



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 8810/1

File Number: DWERVT5353~3

Duration of Permit: 11 October 2020 to 11 October 2022

PERMIT HOLDER

Mr Joseph William Atkins and Mrs Catherine Anne Atkins

LAND ON WHICH CLEARING IS TO BE DONE

Lot 333 on Deposited Plan 211565, Kununurra

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 16.32 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8810/1.

CONDITIONS

1. 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:

- (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.

2. 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) weed-affected soil, mulch, fill or other material is brought into the area to be cleared;
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared

3. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation between 1 November and 31 March of any given year.

4. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) 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;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit;
- (e) actions taken to minimise the risk of introduction and spread of weeds in accordance with condition 2 of this permit.

5. Reporting

The Permit Holder must provide to the *CEO* the records required under condition 4 of this Permit, when requested by the *CEO*.

DEFINITIONS

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

CEO: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

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

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;

weed/s 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 Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

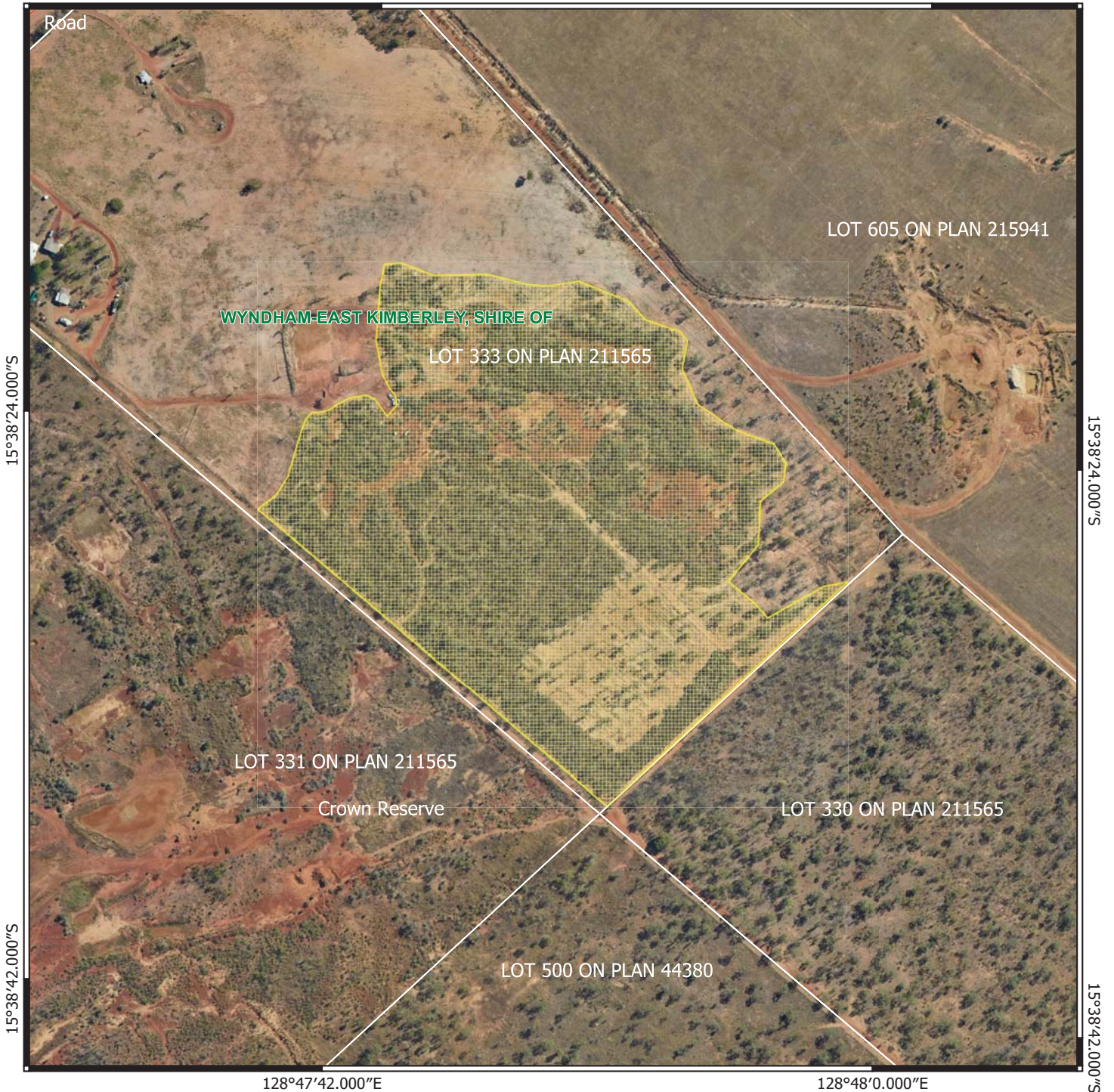
*Officer delegated under Section 20
of the Environmental Protection Act 1986*

