetation within 50 metres of any *watercourse* or drainage line or dams, except for the purpose of a crossing, unless approved by the *CEO*;

(b) Where a *watercourse* or drainage line is to be impacted by clearing for a crossing, the permit holder shall ensure that surface flow is maintained, or is reinstated downstream into existing natural drainage lines; and

(c) Avoid clearing riparian vegetation.

9. Flora Management – Pre-clearance survey

(a) Prior to undertaking any clearing authorised under this permit within the area cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must engage a *botanist* to conduct a *targeted flora survey* of the areas to be cleared for the presence of *threatened flora* and *priority flora*.

(b) Where *threatened flora* is identified under condition 9(a), the permit holder must not cause or allow:

  (i) clearing within 50 metres of the identified *threatened flora*; and

  (ii) clearing of the identified *threatened flora*.

(c) Where *priority flora* is identified under condition 9(a), the permit holder must not cause or allow:

  (i) clearing within 20 metres of the identified *priority flora,* unless approved by the *CEO*; and

  (ii) clearing of the identified *priority flora* unless approved by the *CEO*.

(d) Where *threatened flora* or *priority flora* are identified under condition 9(a) of this permit, the permit holder must include the following in a report submitted to the *CEO* within three months of undertaking any *clearing* authorised under this permit:

  (i) the species name of each *threatened flora* and *priority flora* individual(s) identified under condition 9(a);

  (ii) the number of individuals identified;

  (iii) the date each individual was identified;

(iv) the location of each *threatened flora* and *priority flora*, identified under condition 9(a), either as the location of individual plants, or where this is not practical, the areal extent of the population and an estimate of the number of plants, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(v) the name of the *botanist* that undertook clearance surveys under condition 9(a) of this permit; and

(vi) the methodology used to survey the permit area.

10. Malleefowl management

(a) Prior to undertaking any clearing authorised under this permit, the permit holder shall engage a *fauna specialist* to undertake clearance surveys within the areas for *Leipoa ocellata* (malleefowl), including the identification and inspection of *active* and *inactive mounds* and malleefowl *critical habitat;*

(b) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide the results of the *fauna survey* in a report to the *CEO.*

(c) The *fauna survey* report must include;

(i) the location of each *Leipoa ocellata* (malleefowl) mound, delineated as either an *active mound* or *inactive mound*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees, to the *CEO*.

(ii) the location of the *Leipoa ocellata* (malleefowl) *critical habitat*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees, to the *CEO*.

(iii) the methodology used to survey the area cross-hatched yellow on Figure 1 of Schedule 1 to establish the *Leipoa ocellata* (malleefowl) *critical habitat* and identify the mound/s;

(iv) the extent of the *critical habitat* of *Leipoa ocellata* (malleefowl) shown on a map; and

(v) a description of the *critical habitat* found.

(d) Where *Leipoa ocellata* (malleefowl) mounds are identified under Condition 10(a) of this Permit, the Permit Holder shall ensure that no clearing of *Leipoa ocellata* (malleefowl) *active mounds*, or *critical habitat* of the identified *Leipoa ocellata* (malleefowl) *active mounds* occurs, unless first approved by the *CEO*.

(e) The malleefowl pre-clearance survey should also include searches for other conservation significant fauna.

(f) Where mounds are identified under condition 10(a) of this permit, the permit holder shall;

(i) flag the location of the mound(s);

(ii) not clear within 50 metres of malleefowl mound(s).

11. Fauna management – backfilling

The Permit holder must:

(a) backfill all test pits on the day of drilling/excavating with excavated material; or

(b) fence all test pits on the day of drilling/excavating with fine mesh to prevent fauna access; or

(c) cover all test pits on the day of drilling/excavating with a cover which prevents entry to the pits by fauna species.

12. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

(a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.

(b) within six months following completion of clearing authorised under this permit, *revegetate* and *rehabilitate* areas not required for the purpose for which they were cleared by laying the vegetative material and topsoil retained under condition 12(a) on the cleared area(s).

(c) Within 18 months of undertaking *revegetation* and *rehabilitation* in accordance with condition 12(b) of this Permit:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and

(ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 12(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, revegetate the area by deliberately *planting* and/or direct seeding native vegetation that will result in a similar species composition, structure and density of *native vegetation* to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

(d) where additional planting or direct seeding of *native vegetation* is undertaken in accordance with Condition 12(c)(ii) of this Permit, the Permit Holder shall repeat Condition 12(c)(i) and 12(c)(ii) within 24 months of undertaking the additional *planting* or direct seeding of native vegetation.

(e) where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in Condition 12(c)(i) and (ii) of this Permit, that determination shall be submitted for the *CEO*'s consideration. If the *CEO* does not agree with the determination made under Condition 12(c)(ii), the *CEO* may require the Permit Holder to undertake additional *planting* and direct seeding in accordance with the requirements under Condition 12(c)(ii).

PART III - RECORD KEEPING AND REPORTING

13. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; (f) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 6; (g) actions taken to manage and mitigate impacts to fauna in accordance with condition 7; (h) actions taken in accordance with condition 8.
2.	In relation to flora management pursuant to condition 9	(a) actions taken to demarcate each *threatened flora* and/or *priority flora* species recorded and their relevant buffers; (b) actions taken to avoid the clearing of *threatened flora* and/or *priority flora* species; (c) a copy of the *botanist's* report in accordance with condition 9(d).
3.	In relation to the fauna pre-clearing survey undertaken for malleefowl management pursuant to condition 10	(a) the location of each *Leipoa ocellata* (malleefowl) mound, delineated as either an active mound or inactive mound, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees, to the *CEO*; (b) the location of the *Leipoa ocellata* (malleefowl) *critical habitat*, recorded using a GPS unit set to GDA2020 expressing geographical coordinates in Eastings and Northings or decimal degrees, to the *CEO*; (c) the methodology used to survey the Permit

No.	Relevant matter	Specifications
		Area and to establish the *Leipoa ocellata* (malleefowl) *critical habitat* and identify the mound/s; (d) the extent of the *critical habitat* of *the Leipoa ocellata* (malleefowl) shown on a map; (e) a description of the *critical habitat* found (f) the time(s) and date(s) that the survey was undertaken: and, the name and qualification of the *fauna specialist* performing the survey
4.	In relation to fauna management pursuant to condition 11	(a) actions taken to cover or backfill test pits; and (b) evidence of backfilling test pits.
5.	In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 12	(a) the location of any *revegetated* and *rehabilitated* areas, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees; (b) a description of the *revegetation* and *rehabilitation* activities undertaken; (c) the size of the area *revegetated* and *rehabilitated* (in hectares) (d) the date(s) on which the *revegetation* and *rehabilitation* was undertaken. (e) action and timing of remedial actions undertaken within the area(s) that was *revegetated* and *rehabilitated* in accordance with condition 12(c)(ii) to 12(e).

14. Reporting

The permit holder must provide to the *CEO* the records required under condition 13 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
botanist	means a person who holds a tertiary qualification specialising in environmental science or equivalent and has a minimum of two (2) years' work experience in Western Australian flora identification and undertaking flora surveys native to the bioregion being inspected or surveyed, or who is approved by the *CEO* as a suitable environmental specialist for the bioregion, and who holds a valid flora licence issued under the *Biodiversity Conservation Act 2016*.
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
critical habitat	means any part of the Permit area comprising of habitat for *Leipoa ocellata* (malleefowl) and its population, that is critical for the health and long term survival of Leipoa ocellata (malleefowl) and its population.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species
drainage lines	means a natural depression that carries surface water runoff.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist.
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the *CEO* as a suitable fauna specialist for the bioregion.
fill	means material used to increase the ground level, or to fill a depression.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;
Priority flora	means those plant taxa described as priority flora classes 1, 2, 3, 4 or 5 in the Department of Biodiversity Conservation and Attractions *Threatened and Priority Flora List for Western Australia* (as amended);

Term	Definition
revegetate/ed/ion and rehabilitate/ed/ion	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
targeted flora survey	means a field-based investigation, including a review of established literature, of the biodiversity of flora and vegetation of the permit area, focusing on habitat suitable for flora species that are being targeted and carried out during the optimal time to identify those species. Where target flora are identified in the permit area, the survey must also include a minimum of a 10 metre radius of the surrounding areas to place the permit area into local context.
threatened flora	means those plant taxa listed as threatened flora under the *Biodiversity Conservation Act 2016.*
watercourse	Has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914.*
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Meenu Vitarana
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

