



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

| | |
|-------------------------------|----------------------------------|
| Purpose Permit number: | CPS 7735/1 |
| Permit Holder: | Whitestone Quarries W.A. Pty Ltd |
| Duration of Permit: | 26 April 2019 – 26 April 2034 |

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of selective quarrying of quartz rock.

2. Land on which clearing is to be done

Lot 4021 on Deposited Plan 165766, Bonnie Rock.

3. Area of Clearing

The Permit Holder must not clear more than 2 hectares of native vegetation within the areas hatched yellow on attached Plan 7735/1.

4. Period within which clearing is authorised

The Permit Holder shall not clear any native vegetation after 26 April 2029

5. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

PART II – MANAGEMENT CONDITIONS

6. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

7. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no known *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

8. Malleefowl habitat management

- (a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to conduct a *fauna survey* of any areas to be cleared within the area cross-hatched yellow on attached Plan 7735/1, to identify active *Leipoa ocellata* (malleefowl) mounds.
- (b) Where active malleefowl mounds are identified in relation to condition 8(a), the Permit Holder shall ensure that no clearing occurs within 50 metres of the identified active malleefowl mounds.
- (c) Where active malleefowl mounds are identified under condition 8(b), the Permit Holder shall document the location of any active malleefowl mounds identified and submit to the CEO.

9. Flora management

The Permit Holder shall not clear within 50 metres of Eucalyptus species within the area hatched red on Plan 7735/1, unless these Eucalyptus species can be determined not to be *Eucalyptis brevipes* by a *botanist*.

10. Vegetation management

The Permit Holder shall not clear native vegetation within 25 metres of any wetland or watercourse within or adjacent to the areas hatched yellow on Plan 7735/1.

11. 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) at an *optimal time* following completion of the extractive industry, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land;
 - (ii) ripping the ground on the contour to remove soil compaction;
 - (iii) ripping the pit floor and contour batters within the extraction site; and
 - (iv) laying the vegetative material and topsoil retained under condition 11(a) on the cleared area.
- (c) within two years of laying the vegetative material and topsoil on the cleared area in accordance with condition 11(b) of this Permit the Permit Holder must:
 - (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 11(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 11(c)(ii) of this permit, the Permit Holder shall repeat condition 11(c)(i) and 11(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 11(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 11(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 11(c)(ii).

PART III - RECORD KEEPING AND REPORTING

12. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the date(s) that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of this Permit; and
 - (v) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 7 of this Permit.
- (b) The Permit Holder must maintain a description of the activities undertaken in relation to malleefowl habitat management pursuant to condition 8 of this Permit.
- (c) In relation to flora management pursuant to condition 9 of this Permit, evidence from a botanist that the identified eucalyptus species are not *Eucalyptis brevipes*.
- (d) In relation to the revegetation and rehabilitation of areas pursuant to condition 11 of this Permit:
 - (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares);
 - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*, and
 - (v) a copy of the environmental specialist's report.

13. Reporting

- (a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
 - (i) of records required under condition 12 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 26 January 2034, the Permit Holder must provide to the CEO a written report of records required under condition 12 of this Permit where these records have not already been provided under condition 13(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

botanist: means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience in identification and surveys of flora native to the bioregion being inspected or surveyed, or who is approved by the CEO as a suitable botanist for the bioregion;

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;

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.

fill means material used to increase the ground level, or fill a hollow;

fauna specialist means a person who holds a tertiary qualification specializing 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, and who holds a valid fauna licence issued under the Biodiversity Conservation Act 2016;

fauna survey means a field-based investigation, including a review of established literature, of the biodiversity of fauna and/or fauna habitat of the Permit Area. Where conservation significant fauna are

identified in the Permit Area, the survey should also include sufficient surrounding areas to place the Permit Area into local context;

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;

optimal time means the period from April to June for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;


regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/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.

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;
or
- (b) 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.

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Abbie Crawford
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