18 September 2020


Plan 8810/1

128°47'42.000"E

128°48'0.000"E




CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

Cadastre - LGATE 218

 Local Government Authority (LGA) Boundaries (LGATE-233)



0 50 100 150 200 m



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Officer delegated under section 20 of the
Environmental Protection Act 1986

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MGA Zone 50
Geocentric Datum of Australia 1994



GOVERNMENT OF
WESTERN AUSTRALIA



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 8810/1
Permit type:	Area permit
Applicant name:	Joseph William Atkins and Catherin Anne Atkins.
Application received:	17 February 2020
Application area:	16.32 hectares (ha) of native vegetation.
Purpose of clearing:	Grazing and pasture
Method of clearing:	Mechanical
Property:	Lot 333 on Deposited Plan 211565.
Location (LGA area/s):	Shire of Wyndham-East Kimberley.
Localities (suburb/s):	Kununurra

1.2. Description of clearing activities

The vegetation applied to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5).

1.3. Decision on application and key considerations

Decision:	Granted.
Decision date:	18 September 2020
Decision area:	16.32 hectares (ha) of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 17 February 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking their assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments, and any other pertinent matters they deemed relevant to the assessment (see Sections 3 and 4).

In particular, the Delegated Officer has determined that:

- the clearing is not likely to have a significant impact on the local population or conservation status of *Brachychiton tuberculatus* (see Section 3.2.1).
- the implementation of a condition restricting clearing to the seasonal period of lower rainfall and cyclonic events will minimise the potential for appreciable land degradation (see Section 3.2.1).
- the implementation of a suitable weed management condition is appropriate to mitigate the impact of spreading weeds into adjacent vegetation (see Section 3.2.1).
- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1)