18 December 2023

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

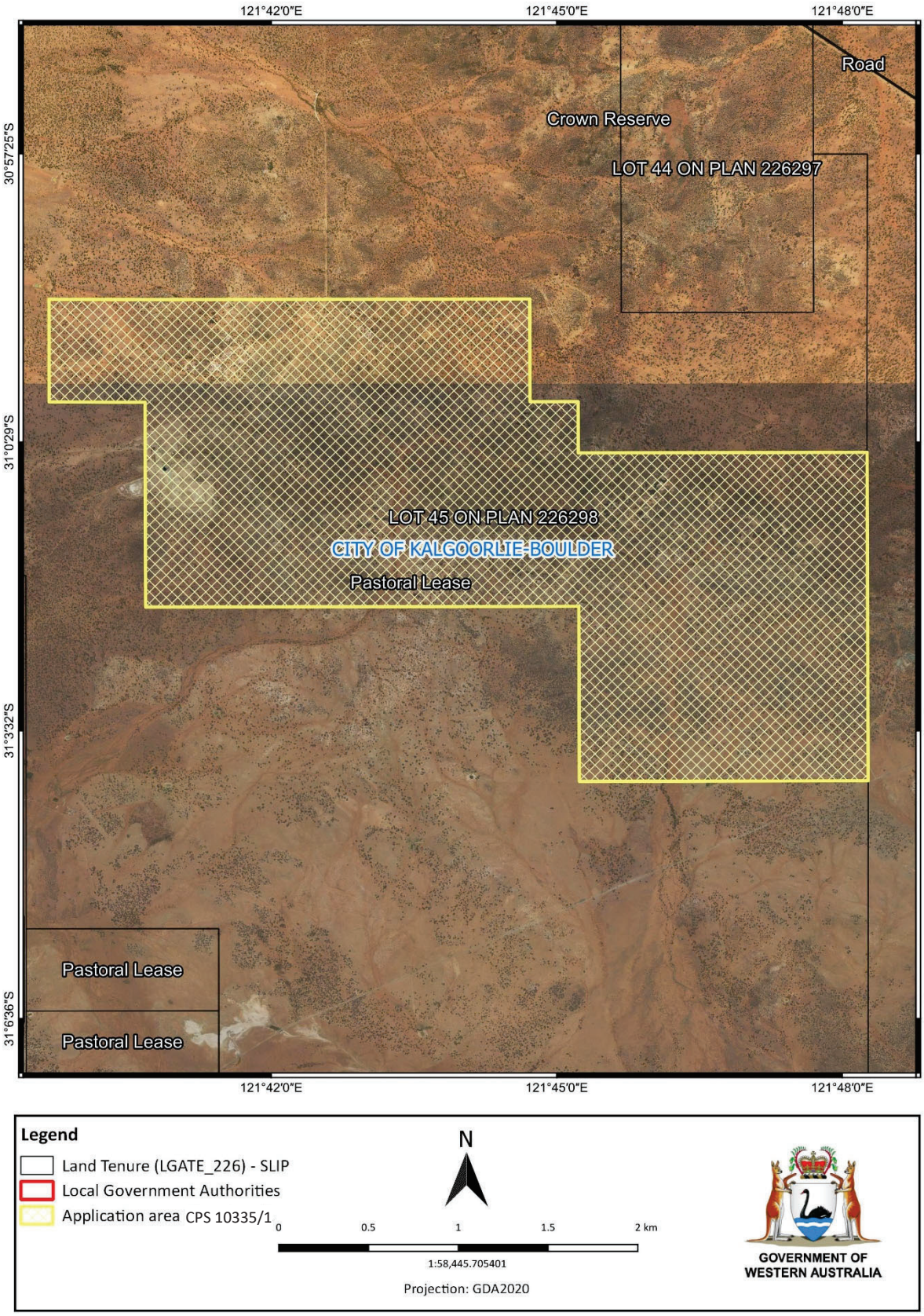

Figure 1: Map of the boundary of the area within which clearing may occur, subject to conditions.

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 10335/1
Permit type:	Purpose permit
Applicant name:	Monger Exploration Pty Ltd
Application received:	12 September 2023
Application area:	125 hectares of native vegetation within a 7,632 hectare footprint
Purpose of clearing:	Mining exploration
Method of clearing:	Mechanical clearing
Property:	Lot 45 on Deposited Plan 226298
Location (LGA area/s):	City of Kalgoorlie-Boulder
Localities (suburb/s):	Feysville

1.2. Description of clearing activities

The application is to selectively clear up to 125 hectares of native vegetation within a larger footprint area comprising of 7,631.6 hectares (see Figure 1, Section 1.5). The purpose of the clearing is for mineral exploration within Lot 45 on Deposited Plan 226298 (Lot 45), Feysville.
At the completion of exploration, the applicant is responsible for rehabilitation of the cleared areas. Clearing associated with future mining activities is not covered by this application.

1.3. Decision on application

Decision:	Granted
Decision date:	18 December 2023
Decision area:	125 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 two flora, fauna and vegetation surveys, 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 Delegated Officer also took into consideration the following:

- Malleefowl (*Leiopoa ocellata*) are likely to occur in the application area as indicated by the presence of suitable habitat, and a mapped record of malleefowl from 2012 within the application area. Clearing may impact on this species and associated habitat. To minimise the impacts a preclearing survey to identify active and-non active mounds is required as a condition on the permit. This condition ensures clearing is avoided within 50 metres of any identified inactive and active mounds.

- The survey of the application area did not observe the occurrence of the conservation significant *Dasyurus geoffroii* (chuditch), however, suitable habitat features occur within the application area indicating it is likely for the chuditch to occur. To minimise the impact to the species; slow, progressive, one-directional clearing towards remnant vegetation, is required as a condition on the permit.
- The proposed clearing will increase the risk of sedimentation of several minor non-perennial watercourses and may impact fauna and flora associated with two artificial dams mapped within the application area. The permit holder is required to avoid clearing within 50 metres of a mapped watercourse/dam, except for the purpose of a crossing, unless approved by the CEO.
- Clearing may introduce and spread weeds, which could impact on the quality of vegetation and habitat values within the application area. Weed control and management is required as a condition on the permit.

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 is unlikely to lead to appreciable or long-term adverse impacts on environmental values. Potential impacts on the above environmental values can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

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

- Avoid and minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds,
- directional clearing to allow fauna to move into adjacent native vegetation ahead of the clearing,
- avoid clearing within 50 metres of the non-perennial watercourse intersecting the application area, except for the purpose of a crossing, unless approved by the CEO. Where clearing of a watercourse is required for a crossing, maintain existing surface flow,
- pre-clearance flora survey to identify and avoid threatened and priority flora,
- pre-clearance fauna survey to identify, exclude and buffer around malleefowl mounds,
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity,
- back filling test pits and drill holes; all pits are to be backfilled, fenced or covered at the end of each day and backfill upon completion,
- retain the vegetative material and topsoil removed by clearing authorised under this permit and stockpile the vegetative material and topsoil, and
- undertake revegetation and rehabilitation of areas no longer required for mineral exploration purposes.

1.5. Site map

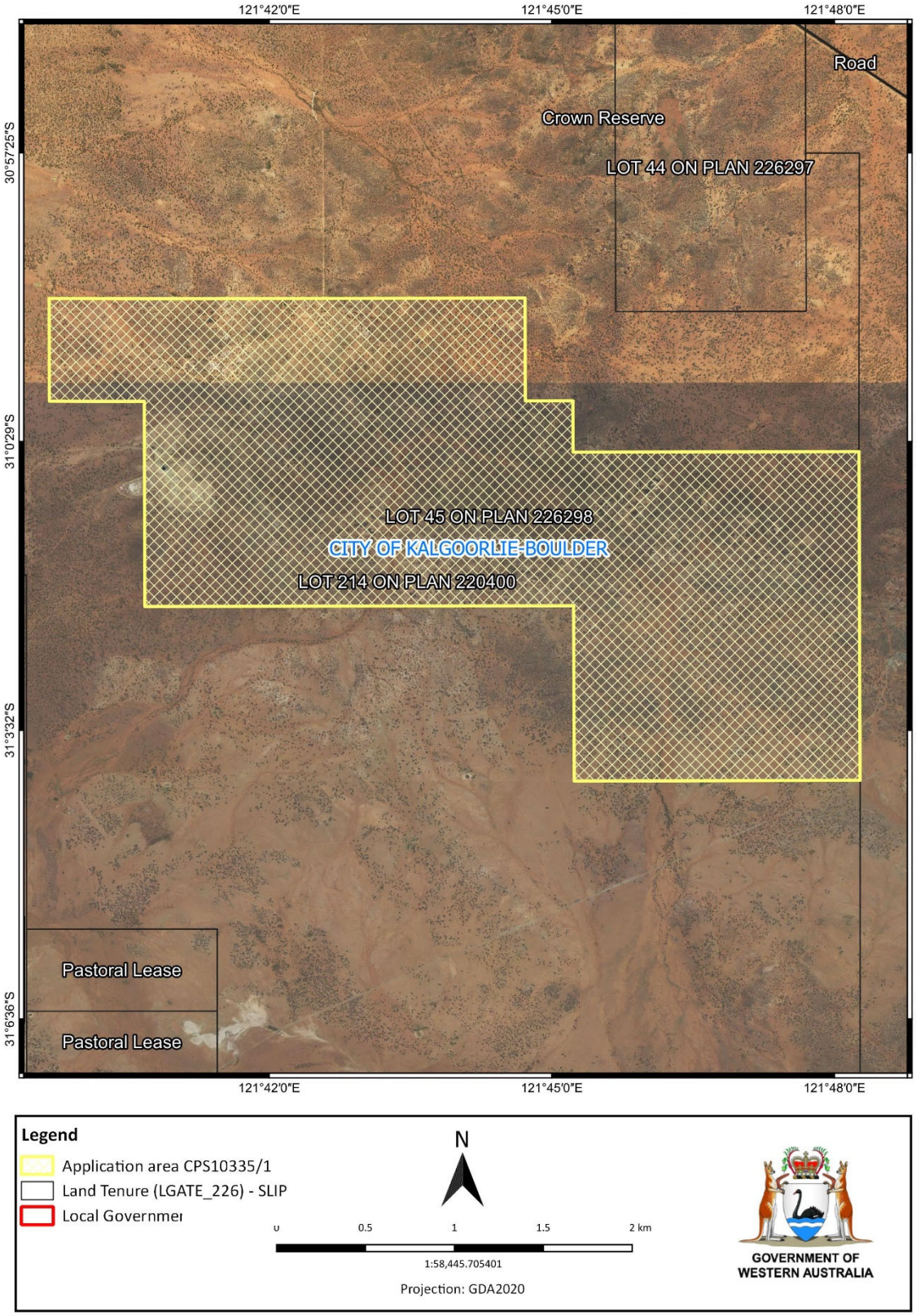

Figure 1 Map of the application area. The area crosshatched yellowindicates the area authorised to be cleared under the granted clearing permit subject to permit conditions.