27 March 2019

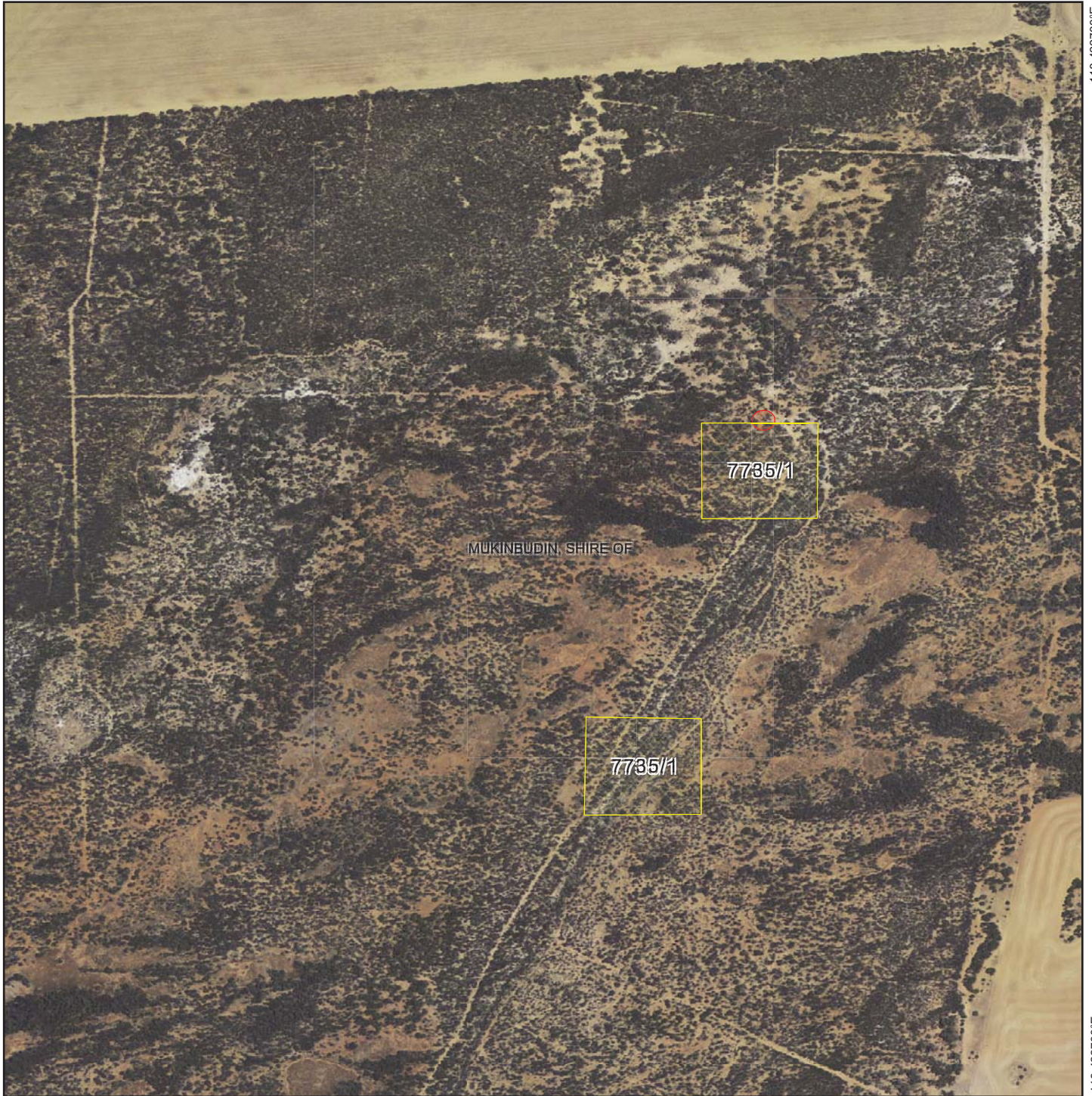
Plan 7735/1

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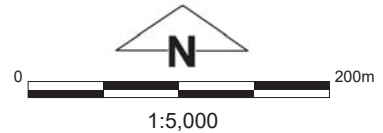
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Legend

-  Roads
-  Clearing Instruments Conditions
-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

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Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



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Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7735/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Whitestone Quarries WA Pty Ltd
Application received date: 09 August 2017

1.3. Property details

Property: Lot 4021 on Deposited Plan 165766, Bonnie Rock
Local Government Authority: Mukinbudin, Shire of
Localities: Bonnie Rock

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | Purpose category: |
|--------------------|-----------|--------------------|---------------------|
| 10 | | Mechanical Removal | Extractive industry |

1.5 Decision on application

Decision on Permit Application: Grant
Decision Date: 27 March 2019
Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with s 51O of the *Environmental Protection Act 1986*, and it has been concluded that the proposed clearing may be at variance to principles (a), (b), (c) and (f), and is not likely to be at variance to the remaining clearing principles.

The delegated officer determined that the proposed clearing may impact the environmental values of the surrounding bushland through the introduction or spread of weeds. Weed management measures will minimise this impact.

The delegated officer determined that the threatened flora species *Eucalyptis brevipes* may exist within or adjacent to the northern boundary of the application area. To address this matter the clearing permit contains a condition that prevents the clearing native vegetation within 50 metres of this area.

The delegated officer determined that there are watercourses and wetlands in the vicinity of the application area. The permit has been conditioned to ensure that clearing does not occur within 25 metres of any watercourse or wetland to minimise the impact to these areas.

Through assessment it was also determined that the application area contains suitable habitat for malleefowl (*Leipoa ocellata*). The proposed clearing may have a significant impact to individuals if an active mound is destroyed or disturbed during the clearing process. A condition has been placed on the permit requiring the permit holder to search for active malleefowl mounds and not clear within 50 metres of any active mound identified.

The delegated officer has noted that the purpose of the application is selective quarrying. The delegated officer has determined that revegetation and rehabilitation conditions are to be placed on the clearing permit, to address the temporary nature of the clearing.

2. Site Information

Clearing Description

The initial application was to clear 10 hectares (within a footprint area of 446 hectares) of native vegetation within Lot 4021 on Deposited Plan 165766, Bonnie Rock, for the purpose selective quarrying of quartz rock (Figure 1).

In response to the Department of Water and Environmental Regulation's Preliminary Assessment and correspondence dated 30 January 2018 the applicant reduced the application area to two hectares.

Vegetation Description

The application area is mapped as Beard vegetation type 551 which is described as 'shrublands; *Allocasuarina campestris* thicket' (Shepherd et al., 2001).

Photographs provided by the applicant indicate the areas proposed to be cleared within the 446 hectare footprint consist of – Myrtaceae sp., *Allocasuarina* sp., *Calothamnus* sp. and *Grevillea* sp. shrubland (Whitestone Quarries WA Pty Ltd, 2017).

Vegetation Condition

Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

To

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

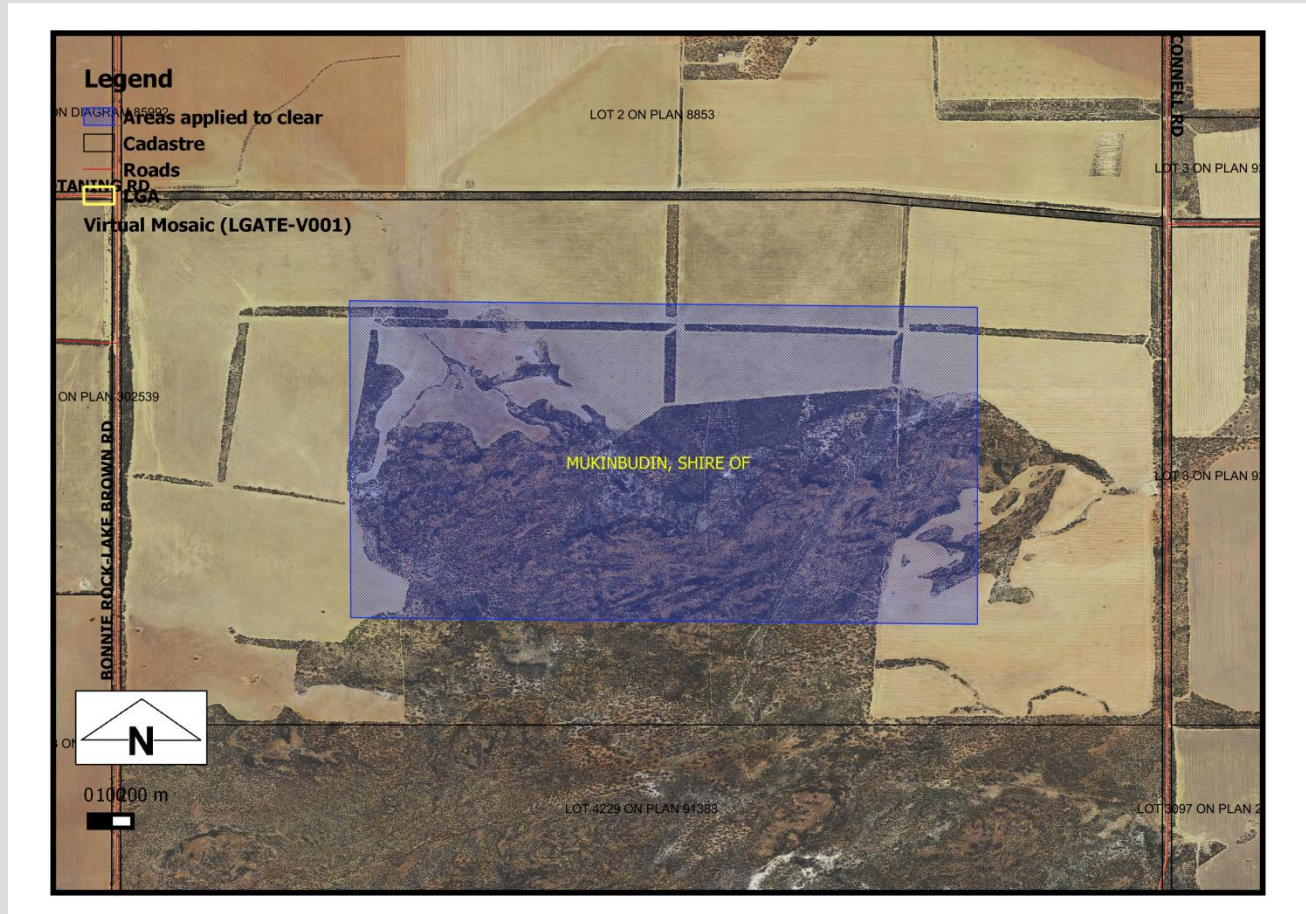


Figure 1: Initial application area

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Proposed clearing may be at variance to this Principle

The following assessment is the preliminary assessment of the original 10 hectare area. Sections 4 and 5 below outline the amendments made by the applicant and the consideration of the variances made in response to the amendments.

According to available databases, three threatened flora species and eight priority species have been recorded within the local area (10 kilometre radius).

The closest record of priority flora is, *Baeckea* sp. Beringbooding (A.R. Main 11/9/1957), this species has been recorded approximately 5.4 kilometres from the application area and is found on coarse sand, granite, outcrops and sandplains (Western Australian Herbarium 1998-). The following priority flora have also been recorded within the local area:

- *Baeckea* sp. Wialki (G.M. Storr s.n. 4/10/1958) (Priority 1) has been recorded approximately 7.4 kilometres from the application area on yellow clayey sand;
- *Eucalyptus leptophylla* var. *floribunda* (Priority 1) has been recorded approximately 7.2 kilometres from the application area and has been found on red-brown loam, red sand, granite and near outcrops;
- *Persoonia leucopogon* (Priority 1) has been recorded approximately 7.3 kilometres from the application area and occurs on yellow sand or sandy clay;
- *Calandrinia kalanniensis* (Priority 2) has been recorded approximately 6.9 kilometres from the application area and occurs on shallow brown clay, often gritty, derived from eroded granite on rock outcrops and herb fields;
- *Leucopogon* sp. Yanneymooning (F. Mollemans 3797) (Priority 3) has been recorded approximately 6.7 kilometres from the application area and is known to occur on white-grey sandy clay, brown gritty loam over granite, skeletal soils and tops of valleys and hills;

- *Melichrus* sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) (Priority 3) has been recorded approximately 7.3 kilometres and has been recorded on yellow sandy loam and yellow sandplain; and
- *Phebalium drummondii* has been recorded approximately 7.3 kilometres and is known to occur on gravelly sandy or clayey soils on flats and roadsides (Western Australia Herbarium, 1998-).