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)

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

Supporting documents were submitted by the applicant, demonstrating that they are committed to implementing, avoidance and mitigation measures to minimise environmental impacts including:

- Disturbance areas will be kept to a minimum required, and existing disturbance will be used where possible,
- activities will be coordinated with those of application CPS 10334/1 (Hampton Metals, 2023) where possible as both applications occur within the same land parcel,
- prior to clearing, boundaries will be clearly defined and machinery will be led by spotters with GPS devices,
- the path of least resistance will be chosen for tracks and drill lines to minimise disturbance,
- pruning will be favoured over clearing,
- designated access tracks will be used,
- vegetation will be cleared and stockpiled for use in rehabilitation
- where practicable raised blade clearing will be utilised,
- where raised blade clearing is not practicable, topsoils will be removed and stockpiled for future rehabilitation,
- toolbox meetings are to occur between geologist/field assistance and the clearing contractors ensuring operators are aware of approved areas to be cleared and areas to avoid,
- disturbance areas will be recorded and rehabilitated within six months of no longer being required,
- all vehicles and equipment arriving to site will be free of soil, weeds and vegetative matter,
- weed infestations will be treated,
- speed limits are to be enforced and personnel are to drive to road and weather conditions to minimise fauna injury and death,
- waste management is to be implemented,
- all drill holes will be plugged immediately after completion of the hole to inhibit fauna from entering,
- sumps will consist of at least one ramp to allow fauna egress,
- targeted searches for malleefowl mounds will be undertaken no more than one month prior to clearing by qualified personnel or traditional owners, and;
- no activities to occur within 50 metres of any active malleefowl mounds (RPM Global, 2023).

Given this 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 that the impacts of the proposed clearing present a risk to biological values (fauna, flora, and land resources). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values - Fauna - Clearing Principles (b)

Assessment

Available databases indicate three conservation significant fauna species have been recorded within the local area (20 kilometre radius of the application area), this includes two avian and one mammal species. One avian species, the *Calidris acuminata* (sharp-tailed sandpiper) was excluded from the assessment as suitable habitat features of fresh or brackish wetland systems are not represented within the application area.

The fauna survey (GHD, 2018) identified a total of 37 species, consisting of 26 birds, seven mammals and four reptiles within the survey area. While the survey did not identify any conservation significant fauna species, the fauna survey (GHD, 2018) along with the desktop analysis indicate the application area consists of suitable habitat for two vulnerable species; *Leipoa ocellata* (malleefowl) and the *Dasyurus geoffroii* (chuditch).

It is to be noted that the fauna survey was a single season Level 1 (reconnaissance) survey to verify the accuracy of the desktop study and habitat types rather than a targeted survey to identify the malleefowl or chuditch. While a targeted survey did not occur the survey did conclude habitat features of these species were consistent with that of the application area.

***Leipoa ocellata* (malleefowl)**

Leipoa ocellata (malleefowl) is a large ground dwelling avian species and is listed as vulnerable under the EPBC Act. The National Malleefowl Recovery Plan states the fauna species is found predominantly in semi-arid to arid shrublands and woodlands across Australia (DCCEEW, 2018). Within Western Australia the malleefowl is found to inhabit shrublands dominated by acacia and woodlands dominated with eucalyptus, which is consistent with that of the application area. The National Recovery Plan for malleefowl notes that habitat loss has been and continues to be the major factor in the decline of malleefowl in southern Australia. Predation, habitat fragmentation and isolation are also listed as major threats to malleefowl.

Between 15 to 18 March 2018, the application area was subject to a single season level 1 (reconnaissance) fauna survey. During the survey, malleefowl were not sighted and no nesting mounds were recorded, however suitable foraging and nesting habitat was identified and a previous survey of the area from 2012 (Bamford Consulting Ecologists, 2012) identified an old, inactive nest mound within the application area. Malleefowl in the region breed during the months of September through to January, and while the survey occurred outside of this timeframe any active mounds from the previous breeding season could have been identified.

The local area consists of a significant number of malleefowl records (especially towards the west of the application area) which are relatively evenly distributed across the landscape, indicating the population is not presently restricted to a certain area. Given suitable habitat was identified and the mapped malleefowl records of the local area it is likely that malleefowl exists across the application area. Previous DBCA advice for a similar application (CPS 9866/1) advised that given exploration activities intend to be short-term and low impact and the malleefowl is a mobile species with the ability to transit to other areas without assistance, the proposed clearing is unlikely to significantly impact the species. However, the proposed clearing is likely to result in loss of 125 hectares of potential foraging habitat, contribute to the degradation of remaining habitat and increase accessibility of the area to feral predators (foxes and cats).

To minimise the impacts to the malleefowl, pre-clearing surveys are to occur to identify the location of active and non-active mounds. In addition, buffers are to be applied around these mounds to reduce the risk of potential nest abandonment and vehicle strikes. As recommended in CPS 9866/1, DBCA advises a 50 metre buffer should be adequate, it is also important to preserve any connectivity of the active mounds to broadscale native vegetation areas to facilitate the movement of malleefowl through the natural landscape (ie for adult foraging while tending the mounds and for offspring dispersal). Noting that malleefowl may use inactive or old mounds in subsequent years, clearing of inactive mounds should also be avoided. Buffering any inactive and old mounds with the maintenance of connectivity between the mounds can further mitigate the impacts of the long-term survival of this species. If malleefowl mounds are to be disturbed or removed, or if works are to occur within 50 metres of an active mound during September to January a Section 40 Authorisation under the *Biodiversity conservation Act 2016* for the potential take is required.

***Dasyurus geoffroii* (Chuditch)**

Dasyurus geoffroii (Chuditch) is Western Australia's largest endemic marsupial carnivore. Prior to European settlement the chuditch formerly ranged across nearly 70 per cent of the continent, however, are now restricted to Western Australia, within an estimated five percent of the former range (DCCEEW,2012). The chuditch is listed as vulnerable under the EPBC Act and inhabits eucalyptus forest, dry woodlands and mallee shrubland. The species can travel large distances, they consist of large home ranges and are sparsely populated throughout their range. They are solitary animals for most of their lives with males ranging over 15 square kilometres and females typically ranging between three to four square kilometres.

The decline in chudditch numbers is attributed to the alteration in habitat caused by rabbits, grazing livestock, changes to fire regimes, native vegetation clearing, predation and competition from feral dogs, foxes and cats, as well as disease, shooting and poisoning (DCCEEW, 2012).

The fauna survey did not record evidence of chuditch being present within the application area, however suitable habitat was identified to occur. Within the local area there is one historical record from 1974 occurring 15 kilometres south of the application area. Given the lack of contemporary records in or near the application area the likelihood of occurrence is deemed low, therefore the proposed clearing is unlikely to have significant impact on the chuditch. DBCA advice from CPS 9866/1 (an application approximately 20 kilometres west of the current application area) noted that the likelihood of occurrence was low due to the lack of contemporary records. While the proposed clearing is unlikely to have a significant impact on chuditch, noting the extent of the application area and the presence of suitable habitat within this extent, slow, directional clearing will mitigate impacts to any individuals that may use the application area for foraging at the time of the clearing.

Conclusion
Given the above, any direct impacts of clearing on conservation significant fauna species may be significant unless fauna management measures are in place. Placing relevant fauna management conditions on the permit can mitigate impacts on fauna species.

Conditions
To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Slow directional clearing towards adjacent vegetated areas to allow fauna to move to nearby vegetation ahead of clearing.
- A pre-clearing survey to be undertaken in areas of suitable habitat to identify all malleefowl mounds that have the potential to be disturbed by all project activities.
- A minimum buffer of 50 metres to be applied to all malleefowl mounds.

3.2.2. Biological values – Biodiversity and flora - Clearing Principles (a)

The application area occurs within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This bioregion is comprised of mallees and shrublands on sandplains, it is also described to consist of rich endemic eucalypts on low greenstone hills, alluvial valley and calcareous plains, (Grant et al., 2002). The flora and vegetation survey of the application area, conducted by GHD, identified 84 taxa (including subspecies and varieties) of flora, representing 20 families and 40 genera. Of these taxa 81 species were native and three were weeds. No conservation significant flora were recorded. The survey also identified seven vegetation types, six of which were described as woodlands consisting of various *Eucalyptus* species and the seventh was associated with and surrounding manmade water sources (GHD, 2018).

The field survey identified seven broad fauna habitat types which were consistent with the identified vegetation types. As mention in section 3.2.1 above the eucalyptus woodlands within the application area represent typical habitat for the malleefowl and the chuditch.

Along with the application area providing significant habitat for conservation significant fauna, it is likely to support priority flora species. Given mapped soil types, vegetation types and topography, two species are likely to occur (see Appendix A.3 for the flora analysis table) as listed below:

- *Austrostipa turbinata* (Priority 3)
- *Eremophila arachnoides* subsp. Tenera (P3)

A level 1 (reconnaissance) flora survey of the proposed clearing was conducted between 15 – 18 March 2018, which is outside of the EPA's recommended survey timing for the region. The survey report noted that, 'it is likely the survey

under-recorded some grass species (Poaceae) and herb (annual/ ephemeral) species' (GHD, 2018), due to the timing of the survey, and therefore it is possible the priority species listed above may have been overlooked.

While the flora survey did not identify any priority species, the survey is older than 5 years and doesn't represent the most up to date information. Further, the desktop assessment indicated it is likely for *Austrostipa turbinata* and *Eremophila arachnoides* to occur. *A. turbinata* is a widespread Poaceae species found within five IBRA regions of Western Australia. Although it does consist of a wide distribution being a priority three species, it is a poorly known and is relatively hard to identify unless in flower. Like *A. turbinate, E. arachnoides* subsp. Tenera, is also a priority 3 species and is relatively unknown. It is found within three IBRA regions, and the application area consists of suitable habitat, vegetation types and soil types. Noting the above, the proposed clearing may impact individuals of the above priority flora and as such will require a pre-clearance survey to be undertaken to mitigate any potential impacts.

It is also to be noted the concurrent application; CPS 10334/1 Hampton Metals Ltd, is to occur within the same footprint resulting in a cumulative clearing of 250 hectares. This cumulative impact has been considered in determining the overall impacts to the biodiversity and flora of both the application area and local area.

Overall, the desktop assessment and the GHD survey did not identify any threatened flora to occur within the application area and no priority or threatened ecological communities (PEC/TEC) have been recorded within the application area. The closest PEC; Mount Belches Acacia quadrimarginea /Ptilotus obovatus (banded ironstone formation), was identified 33.7 kilometres east of the application area and it is unlikely the clearing will impact this PEC. Given the nature of the clearing is scattered; for mining exploration, the cumulative impact of two application within the one footprint is unlikely to be of significant.

Conclusion

Given the above, the proposed clearing is unlikely to impact areas of high biodiversity value given the type of clearing. The impacts of clearing on the conservation status of *A. turbinate* and *E. arachnoides* subsp is unlikely to be significant.