Photographs provided by the applicant of the areas proposed to be cleared within the 446 hectare footprint consist of – Myrtaceae sp., *Allocasuarina* sp., *Calothamnus* sp. and *Grevillea* sp. shrubland. The applicant has advised that the clearing is proposed along a quartzite ridge. Given this, suitable habitat for the abovementioned priority flora is not likely to be impacted by the proposed clearing. However, priority flora may have potential to occur within the wider 446 hectare footprint and therefore further information regarding the exact location of clearing is required to determine if suitable habitat for the abovementioned priority flora is present.

As assessed under principle (b), the application area may contain suitable habitat for the following conservation significant fauna: chuditch (*Dasyurus geoffroii*), malleefowl (*Leipoa ocellata*), arid bronze azure butterfly (*Ogyris subterrestris petrina*), tree-stem trapdoor spider (*Aganippe castellum*) and shield-backed trapdoor spider (*Idiosoma nigrum* / *Idiosoma* species). Further information on the exact location of the proposed clearing and associate quartzite deposits is required to determine the impacts on the abovementioned fauna. Fauna management practices including inspecting the proposed clearing areas immediately prior to clearing occurring via a walk through survey to look for malleefowl mounds and locations that may be suitable for chuditch refuge and/or dens will help mitigate impacts to these species.

As assessed under principle (c), the application area may contain threatened flora. A flora survey is required to determine the presence of threatened flora.

As assessed under principle (d), the application area is not likely to be representative of or impact upon any threatened ecological communities (TEC).

Given the above, the proposed clearing may contain threatened or priority flora and comprise of significant habitat for fauna and the proposed clearing may be considered to comprise a high biological diversity.

The proposed clearing may be at variance to this 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 indigenous to Western Australia.

Proposed clearing may be at variance to this Principle

One fauna species, chuditch, listed as rare or likely to become extinct under the *Biodiversity Conservation Act 2016* (BC Act) has been recorded within the local area (10 kilometre radius) (DBCA, 2007-).

The Department of Biodiversity, Conservation and Attractions (DBCA) has advised that chuditch may occur within the application area or periodically use the area due to their nomadic nature. The vegetation description of the application area may be suitable habitat as the species is known to occur within woodlands and mallee shrubland in the Wheatbelt. The chuditch are opportunistic foragers and have a wide-ranging diet that includes carrion, a variety of prey species and fruit and flowers, which means that they are not restricted to specific habitat types for food resources. As they are predominantly nocturnal, they may not be detected within an area, especially in areas not frequented by people and when occurring in low densities, as is likely in the eastern wheatbelt area. The application area may also be suitable as breeding habitat, depending on the availability of potentially suitable sites for denning that may exist (e.g. horizontal hollow logs, burrows or rock crevices) (DBCA, 2017).

DBCA advised that based on the location and size of the total proposed vegetation clearing within the application area (10 hectares clearing within a 446 hectare project area), it is likely that there may be one to a few individuals resident at any time. The proposed clearing may have a direct impact on any individuals that utilise the area by a reduction in foraging area and refuge sites however this is unlikely to be a significant impact at a local or regional scale. However, there may be a significant impact on breeding females if they have a den site within the area to be cleared (DBCA, 2017).

DBCA advised that suitable habitat for the malleefowl may occur within the application area as it appears to be suitable habitat for nesting mound construction (DBCA, 2017). The general vegetation description in the State Physiognomic vegetation layer is “Tall (sclerophyll) shrubland (> 1 metre tall), wattle, casuarina and teatree (*Acacia-Allocasuarina-Melaleuca* alliance)”, which is a habitat type known to have records of malleefowl mound elsewhere in the regional area. Malleefowl are unlikely to be significantly impacted by the proposed clearing at a local or regional scale. However there may be a significant impact to individuals if an active mound is destroyed or disturbed during the clearing process (DBCA, 2017).

The tree-stem trapdoor spider and/or the shield-backed trapdoor spider may occur within the application area as it is suitable vegetation/habitat type. However it is unknown if the soil around the quartz deposits are suitable, or of a suitable depth for shield-backed trapdoor spider burrow construction (DBCA, 2017).

DBCA advised that Arid bronze azure butterfly has the potential to occur within the application area. The species is listed as critically endangered under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* and until very recently, was only known to be extant at one location within the Wheatbelt Region and presumed extinct at one location within the Goldfields Region. A second extant location within the Wheatbelt has recently been found. The application area is approximately half-way between the two now known locations of the butterfly; approximately 40 kilometres northeast of the originally known location and approximately the same distance southeast of the new location. Therefore, the application area

is within the known extent of occurrence for the butterfly and there is potential for the butterfly to occur within the application area (DBCA, 2017).

The butterfly is restricted to the close vicinity of the host ant colony. The host ant nests are at the base of smooth-barked eucalypt species predominantly Gimlet (*Eucalyptus salubris*), Lake Grace gum (*E. loxophleba gratiae*), but also Wheatbelt Wandoo (*E. capillosa capillosa*) Salmon Gum (*E. salmonophloia*), Victoria Desert Mallee (*E. concinna*) or any other smooth-barked eucalypt (DBCA, 2017). The photographs provided by the applicant did not depict any *Eucalyptus* species within the application area and therefore the proposed clearing is not likely to impact upon the arid bronze azure butterfly. However, the photographs provided only represented a small portion of the 446 hectares footprint area and therefore suitable habitat for this species may be located within the application area.

Given the above the application area may provide suitable habitat for the chuditch, malleefowl, arid bronze azure butterfly and trapdoor spiders. Therefore the proposed clearing may be at variance to this principle.

Fauna management actions including inspecting the proposed clearing areas immediately prior to clearing occurring, via a walk through survey to look for malleefowl mounds and locations that may be suitable for chuditch refuge and/or dens (such as hollow logs, burrows and rock crevices) will help mitigate impacts to these species.

Further information regarding the exact location of clearing is required to determine if suitable habitat and including *Eucalyptus* sp. are present within the application area for the Arid bronze azure butterfly and trapdoor spiders.

The proposed clearing may be at variance to this principle.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing may be at variance to this Principle

According to available databases, three threatened flora species have been recorded within the local area.

The first threatened flora species, *Caladenia drakeoides*, has been recorded approximately 6.2 kilometres from the application area. This species is confined to seasonally moist rises above salt lakes between Coorow, Beacon and Lake King in the Merredin district of Western Australia. This species grows in tall to medium shrub land dominated by *Melaleuca* and *Acacia* species (DotEE, 2017). Three wetlands are mapped within the application area, and therefore suitable habitat may be present within the application area.

The second threatened flora species, *Eremophila virens*, has been recorded approximately 9.7 kilometres from the application area and is found over a geographic range of 55 kilometres in the Mukinbudin, Warralakin and Bonnie Rock areas. This species grows in light brown sandy loam over granite in rock situation, in thicket or scrub with acacias and sheoaks (Brown et al., 1998). Suitable habitat may be located within the application area.

The third threatened flora species, *Eucalyptus brevipes*, has been recorded approximately 6.5 kilometres from the application area and is found over a geographic range of 37 kilometres, from north of Mukinbudin to north-east of Chiddarcooping Hill. This species is found on pale red brown loams to white sand and quartzite outcrops, with York gum open shrub mallee over open low scrub with jam (Brown et al., 1998). Given the mapped vegetation and soil types the application area may contain suitable habitat for this species.

No threatened flora species were identified within the photographs provide by the applicant. However, the photographs only represented a small area of the 446 footprint clearing area and therefore the abovementioned flora species have the potential to occur within the application area. Further information regarding the exact location of the proposed quartzite deposits as well as a flora survey undertaken within the application area is required to determine the presence of these species.

Given the above, threatened flora may occur within the application area and therefore the proposed clearing may be at variance to this 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.

Proposed clearing is not likely to be at variance to this Principle

According to available databases, a TEC, 'Eucalypt woodlands of the Western Australian Wheatbelt' has been mapped approximately 660 metres south west and 800 metres east from the application area. The *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* states that these woodlands are dominated by a complex mosaic of eucalypt species with a tree or mallet form over an understorey that is highly variable in structure and composition (Threatened Species Scientific Committee [TSSC], 2015).

Noting the mapped vegetation type, and from photographs provided from the applicant, the application area does not contain vegetation representative of this TEC.

Therefore the application area is not likely to include or be necessary for the maintenance of a TEC.

The proposed clearing is not likely to be at variance to this 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.

Proposed clearing may be at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The local area (10 kilometre radius) retains approximately 28 per cent native vegetation. The application area is located within the Avon Wheatbelt Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and within the Shire of Mukinbudin which retain approximately 19 per cent and 24 per cent of their pre-European vegetation extents respectively (Government of Western Australia, 2016).

The application area is mapped as Beard vegetation association 551 which retains 24 per cent of its pre-European vegetation extent within the Avon Wheatbelt IBRA bioregion (Government of Western Australia, 2016).

Given the vegetation representation outlined above, the application area is located within an extensively cleared landscape.

The application area may contain suitable habitat for priority and threatened flora, conservation significant fauna and comprises of wetlands and watercourses and therefore the application area may be considered significant as a remnant of native vegetation.

The proposed clearing may be at variance to this principle.

Further information including the exact location of clearing and flora surveys of the proposed clearing is required to determine the significance of vegetation.

Table 1: Pre-European vegetation statistics

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | Extent in DBCA Managed Lands (%) |
|---|------------------------------|------------------------------------|--------------------------|---|
| IBRA Bioregion | | | | |
| Avon Wheatbelt | 9,517,110 | 1,763,071 | 19 | 10 |
| | | | | |
| Local government authority | | | | |
| Shire of Mukinbudin | 342,696 | 120775 | 35 | 15 |
| | | | | |
| Beard Vegetation Association in Bioregion* | | | | |
| 551 | 257,692 | 50,715 | 20 | 7 |
| | | | | |

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance to this Principle

According to available databases, two minor watercourses intersect the application area with an additional minor watercourse located approximately 170 metres south of the application area. Four wetlands area mapped within the application area (Figure 2).