Conditions

To mitigate potential impact on the priority flora species, a pre-clearing survey is to be undertaken in areas of suitable habitat to identify priority species (*Austrostipa turbinata* and *Eremophila arachnoides)* and the maintenance of appropriate buffers around any individuals identified, is imposed as a condition on the permit.

3.2.3. Biological values – Land and Water resources - Clearing Principles (f), (g) and (i)

Several non-perennial tributaries intersect the application area along with two artificial dams. Given this, certain vegetation within the application area is considered to be growing in, or in association with an environment associated with a watercourse.

The non-perennial tributaries combine to a length of approximately 47 kilometres and drain approximately 7.7 kilometres south to the Lake Lefroy salt lake basin. The Coolgardie region receives an average of 264.5 millimetres of rain annually, which is generally spread throughout the year, however, a single portion of rain can occur in one single rainfall event. It is likely these tributaries will only flow during and after these significant rainfall events. While these tributaries contribute to Lake Lefroy Basin system, they are unlikely to contribute significantly to the systems function.

Along with these non-perennial watercourses there are two artificial dams located within the application area; one located within the centre, the other located in the northwest corner, making up approximately 0.94 hectares of the overall application footprint. While the condition of the vegetation surrounding the dams is considered in good condition (Trudgen,1991) these dams contribute to habitat for native flora and fauna and also provides habitat for introduced fauna including cattle.

The application area is mapped within the Goldfields Groundwater area. Groundwater in the region is typically 50 metres below ground level and is saline or hypersaline. The depth of groundwater in the area is not known, however, noting that the purpose of clearing is mineral exploration, impacts to the groundwater quantity and quality is considered minimal, provided standard exploration guidelines are followed (DMIRS, 2002).

The region is characterised by hot summers with low rainfall and high evaporation rates. Loose soils and dust at bare ground could be prone to erosion. Given the low rainfall and noting the non-perennial tributaries only flow immediately after heavy rain, the risk of water erosion is considered low, for majority of the application area and low to medium

risk in and around the tributaries. If vegetation was to be cleared around the artificial dam, erosion is likely to occur and enhanced with the presence of grazing cattle, leading to further degradation of the land surrounding the dams. The presence of bare and loose soils could also be affected by wind erosion and deposited onto the vegetation and environments nearby. Provided the clearing is not concentrated in one area, the proposed clearing of 125 hectares across a total footprint of 7631.6 hectares with the cumulative clearing of a further 125 hectares from the concurrent application from Hampton Metals Ltd is not likely to cause appreciable land degradation. Potential impacts from land degradation can be further mitigated through the implementation of rehabilitation.

Conclusion:

Based on the above assessment the proposed clearing will have an impact on vegetation associated with the tributaries and artificial dams, these areas are also susceptible to water erosion as a result of sedimentation. Provided the clearing of 125 hectares (including the cumulative clearing under CPS 10334/1) is not concentrated in one area the clearing is not likely to cause appreciable land degradation. Water quality is not likely to be negatively impacted, providing clearing does not occur around tributaries particularly after heavy rainfall events and provided standard exploration guidelines are followed. These impacts can be appropriately managed by the permit conditions and mitigation strategies.

Conditions:

To address the above impacts, the following management measures will be required as a condition on the clearing permit:

- Avoid clearing within 50 meters of the mapped watercourses, drainage lines and dams, except for the purpose of a crossing, the maintenance of tributary surface water flow and no clearing of riparian vegetation.
- rehabilitation and rehabilitation conditions for temporary works.

3.3. Relevant planning instruments and other matters

The City of Kalgoorlie-Boulder were provided the opportunity to comment on the proposed clearing and advised they did not have any objections to the proposed clearing.

Two other clearing permit applications, CPS 8232/1 and CPS 2473/3 overlaps the current application area. CPS 8232/1 was issued to Northern Star (HBJ) Pty Ltd for the clearing of 200 hectares within a 7169.97 footprint (similar to the current application area but excludes the existing mine pit area to the west) for mineral exploration. Clearing is authorised until 26 September 2029 and no clearing has occurred to date/. CPS 2473/3 was granted to Northern Star (HBJ) Pty Ltd for the clearing if 250 hectares within a larger footprint adjacent to the existing mine pit area to the west, for the purposes of mineral production, exploration activities associated infrastructure and waste dumps. Clearing is authorised until 19 July 2025 and 0.4 hectares of clearing has occurred /until 31 December 2021. Northern Star no longer has authority to access Lot 45 and no longer holds mineral rights over the area, no further clearing is likely to occur under these permits.

Further, the department concurrently assessed another application made by Hampton Metals Ltd (CPS 10334/1) to clear 125 hectares for mineral exploration, within the same footprint as CPS 10335/1. The assessment of both applications has considered cumulative impacts associated with the combined clearing of 250 hectares. Noting both applicants are wholly owned subsidiaries of Lefroy Exploration Ltd, monitoring compliance over the two overlapping applications can be coordinated.

Several Aboriginal sites of significance have been mapped in the local area of the application area, however none are mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

A.1 Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia and is located within the Coolgardie Bioregion. The proposed clearing and the local area consists of extensive areas of remnant native vegetation. Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 98.5 per cent of the original native vegetation cover.
Ecological linkage	There are no mapped ecological linkages within the application area.
Conservation areas	The application area consists of no mapped conservation areas. Available datasets indicate eight conservation areas are located within the local area (20 kilometre radius). The Majestic Timber Reserve is located the closest to the application area at 12.5 kilometres northeast and Kambalda Nature Reserve is located 13.7 kilometres to the south west.
Vegetation description	The vegetation survey (GHD 2018) (Appendix D) recorded the following vegetation units within the proposed clearing area: • VT01 – *Eucalyptus salmonophloia, E.lesouefii* and *E.transcontinentalis* open woodland over Chenopodiaceae open shrubland – comprises of 2,669.57 hectares. • VT02 - Occasional *Eucalyptus salmonophloia* with *E. lesouefii, E. oleosa* subsp. *oleosa* and *E. torquata* woodland over *Eremophila* spp.shrubland – comprises of 258.95. • VT03 - Mosaic *Eucalyptus* spp. Woodland – comprises of 3481.07 hectares. • VT04 – *Eucalyptus salmonophloia* and *E. griffithsii* open woodland over a tall sparse shrubland – comprises of 226.96 hectares. This vegetation type is associated with non-perennial drainage systems • VT05 - *Eucalyptus oleosa* subsp*. oleosa* and *E. griffithsii* woodland over *Triodia* sp. open hummock grassland – comprises of 307.77 hectares. • VT06 – *Eucalyptus salmonophloia, E.stricklandii* and *E. celastroides* subsp. *celastroides* over variable open shrubland – comprises of 184.54 hectares. • VT07 – variable shrubland/ herb land – comprises of 10.45 hectares. • VT08 – *Eucalyptus lesouefii* woodland, *E. cylindriflora, Eremophila interstans* subsp. *virgata* and *Maireana sedifolia.* – comprises 125.48 hectares • VT09 - Salmon Gum (*Eucalyptus salmonophloia*) woodland, *E. lesouefii, Maireana sedifolia, Eremophila interstans* subsp. *virgata,* and *Sclerolaena diacantha.* – Comprises 102.59 hectares. • VT10 – Transitional Eucalyptus woodland, *Eucalyptus transcontinentalis, E. lesouefii, E. salmonophloia, E. oleosa, Eremophila interstans* subsp. *virgata, E. oldfieldii* subsp*. angustifolia, Acacia erinacea,* and *Senna artemisioides* subsp. *filifolia.* – Comprises 61.11 hectares. • VT11 - *Eucalyptus griffithsii* woodland, *Eucalyptus griffithsii, Acacia erinacea, Scaevola spinescens, Olearia muelleri, Senna artemisioides* subsp. *filifolia,* and *Dodonaea lobulate* – comprises 37.17 hectares. • VT12 - *Eucalyptus salmonophloia* and *E. lesouefii* woodland over *Tecticornia disarticulate* – comprises of 24.94 hectares. • VT13 – *Eucalyptus ravida* woodland, *Eremophila interstans* subsp. *virgata, Maireana sedifolia, M. triptera,* and *Sclerolaena diacantha.*- Comprises of 23.24 hectares. • VT14 - *Eucalyptus stricklandii* woodland over *Acacia kalgoorliensis, Eremophila oldfieldii angustifolia, and Eremophila decipiens subsp. decipiens.* – Comprises 3.91 hectares.

Characteristic	Details
	• VT15 - *Eucalyptus stricklandii* woodland on rocky hills, *Leucopogon* sp. Clyde Hill*, Dodonaea lobulata, Acacia andrewsii, A. erinacea, Scaevola spinescens,* and *Olearia muelleri.* – Comprises 23.85 hectares. • VT16 - *Eucalyptus oleosa* and *E. stricklandii* woodland over *Tecticornia, Eremophila interstans subsp. Virgata.* – Comprises 20.71 hectares. • Cleared areas/ water sources/disturbances – comprises of 288.7 hectares. This is consistent with the mapped vegetation type(s): • Beard vegetation association 9, described as Medium woodland; coral gum (*Eucalyptus torquata*) & goldfields blackbutt (*E. lesouefii*) (Shepherd et al, 2001) • Beard vegetation association 468, which is described as medium woodland; salmon gum & goldfields blackbutt (Shepherd et al, 2001) *The mapped vegetation types retain approximately 98.45 per cent of the original extent (Government of Western Australia, 2019).*
Vegetation condition	Vegetation survey (GHD, 2018) and aerial imagery indicate the vegetation within the proposed clearing area is in completely degraded to excellent (Trudgen, 1991–) condition, described as: • Excellent – Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement. Comprises of 6,901.9 hectares of the larger application footprint. • Very good - Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks. Comprises of 226.96 hectares of the larger application footprint. • Good - More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds. Comprises of 10.45 hectares of the larger application footprint. • Completely degraded - Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs. The full Trudgen (1991) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix D.
Climate and landform	The climate of the application area which is within the Kalgoorlie region consists of hot summers and mild winters, with rainfall varying throughout the year with an average of 264.5 millimetres annually (BoM, 2023). The application area is located within the Kalgoorlie Province within the Kambalda Zone, described as: flat to undulating plains (with hills, ranges and some salt lakes and stony plains) on greenstone and granitic rocks of the Yilgarn Craton (DIPIRD, 2006).
Soil description	Soil landscape mapping (DPIRD, 2023) indicates that seven soil landscape types occur within the application area: • 265Bv - Irregular low ironstone hills with stony lower slopes supporting mulga shrublands. • 265By - Gilgaied drainage tract, draining greenstone hills supporting mixed halophytic shrublands occasionally with a black oak overstorey. • 265Gm - Extensive pedeplains supporting eucalypt woodlands with halophytic and non-halophytic shrub understoreys. • 265Gr - Basalt and greenstone rises and low hills supporting eucalypt woodlands with prominent saltbush and bluebush understoreys. • 265Gu - Extensive, gently undulating calcareous stony plains supporting bluebush shrublands. • 265Mo - Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.