Given the presence of wetlands and watercourses within the application area, the application area is considered to be growing in association with a wetland and watercourse.

The proposed clearing is at variance to this principle.

Further information including the exact location of the proposed clearing is required to determine the impact on the wetlands and watercourses.

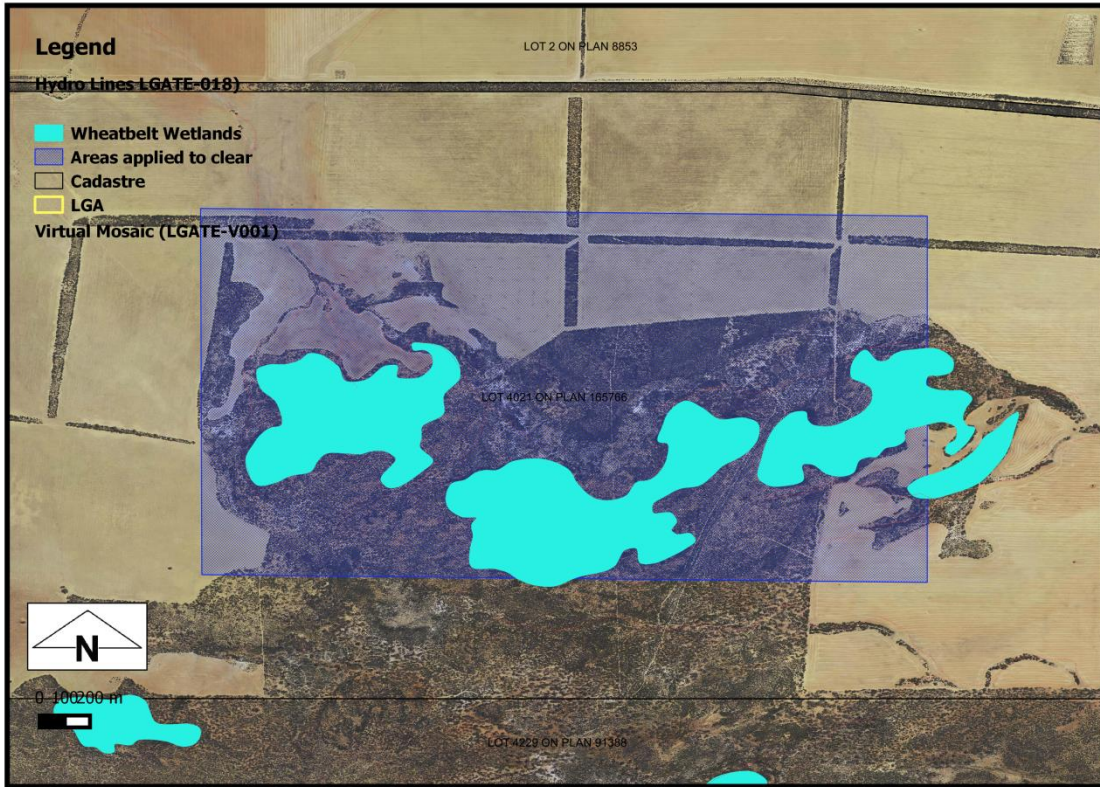


Figure 2: Wetlands located within the application area.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be at variance to this Principle

The application area has been mapped within the following Department of Primary Industry and Regional Development (DPIRD) land sub systems (map units):

- Kwolyin, Yelbeni Subsystem: Gently undulating sandplain plain, in the central zone of ancient drainage, with yellow sandy earth (occasionally acid, yellow deep sand, gravel and pale deep sand); and
- Kwolyin, Kwelkan subsystem: undulating granitic low hills, in the central zone of ancient drainage, with bare rock, deep sandy duplex (grey and red), shallow sand (red and yellow/brown) and red loamy duplex.

The application area has been mapped within the land degradation risk categories outlined in Table 2.

Table 2: Land degradation risk categories (DPIRD, 2017)

| Risk categories | Kwolyin, Kwelkan subsystem | Kwolyin, Yelbeni Subsystem |
|--------------------------|--|--|
| Wind erosion | 10-30% of map unit has a high to extreme wind erosion risk | 50-70% of map unit has a high to extreme wind erosion risk |
| Water erosion | <3% of map unit has a high to extreme water erosion risk | 3-10% of map unit has a high to extreme water erosion risk |
| Salinity | 3-10% of map unit has a moderate to high salinity risk or is presently saline | 3-10% of map unit has a moderate to high salinity risk or is presently saline |
| Subsurface Acidification | 50-70% of map unit has a high subsurface acidification risk or is presently acid | >70% of map unit has a high subsurface acidification risk or is presently acid |
| Flood risk | <3% of the map unit has a moderate to high flood risk | <3% of the map unit has a moderate to high flood risk |
| Water logging | <3% of map unit has a moderate to very high waterlogging risk | <3% of map unit has a moderate to very high waterlogging risk |
| Phosphorus export risk | <3% of map unit has a high to extreme phosphorus export risk | 3-10% of map unit has a high to extreme phosphorus export risk |

Given the mapped soil types and watercourses present within the application area and the land degradation risks outlined above, the application area may be prone to wind and water erosion.