Characteristic	Details
	• 265 MoX_MIN - Disturbed area, mines, mullock dumps etc
Land degradation risk	The mapped soil types across the application area have susceptibility to wind erosion and water erosion particularly in areas where vegetation coverage is sparse, there is also a low to moderate risk of waterlogging and a low to moderate risk of soil acidification. Increased risk of flooding is only likely after significant rainfall events.
Waterbodies	The desktop assessment and aerial imagery indicate there are several non-perennial watercourses located within the application area. These watercourses drain from north to south into Lake Lefroy located approximately eight kilometres from the application area. The survey of the application area (GHD, 2018), indicate two artificial water sources occupying 11 hectares. One is located in the centre of the application area and the other is located in the northwest corner.
Hydrogeography	The application area is located within the proclaimed Goldfields groundwater area. The ground water salinity of the application area is mapped at 14,000 to 35,000 mg/L TDS.
Flora	Available datasets indicated there are no conservation significant species mapped within the application area. Within the local area there were no threatened flora species mapped, however nine priority species are known to occur. The closest mapped species include *Austrostipa turbinata* (Priority (P) 3) located 7.2 kilometres from the application area and *Calandrinia lefroyensis* (P1) located 7.7 kilometres from the application area.
Ecological communities	There are no mapped ecological communities located within the application area or local area. The closest Priority Ecological Community is Mount Belches BIF (banded iron formation), located approximately 34 kilometres from the application area.
Fauna	Three conservation significant fauna species have been recorded in the local area, of which one species; the malleefowl (*Leipoa ocellata*) was recorded (an inactive mound) within the application area.

A.2 Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Coolgardie	12,912,204.35	12,648,491.39	97.96	2,114,349.37	16.72
Vegetation complex					
Beard vegetation association 9 *	240,441.99	235,100.97	97.78	18,984.28	8.07
Beard vegetation association 468*	583,357.71	575,360.61	98.63	130,719.16	22.72
Local area					
20km radius	212,179.55	215,484.74	98.45	-	-

*Government of Western Australia (2019)

A.3 Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Austrostipa turbinata	3	Y	Y	Y	7.17	2	N
Eremophila arachnoides subsp. tenera	3	Y	Y	Y	12.78	2	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.4 Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Dasyurus geoffroii	VU	Y	Y	15.06193	1	N
Leipoa ocellata	VU	Y	Y	0	13	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

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 contains locally significant flora and fauna species.	May be at variance	Yes *Refer to Section 3.2.2, above.*
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 contains suitable habitat, including foraging and breeding habitat for the vulnerable *Leipoa ocellata* (malleefowl) and *Dasyurus geoffroii* (chuditch).	At variance	Yes *Refer to Section 3.2.1, above*
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 habitat for flora species listed under the BC Act.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
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 contains species that can indicate a threatened ecological community.	Not likely to be 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 the mapped vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. Given there are two applications within the one footprint, there will be a cumulative clearing of 250 hectares of native vegetation, resulting in 215,234.7 hectares of remnant vegetation within the local area post clearing. The vegetation proposed to be cleared, the nature of the proposed clearing (scattered areas for mining exploration) with the cumulative impacts of a concurrent application is not likely to impact any ecological linkage in the local area.	Not likely to be 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: There are no mapped conservation areas located within the application area. Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be 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: The application area consists of several non-perennial watercourses which are likely to flow under heavy rain conditions. Two artificial dams also occur within the application area. The proposed clearing area is considered to be growing in, or in association with, an environment associated with a watercourse.	At variance	Yes *Refer to Section 3.2.3, above*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The surveyed soils are not likely to be susceptible to wind erosion, nutrient export, or salinity. Noting the extent and location of the application area and the condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation, however in the event of a heavy rainfall event, clearing within non-perennial tributaries is likely to result in water erosion.	May be at variance	Yes *Refer to Section 3.2.3, above*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: Given the application area consists of nonperennial tributaries, the proposed clearing may impact surface water quality if the watercourse is flowing at the time of clearing. The proposed clearing is not expected to impact groundwater or surface water quality.	May be at variance	Yes *Refer to Section 3.2.3, above*
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 soil and topographic contours in the surrounding area and given the non-perennial watercourses only flow in events of heavy rainfall the proposed clearing is not likely to contribute to increased incidence or intensity 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;

Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Biological survey information excerpts

Flora and Fauna Assessment (GHD, 2018)

An enhanced reconnaissance vegetation and flora survey with a Level 1 fauna assessment was conducted by GHD on the application area between 15th – 18th March 2018. The survey covered most of the application area except the areas around the Mt Martin Mine which was survey in 2012 by Native Vegetation Solutions (2012). The survey is summarised below.

Vegetation type

Seven vegetation types were identified and described (Table 1, Figure 2). Six vegetation types were describe as variations in *Eucalyptus* species. woodlands, the seventh vegetation type identified as vegetation associated with and surrounding man-made water sources. Vegetation type 4 (VT04) was identified as shrubland associated with drainage lines within the survey area.

Vegetation condition

The vegetation condition within the survey area was rated Excellent to Good in condition. The extents of the vegetation condition ratings mapped within the survey area are detailed in Table 2. Majority of the survey area was in Excellent condition with very little weed invasion. Dirt tracks and fencing were the only major disturbance observed and these had little effect on the vegetation structure.

Flora diversity

Eighty four flora taxa (including subspecies and varieties) representing 20 families and 40 genera were recorded within the survey area. This total comprised of 81 native taxa and three introduced flora taxa.

Dominant families recorded from the survey area included:

- Scrophulariaceae (15 taxa)
- Chenopodiaceae (14 taxa)
- Myrtaceae (11 taxa).

The survey area is considered representative of the floristic diversity in the area. The highest floristic diversity was recorded in VT03 (62 taxa).

Fauna Habitats

Seven broad fauna habitat types were identified in the survey area during the field survey. No habitat types were recorded that are considered exclusive to the survey area. The fauna habitats are described in Table 3 below.

Fauna habitat disturbance

With the exception of haul roads, access tracks, fence lines and man-made dams, disturbance within the survey area is minimal.

Habitat quality and connectivity

Habitat connectivity is important to allow animals to move between areas of resource availability. They are important for ground and aerial fauna, providing cover, resources, and linking areas suitable for rest and reproduction. Locally, the habitat within the survey area is well connected to habitat in the surrounding area and broader region. There has been minimal clearing within the survey area, with the exception of clearing for infrastructure (such as the haul roads, access tracks and fence lines). Several tracks intersect the survey area. All of these tracks are relatively minor and unlikely to restrict the movement of fauna. In addition, the majority of the fences within the survey area are also minor and unlikely to substantially restrict the movement of fauna. The fauna habitat quality and connectivity within the survey area is considered to be high, intact and contiguous within the region.

Fauna diversity

A total of 37 species, consisting of 26 birds, seven mammals and four reptiles were recorded within the survey area during the field survey. A total of four introduced species were also recorded within the survey area including the feral cat, cow, feral goats and European rabbit.

Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha)	Vegetation Association, relevé and photo point reference	Photograph
Eucalyptus salmonophloia, E. lesouefii and *E. transcontinentalis* open woodland over Chenopodiaceae open shrubland (VT01)	*Eucalyptus salmonophloia E. lesouefii, E. transcontinentalis* open woodland over *Eremophila oldfieldii subsp. angustifolia, Eremophila oppositifolia subsp. angustifolia* sparse tall shrubland over *Atriplex nummularia* subsp. *spathulata, Maireana sedifolia* mid chenopod shrubland	Plains with silty orange soils, occasional conglomerate sandstone rocks	2,669.57	Association: 468 Relevés: 10 & 18 Photo Point: 1, 2 & 31	
Occasional *Eucalyptus salmonophloia* with *E. lesouefii E. oleosa subsp. oleosa* and *E. torquata* woodland over *Eremophila* spp. shrubland (VT02)	*Eucalyptus salmonophloia* isolated trees with *E. lesouefii, E. oleosa subsp. oleosa, E. torquata* woodland over *Eremophila interstans* subsp. *virgata* tall sparse shrubland over *E. scoparia, E. glabra* subsp. *glabra, E. parvifolia* subsp. *auricampa* low to mid shrubland	Slopes and outcrops with a combination of quartz and conglomerate sandstone rocks over silty orange soil	258.95	Association: 9 Relevés: 23, 26, 29 & 30	
Mosaic *Eucalyptus* spp. woodland (VT03)	*Eucalyptus* spp. woodland over *E. ravida* isolated clumps of trees over *Allocasuarina acutivalvis* subsp. *acutivalvis* and/or *Melaleuca sheathiana* tall isolated shrubs over *Atriplex nummularia* subsp. *spathulata, Tecticornia halocnemoides* low to mid shrubland	Combination of plains and slopes localised patches of 2-30 % quartz cobbles/ stones over silty orange soil	3,481.07	Associations: 9 & 468 Relevés: 1, 2, 3b, 4, 5, 7, 9, 11, 12, 13, 15, 17, 19, 20, 21, 24, 27, 28 & 68	
Eucalyptus salmonophloia and *E. griffithsii* open woodland over a tall sparse shrubland (VT04)	*Eucalyptus salmonophloia, E. griffithsii* open woodland over *Acacia jennerae* tall sparse shrubland over variable open grassland/ herbland	Drainage line, silty orange soil	226.96	Associations: 9 & 468 Relevés: 8 & 22	
Eucalyptus oleosa subsp. oleosa and E. griffithsii woodland over Triodia sp. open hummock grassland (VT05)	*Eucalyptus oleosa* subsp. *oleosa, E. griffithsii* woodland over *Acacia* spp. tall open shrubland over *Scaevola spinescens, Frankenia interioris* var. *interioris, Dodonaea microzyga* var. *acrolobata* low shrubland over *Triodia* sp. open hummock grassland	Upper slopes with conglomerate sandstone rocks over silty orange soil	307.77	Association: 9 Relevés: 14 & 16	
Eucalyptus salmonophloia, E. stricklandii and *E. celastroides* subsp. *celastroides* over variable open shrubland (VT06)	*Eucalyptus salmonophloia, E. stricklandii, E. celastroides subsp. celastroides* open woodland over *Acacia* spp., *Eremophila* spp., *Ptilotus* spp. mixed mid to low shrubland	Ironstone gravel over silty orange soil	184.54	Association: 9 Relevé: 6	
Variable shrubland/ herbland (VT07)	*Acacia jennerae, *Nicotiana glauca* tall shrubland over *DP *Xanthium spinosum, Swainsona canescens* herbland	Silty orange soils	10.45	Associations: 9 & 468 Relevés: NA	
Water Source	NA		0.54		
Cleared/ track/ road	NA		28.47		