The proposed clearing of 10 hectares occurs within a footprint of 445 hectares is proposed along quartzite deposits and therefore impacts from water erosion are likely to be short term, and minimal.

Appropriate land management practices such as staged clearing and progressive rehabilitation which do not expose the soils for extended durations will help mitigate impacts of land degradation from wind erosion.

Given the above, the proposed clearing is not likely to be at variance to this 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.

Proposed clearing may be at variance to this Principle

Jouerdine Nature Reserve is located approximately 500 metres south of the application area. The vegetation within the application area is contiguous with adjacent vegetation and this nature reserve. An unnamed nature reserve is located approximately 5.5 kilometres south east of the application area.

Given the distance to this conservation area the proposed clearing is not likely to directly impact upon this conservation area.

The application area functions as an ecological linkage allowing fauna to move between conservation areas and remnant vegetation within the local area. The proposed clearing will not sever an ecological linkage, however, the proposed clearing may contribute to the degradation of this linkage and therefore impact upon fauna dispersal between the abovementioned conservation area and remnant vegetation located within the local area. Therefore the proposed clearing may impact on the environmental values of this conservation area.

Given the above, the proposed clearing may be at variance to this 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.

Proposed clearing may be at variance to this Principle

According to available databases, two minor watercourses intersect the application area with an additional minor watercourse located approximately 170 metres south of the application area. Four wetlands are mapped within the application area (Figure 2).

The proposed clearing may increase run-off and sedimentation into the watercourses and wetlands mapped within the application area and therefore may impact upon the quality of surface water.

Groundwater salinity is mapped between 14000 - 35000 milligrams per litre total dissolved solids which is considered to be saline to highly saline. The application area is part of larger remnant approximately 2800 hectares in size, the proposed clearing within a larger footprint of 446 hectares of native vegetation is not likely to have a significant impact on the quality of groundwater and lead to a perceptible rise in the water table.

Given the above, the proposed clearing may be at variance to this principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance to this Principle

The land sub systems covering the application area have been mapped as 'less than three per cent of the map unit has a moderate to high flood risk', which is the lowest risk category (DPIRD, 2017).

Given the above, and noting that the application area is a part of a larger remnant of 2800 hectares, the proposed clearing is not likely to be at variance to this principle.

Planning instruments and other relevant matters.

The application area is located within the Avon River Surface Water Area proclaimed under the *Rights in Water and Irrigation Act 1914*, where there may be a requirement to obtain a permit to interfere with the bed and banks of a watercourse. The application area is located over a minor waterway. DWER's land use planning branch has advised that it does not support the clearing of waterways. A vegetated buffer to the waterways should be maintained to prevent erosion and maintain habitat.

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 31 August 2017 with a 21 day submission period. No public submissions have been received in relation to this application.

4. Applicant's Submissions

On 30 January 2018 and 18 February 2019, a Delegated Officer of DWER wrote to the applicant outlining the environmental impacts associated with the application and recommending that a flora survey be undertaken. The letter also requested that the applicant provide planning approval for the extraction activities related to the application.

On 30 August 2018, the applicant amended the application by reducing the clearing area from 10 hectares to two hectares (see Figure 3).

On 27 February 2019, the applicant provided a copy of a targeted flora survey and Shire of Mukinbudin's Council Decision Number 17 06 17 concerning development approval of the quarry.

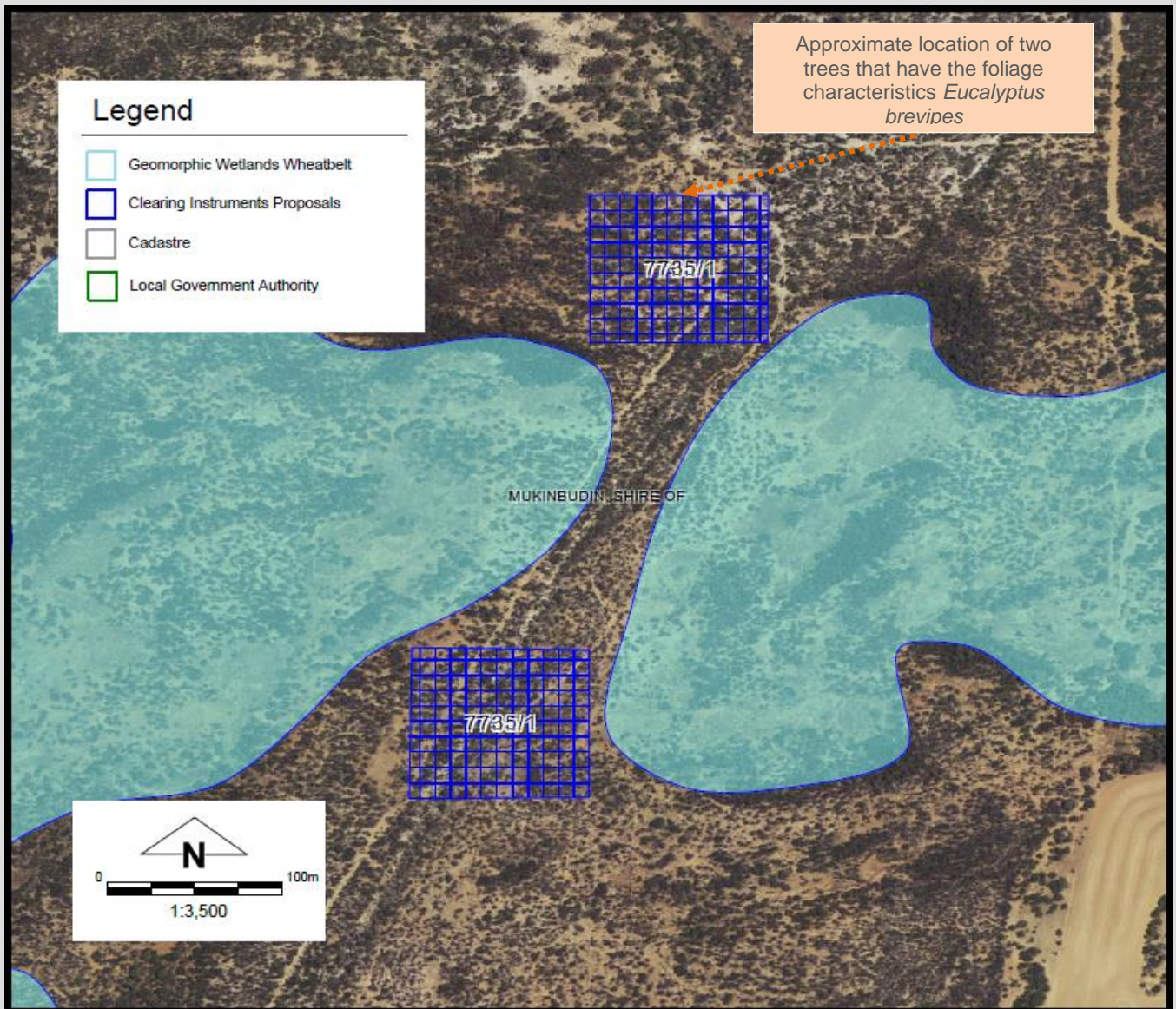


Figure 3: The amended application area in relation to mapped wetlands and possible threatend flora

5. Consideration of variances following applicants submission / further information

In regard to principle (b), considering the reduced size of the application area (two hectares) it is unlikely that the chuditch, malleefowl, arid bronze azure butterfly and trapdoor spiders will be significantly impacted by the proposed clearing at a local or regional scale. However there may be a significant impact to individual malleefowl if an active mound is destroyed or disturbed during the clearing process (DBCA, 2019). Given the highly mobile nature of the chuditch, individual chuditch are unlikely to be significantly impacted. Given that the clearing may impact on malleefowl the proposed clearing remains to be 'may be at variance' with principle (b). A condition has been placed on the permit to ensure that clearing does not occur within 50 metres of an active mound.

In regards to principle (c), the targeted flora survey (Ecoscape, 2019) noted that two plants have the foliage characteristics of the threatened flora species *Eucalyptis brevipes* but require reproductive material to be conclusively identified. These two eucalypts were observed within 10 metres of each other on the northern boundary of the northern application area (see Figure 3). No other conservation significant flora were observed during the survey (Ecoscape, 2019). As a threatened flora species may be within the application area, the proposed clearing remains to be 'may be a variance' to principle (c). A condition has been placed on the permit not allowing clearing within 50 metres of the unidentified *Eucalyptus* species.

Considering the reduced application area (two hectares), together with the conditioned requirement to rehabilitate the application area, the proposed clearing is not likely to be at variance with clearing principles (e) and (h).

In regards to principle (f), the amend application area no longer intercepts mapped watercourses or wetlands, however, the boundaries of the amended area is within ten metres of mapped wetlands (see Figure 3). Given the proximity of the wetlands, some of the native vegetation within the application area may be considered to be growing in association with a wetland, and therefore the proposed clearing may be at variance with this principle. A condition has been placed on the permit to ensure that clearing does not occur within 25 metres of any watercourse or wetland.

The applicant also provided a copy of the Shire of Mukinbudin Council Decision Number 17 06 17. The Council has given development approval for the quarry activities subject to conditions, which includes the preparation of a quarry rehabilitation plan.

6. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed October 2017
- Department of Biodiversity, Conservation and Attractions (DBCA) (2017) Fauna and regional advice for Clearing Permit CPS 7735/1. Western Australia (DWER Ref: A1595909)
- Department of Primary Industry and Regional Development (DPIRD)(2017). NRInfo Digital Mapping. Department of Primary Industry and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (accessed October 2017).
- Department of the Environment and Energy (DotEE) (2017). *Caladenia drakeoides* in Species Profile and Threats Database, Department of the Environment, Canberra. Available from: <http://www.environment.gov.au/sprat>.
- Ecoscape (Australia) Pty Ltd (2019) Whitestone targeted flora survey, Bonnie Rock (A1770358).
- Government of Western Australia (2016). 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016. WA Department of Parks and Wildlife, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Threatened Species Scientific Committee (TSSC) (2015). Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt. Department of the Environment, Canberra. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/128-conservation-advice.pdf>.
- Whitestone Quarries WA Pty Ltd (2017) Photographs of the proposed clearing areas for Clearing Permit CPS 7735/1. Western Australia (DWER Ref: A1595910 – A16595912)

7. GIS Datasets

Aboriginal Sites of Significance
DBCA, Tenure
Groundwater salinity
Hydrology, linear
NLWRA, Current Extent of Native Vegetation
SAC Bio datasets (accessed November 2017)
Soils, statewide