Table 1: Vegetation Types within the survey area.

Vegetation Condition	Extent in survey area (ha)
Excellent	6,901.90
Very Good	226.96
Good	10.45
Not rated – cleared, roads, tracks etc.	29.01
Total	**7,168.32**

Table 2: Vegetation Types within the survey area.

Habitat type	Extent (ha)	Indicative photograph
Mixed *Eucalyptus* woodland over chenopod This habitat incorporates vegetation types: VT01 This habitat is dominated by open Eucalypt woodland consisting of *Eucalyptus salmonophloia*, *E. lesouefii* and *E. transcontinentalis* over sparse shrubland dominated by *Atriplex*, *Eremophila* and *Maireana* species. Very little leaf litter is available in this habitat type, however there is some woody debris. These low shrublands provide foraging opportunities and smaller refuge areas for ground-dwelling fauna such as reptiles. Seasonal inundation is likely to provide seasonal variation in the micro-habitat features available to fauna species. This habitat type shows little evidence of disturbance, and is well-represented throughout the region. Conservation significant species No conservation significant species were recorded in this habitat type during this field survey, although the Rainbow Bee-eater (*Merops ornatus*) may opportunistically use this habitat for foraging.	2669.57	
Mixed *Eucalyptus* woodland over mixed shrubs This habitat incorporates vegetation types: VT06 The majority of the survey area comprised a mosaic of *Eucalyptus* woodlands, consisting of *Eucalyptus salmonophloia*, *E. stricklandii* and *E. celastroides* subsp. *celastroides* over mixed shrubs, including *Eremophila* spp. The diversity of shrubby understory species provides a variety of different shelter and food resources, thereby increasing the availability of food sources for fauna throughout the year. There is a broad structural diversity in the survey area, including variation in tree canopy height and density, a variety of structural layers (trees, large and small shrubs, scattered grasses and herbs), a wide range of age classes in most flora species and ground cover/ refuge including logs, branches, patches of leaf litter (in a variety of patch size, type and thickness). Most of the *Eucalyptus* species in this woodland habitat readily form hollows that are utilised by fauna, particularly birds (owls and parrots). Where these hollow branches fall to the ground, the fallen timber provides a valuable micro-habitat feature for ground-dwelling fauna. Fallen logs, branches and leaf litter are critical habitat components for many fauna species and are readily available in this habitat type throughout the survey area. This habitat type is well represented in the survey area and broader area. Conservation significant fauna No conservation significant fauna were recorded in this habitat type during this field survey, however the Rainbow Bee-eater may opportunistically use this habitat for foraging. This habitat is also suitable Malleefowl (*Leipoa ocellata*) foraging and breeding habitat.	184.54	

Mixed *Eucalyptus* woodland over spinifex This habitat incorporates vegetation types: VT05 This habitat is dominated by mallee eucalypts over a mid-layer of shrubs and spinifex. A range of age classes in most flora species and ground cover/ refuge including some logs, branches, patches of leaf litter (in a variety of patch size, type and thickness) was present. There is a range of micro-habitat features in this habitat type including fallen logs, branches and patches of leaf litter and the low growing clumps of *Triodia*. This habitat type is well represented in the survey area and broader area. Conservation significant fauna No conservation significant fauna were recorded in this habitat type during this field survey, although the Rainbow Bee-eater may opportunistically use this habitat for foraging. This habitat is also suitable Malleefowl foraging and breeding habitat.	307.77	
Mixed *Eucalyptus* woodland over rocky hillslopes This habitat incorporates vegetation types: VT02, VT03 This habitat is dominated by patches of low broken rocky formations where the topography is slightly elevated, which add diversity to the micro-habitats available. There are some larger Eucalypt trees, including *Eucalyptus salmonophloia*, *E. lesouefii, E. oleosa subsp. oleosa* and *E. torquata* in this habitat type with the shrub layers including a mosaic of tall shrubs and lower shrubs. The vegetation in this habitat type ranges from sparse to dense and provides good cover for fauna species in areas and there is continuous connectivity between this habitat type and other habitats within the survey area. The value of this habitat has been impacted by historical disturbance particularly felling of timbers for mining and grazing. This habitat type is well represented in the survey area and broader area. Conservation significant fauna No conservation significant fauna were recorded in this habitat type during this field survey, although the Rainbow Bee-eater may opportunistically use this habitat for foraging.	3,740.02	
Eucalypt-lined creek lines This habitat incorporates vegetation types: VT04 This habitat is dominated by *Eucalyptus salmonophloia* and *E. griffithsii* open woodland over a tall sparse shrubland adjacent to dry creeklines and drainage areas. The Eucalypts were often present in dense patches along the creeklines with scattered patches of dense shrubby understory and leaf litter. Few of the Eucalypt species in this habitat contained hollows. High numbers of birds and bird species were recorded using this habitat type. Feral cat tracks were also recorded along the creekline. Conservation significant fauna No conservation significant fauna were recorded in this habitat type during this field survey, although the Rainbow Bee-eater may opportunistically use this habitat for foraging.	226.96	
Artificial water source This habitat incorporates vegetation types: Water source, VT07 There are two artificial water sources within Location 45, one in the centre of the survey area and one in the north-west corner. This habitat is dominated by shrubs, herbs and trees surrounding the water sources, both of which contained water. These water sources provide habitat and water for native fauna, including birds. A suite of water birds recorded during the survey were only recorded in this habitat. Artificial water sources also provide water for introduced fauna, including cattle which were sighted at both dams during the field survey.	11.00	

Cleared areas This habitat incorporates vegetation types: Cleared/ track/ road Throughout the survey area there are highly modified areas that have been cleared or disturbed in the past for the development of mining access tracks, haul roads and fence lines. These areas cover a small percentage of the survey area and provide little to no habitat value for fauna species, and are largely devoid of native vegetation. There are trees and shrubs alongside these areas that provide cover for birds and reptiles. Dingo tracks were recorded along vehicle access tracks throughout the survey area.	28.47	

Table 2: Fauna habitat types within the survey area.

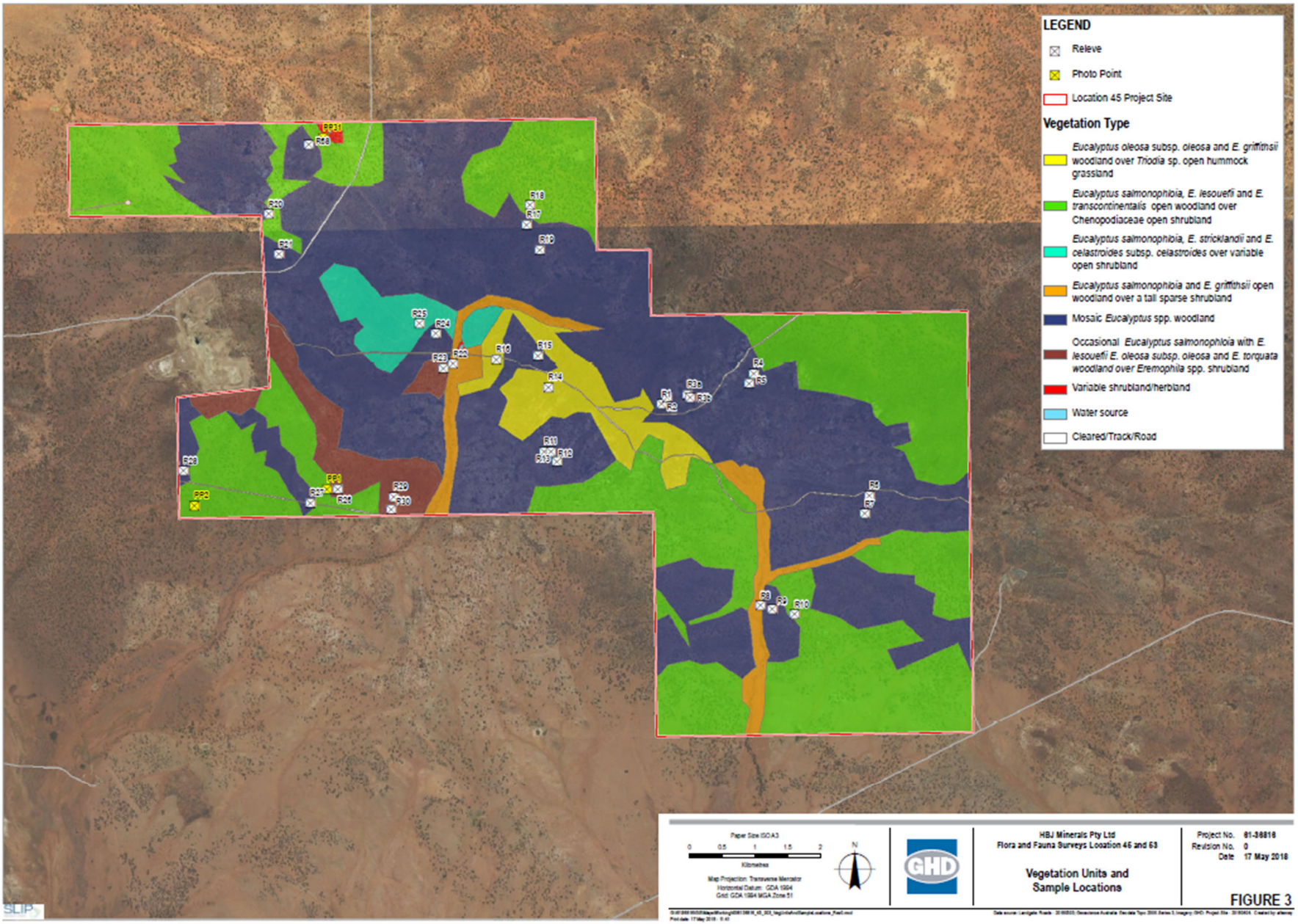

Figure 2: Survey area and mapped vegetation types.

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	Adequate information is available for the survey area, this includes: • Broad scale (1:250 000) mapping by Beard (1972) and digitised by Shepherd *et al.* (2002) • Regional biogeography (Cowan 2001)
Scope (what life forms were sampled etc.)	Nil	Vascular flora and terrestrial vertebrate fauna were sampled during the survey. Non-vascular flora, invertebrate and aquatic fauna were not assessed as part of survey although opportunistic records were taken of invertebrate fauna when observed.
Proportion of flora collected and identified (based on sampling, timing and intensity) Proportion of fauna identified, recorded and/or collected	Nil	The reconnaissance vegetation and flora survey was undertaken 15-18 March 2018. The flora recorded from the field survey is detailed in section 3.6.3 and a full flora species list is provided in Appendix D. The portion of flora collected and identified was considered high, however, it is likely the survey under-recorded some grass species (Poaceae) and herb (annual/ ephemeral) species due to survey timing. The fauna survey was undertaken on 15-18 March 2018 and involved a Level 1 reconnaissance vertebrate fauna survey. The fauna assessment sampled those species that can be easily seen, heard or has distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a reconnaissance survey and seasonal variation within species often requires targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all species were identified to a species level. The fauna assessment was aimed at identifying habitat types and terrestrial vertebrate fauna utilising the survey area. No targeted sampling for invertebrates or aquatic species occurred. Where fresh water fish and crustacean fauna were recorded opportunistically, these findings are mentioned in this report. However, this report is limited to an assessment of terrestrial vertebrate fauna, as the information available on the identification, distribution and conservation status fresh water fish and crustacean is generally less extensive than that of vertebrate species.
Flora determination	Minor	Flora determination was undertaken by the survey botanist in the field and at the WA Herbarium. Two flora collections could only be identified to family, four were identified to genus and two were tentatively identified to species level only due to lack of flowering and fruiting material required for identification. These collections showed no resemblance to any Threatened or Priority flora identified in the desktop assessment. Additionally, some species, particularly grasses (Poaceae) annuals and ephemerals, may have been overlooked due to lack of material; however this is unlikely to affect the results of the survey. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time report development, but it should be noted this may change in response to ongoing research and review of International Union for Conservation of Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Moderate	The majority of the survey area was accessed on foot or by vehicle over the survey period. Information gained from the survey was extrapolated across those sections of the survey area not accessed by foot or vehicle during the field survey to assist with determining the vegetation and habitat types for the entire survey area. These areas consisted of remote sections of the survey area not accessible by vehicle and or a significant distance away by foot
Mapping reliability	Nil	The vegetation was mapped using high resolution ESRI aerial imagery obtained from Landgate and field data. The distribution of sample sites is considered adequate for the definition of vegetation within the survey area. Data was recorded in the field using hand-held GPS tools (e.g. Samsung tablet and Garmin GPS). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers. The Garmin GPS units used for this survey are accurate to within ±5 m on average. Therefore the data points consisting of coordinates recorded from the GPS may contain inaccuracies.
Timing/weather/ season/cycle	Minor	The field survey was conducted in March 2018. In the three months prior to the survey (December to February), Kalgoorlie-Boulder Airport weather station (No. 012038, Bureau of Meteorology (BoM) 2018 – located approximately 37 km from the survey area) recorded a total of 113.6 millimetres (mm) of rainfall. This rainfall total is greater than the Long Term Average (LTA) for the same period (December to February; 75.7 mm) (BoM 2018). The weather conditions during the March field survey (according to BoM weather station No. 012038) included: • Daily maximum temperature ranging from 25.2 to 36.7 °C • Daily minimum temperature ranging from 9.4 to 24.3 °C • Daily rainfall – 0.2 mm of rainfall was recorded during the survey period The weather conditions recorded during the survey periods are considered unlikely to have impacted the vegetation, flora and fauna survey. The vegetation and flora survey was conducted during Autumn. Autumn is generally not considered the most optimal time of year for flora and fauna surveys in the Coolgardie Region, However, above average rainfall was received in January and February 2018.
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	No natural events or disturbances impacted the survey during the site visit.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the survey area was sampled in accordance with the EPA (2016a) Technical guidance and terrestrial fauna sampled in accordance to EPA (2016b, 2016c) as required by the scope of works. The survey area was sufficiently covered by one botanist and one zoologist during the survey.
Resources	Nil	Adequate resources were employed during the field survey. A total of 8 person days were spent undertaking the survey using one dedicated botanist and one zoologist.
Access restrictions	Minor	No access restrictions were encountered during the field survey. The majority of the survey area was accessed on foot or by vehicle over the survey period. Information gained from the survey was extrapolated across those small sections of the survey area not accessed by foot or vehicle during the field survey to assist with determining the vegetation and habitat types for the entire survey area. These areas consisted of remote sections of the survey area not accessible by vehicle and or a significant distance away by foot.
Experience levels	Nil	The botanist and zoologist who executed the surveys were practitioners suitably qualified in their respective fields. Melissa Jensen (zoologist) has nine years' experience undertaking fauna surveys throughout Australia. Angela Benkovic (botanist) has over 11 years' experience undertaking flora and vegetation surveys within WA.

Table 4: Survey constrains and limitations

Level 1 Flora and vegetation survey for the Expansion of Mt Martin Mining area (NVS, 2012)

Native Vegetation Solutions completed a Level 1 flora and vegetation survey of the Mt Martin area on 9th March 2012. This survey comprised of a desktop study, including a literature review and a search of the relevant databases and a reconnaissance survey of the survey area (Figure 3) to verify the desktop assessment.

Results:

Vegetation type, Extent and Status

A total of 20 families, 36 genera and 74 species were recorded within the survey area. Nine major vegetation groups were recorded in the survey area, and are considered to be in Good or Degraded condition (using the scale of Keighery 1994). The vegetation types and extent are show in Table 5 and Figure 4 below.

Vegetation Type	
Eucalyptus lesouefii woodland (VT08) This vegetation group consisted of 19 Families, 29 Genera and 52 Species. The vegetation group was approximately 125.48 ha which makes up 29.68% of the survey area. Dominant species were *Eucalyptus lesouefii, E. cylindriflora, Eremophila interstans* subsp. *virgata* and *Maireana sedifolia.*	
Salmon Gum (*Eucalyptus salmonophloia*) woodland (VT09) This vegetation group consisted of 13 Families, 18 Genera and 31 Species. The vegetation group was approximately 102.59 ha which makes up 24.27% of the survey area. Dominant species were *Eucalyptus salmonophloia, E. lesouefii, Maireana sedifolia, Eremophila interstans* subsp. *virgata,* and *Sclerolaena diacantha.*	
Transitional *Eucalyptus* woodland (VT10) This vegetation group consisted of 13 Families, 19 Genera and 35 Species. The vegetation group was approximately 61.11 ha which makes up 14.45% of the survey area. Dominant species were *Eucalyptus transcontinentalis, E. lesouefii, E. salmonophloia, E. oleosa, Eremophila interstans* subsp. *virgata, E. oldfieldii* subsp. *angustifolia, Acacia erinacea,* and *Senna artemisioides* subsp. *filifolia.*	

***Eucalyptus griffithsii* woodland (VT11)** This vegetation group consisted of 9 Families, 12 Genera and 20 Species. The vegetation group was approximately 37.17 ha which makes up 8.78% of the survey area. Dominant species were *Eucalyptus griffithsii, Acacia erinacea, Scaevola spinescens, Olearia muelleri, Senna artemisioides* subsp. *filifolia,* and *Dodonaea lobulata.*	
***Eucalyptus salmonophloia* and *E. lesouefii* woodland over *Tecticornia disarticulata* (VT12)** This vegetation group consisted of 13 Families, 17 Genera and 28 Species. The vegetation group was approximately 24.94 ha which makes up 5.89% of the survey area. Dominant species were *Eucalyptus salmonophloia, E. lesouefii, Tecticornia disarticulata,* and *Eremophila interstans* subsp. *virgata.*	
Eucalyptus ravida woodland (VT13) This vegetation group consisted of 9 Families, 12 Genera and 19 Species. The vegetation group was approximately 23.24 ha which makes up 5.49% of the survey area. Dominant species were *Eucalyptus ravida, Eremophila interstans* subsp. *virgata, Maireana sedifolia, M. triptera,* and *Sclerolaena diacantha.*	
***Eucalyptus stricklandii* woodland over *Acacia kalgoorliensis* (VT14)** This vegetation group consisted of 10 Families, 10 Genera and 16 Species. The vegetation group was approximately 3.91 ha which makes up 0.92% of the survey area. Dominant species were *Eucalyptus stricklandii, Acacia kalgoorliensis, Eremophila oldfieldii angustifolia,* and *Eremophila decipiens* subsp. *decipiens.*	

***Eucalyptus stricklandii* woodland on rocky hills (VT15)** This vegetation group consisted of 11 Families, 13 Genera and 22 Species. The vegetation group was approximately 23.85 ha which makes up 5.63% of the survey area. Dominant species were *Eucalyptus stricklandii, Leucopogon* sp. Clyde Hill*, Dodonaea lobulata, Acacia andrewsii, A. erinacea, Scaevola spinescens,* and *Olearia muelleri.*	
***Eucalyptus oleosa* and *E. stricklandii* woodland over *Tecticornia* (VT16)** This vegetation group consisted of 12 Families, 16 Genera and 23 Species. The vegetation group was approximately 20.71 ha which makes up 4.89% of the survey area. Dominant species were *Eucalyptus oleosa, E. stricklandii, Tecticornia disarticulata,* and *Eremophila interstans* subsp. *virgata.*	

Table 5 Description of each vegetation group within the survey area.

Weeds

The EPBC search results revealed one weed species *Carrichtera annua* (Ward's Weed) was likely to occur within the survey area, however it was not recorded during the survey.

Carrichtera annua was introduced into Australia from the eastern Mediterranean and first recorded in Port Pirie in South Australia in 1915. *C. annua* is now widespread throughout South Australia, the Interior, and Western Australia (Lamp & Collet, 1999).

This species is not listed as a declared plant by DAFWA (2012a).

Vegetation condition

Evidence of grazing, as well as historic mining and exploration was observed during the field assessment.

Overall, the condition of the vegetation was determined to be "Good" with areas which were affected by grazing and historic exploration in either "Good" or "Degraded" condition.

Conclusion

The field assessment established that the condition of the vegetation in the proposed disturbance area is overall "Good", with certain areas affected by grazing and exploration in "Degraded" condition. No areas of vegetation were assessed to be in "Pristine" condition. No TECs, PECs or Priority Species were recorded within the survey area. Any proposed disturbance/clearing of vegetation will result in a loss of species from the proposed expansion of the Mt Martin mining operations. However, given the size of the area and the extent of the Beard (1990) vegetation associations elsewhere, the impact on the vegetation and its component flora will not affect the conservation values of either, or create fragmentation or patches of remnant vegetation. The following recommendations arise from the Level 1 flora survey:

- Where possible, avoid clearing areas unnecessarily; and
- Weed control measures should be implemented during and following earthworks

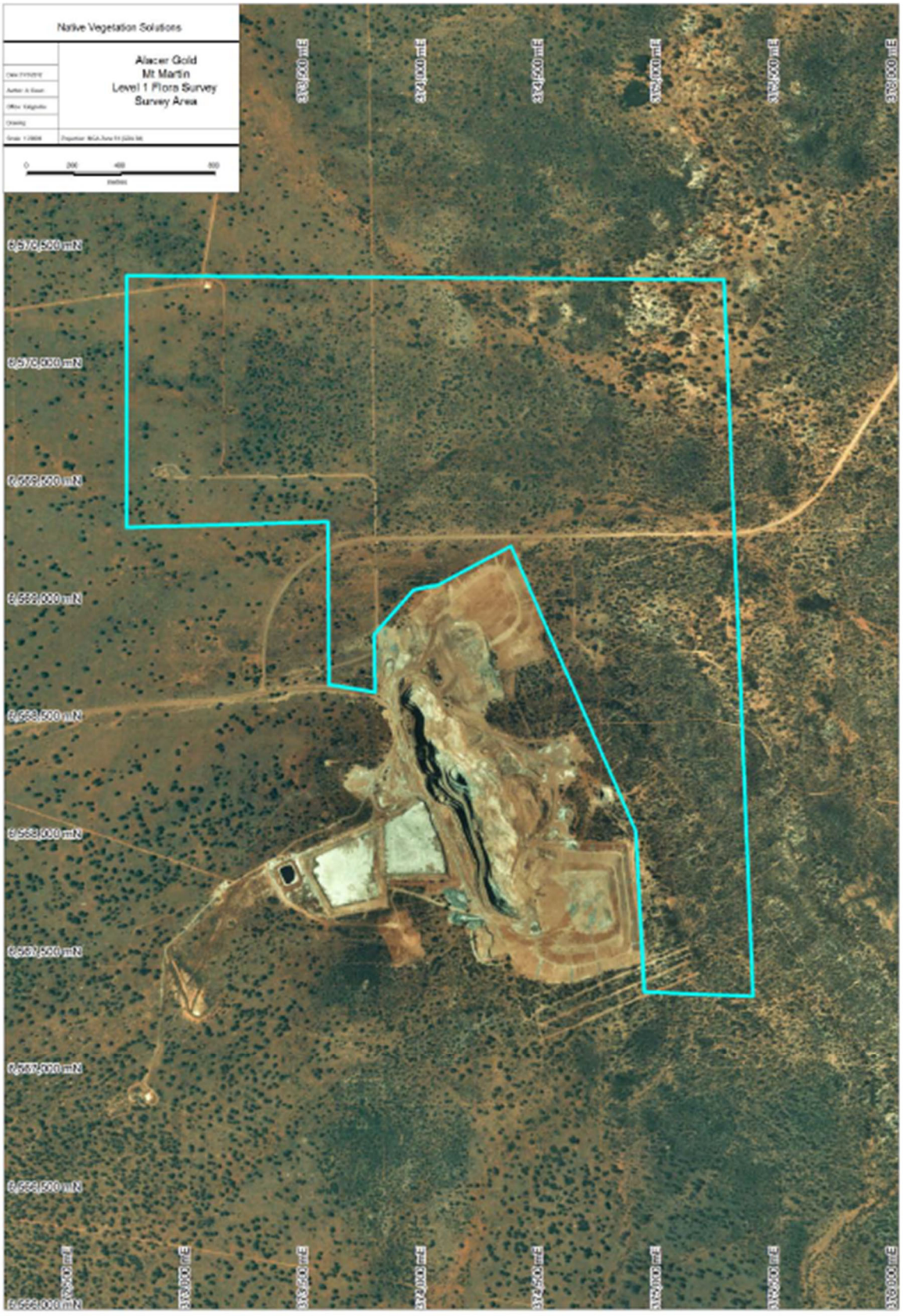

Figure 3: Mt Martin Survey Area.

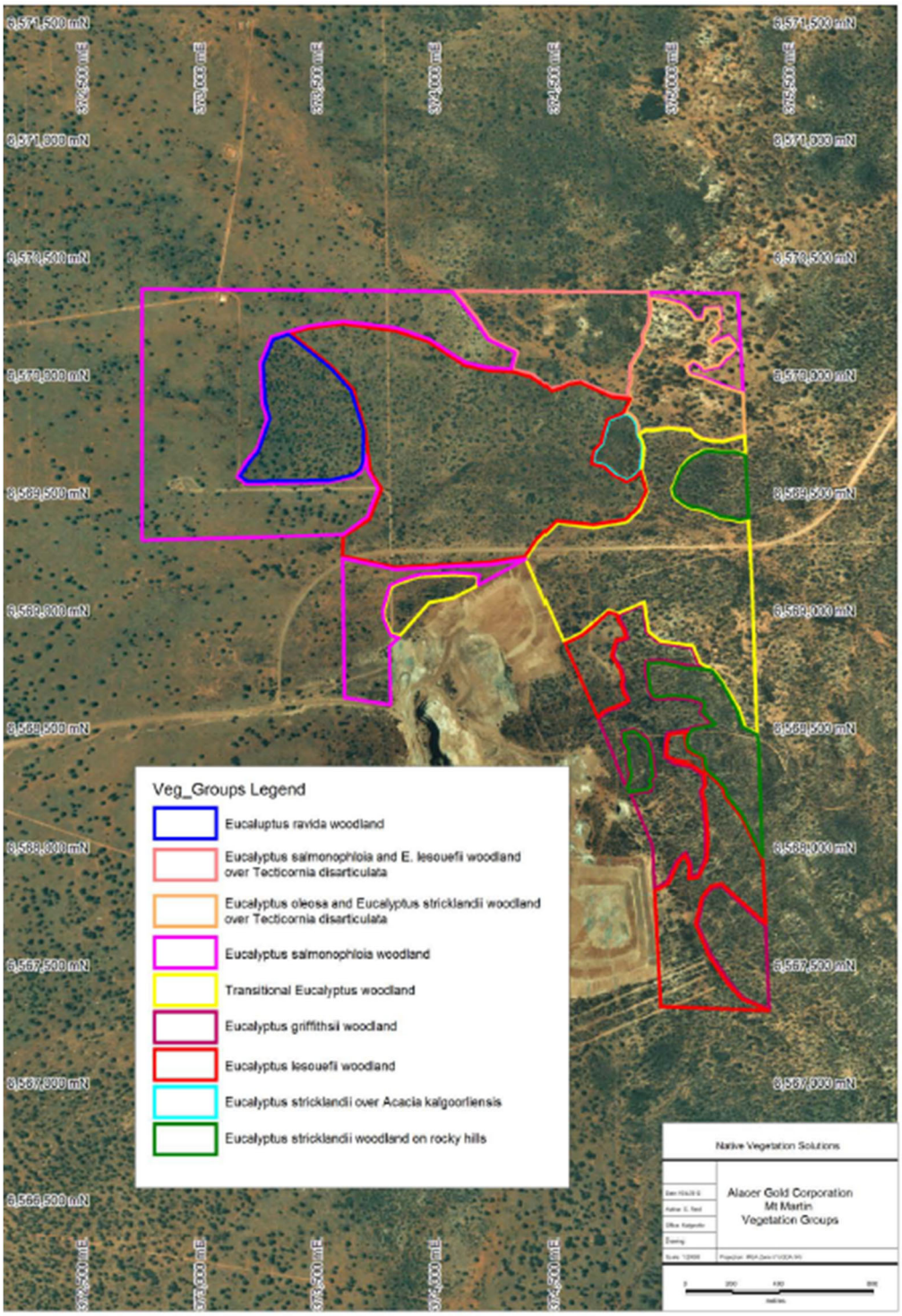

Figure 4: Mt Martin Vegetation Groups

Appendix E. Sources of information

E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- 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
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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)

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