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

1.5. Site map

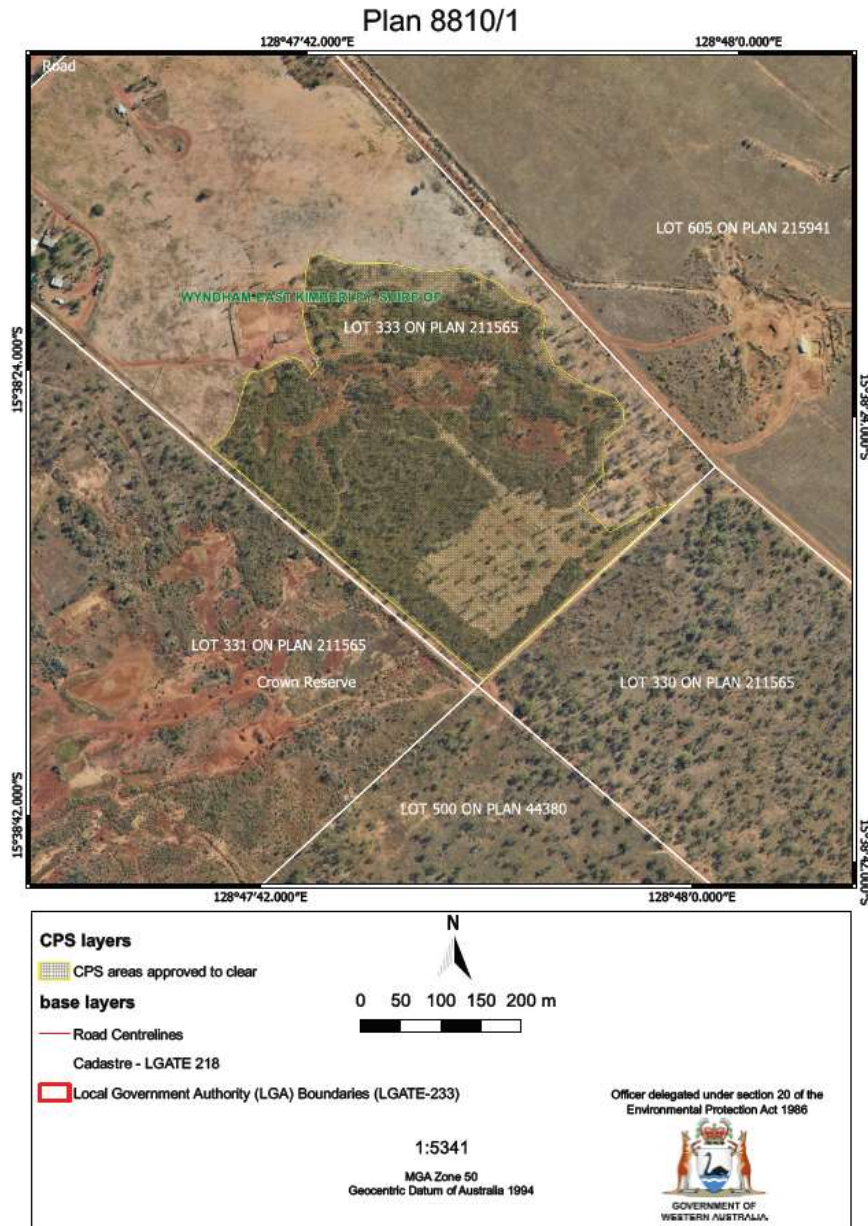


Figure 1. Map of the application area.

The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

1. the precautionary principle;
2. the principle of intergenerational equity;
3. 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)

- *Soil and Land Conservation Act 1945 (WA)*

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has stated of their intent to avoid the clearing of all vegetation within the application area, with a single boab tree and larger gum trees proposed to be retained. These measures will result in the retention of potential roosting habitat for avian species.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix A) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix B.

This assessment identified that the clearing required the further consideration of potential impacts on one Priority 3 flora species, *Brachychiton tuberculatus* and the potential for land degradation impacts from wind and water erosion. The detailed consideration and assessment of the clearing impacts against this specific environmental value is provided below.

3.2.1. Environmental value: biological values (flora) – Clearing Principles (a) to (d)

Assessment:

***Brachychiton tuberculatus* (P3):**

The application area contains over ten specimens of *Brachychiton tuberculatus* a Priority 3 species (BC Act 2016) (Causley, 2020). The proposed native vegetation clearing will require the disturbance of these *Brachychiton tuberculatus* plants. There are seventeen recorded populations of *Brachychiton tuberculatus* in currently available databases. Sixteen of these recorded populations are within 50 kilometres of the application area which is in the middle of the known range for the species.

Recent flora surveys within the local area have identified multiple locations with large numbers of *Brachychiton tuberculatus*. A total of 1,433 individual plants were recorded nearby at a site on Crossing Falls Road (approximately 30 kilometres south of the application area) with other large populations in nearby parcels of undisturbed native vegetation. It is highly likely that this species has a greater range and population size than that currently recorded within available databases, with suitable habitat found extensively within the local area.

Given the above information, it is considered that the clearing of *Brachychiton tuberculatus* individuals within the application is not likely to affect local populations or the conservation status of this species.

Outcome:

Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable.

3.2.2. Environmental value: land and water resources – Clearing Principles (f), (g), (i) and (j)

Assessment:

Advice provided by the Department of Primary Industries and Regional Development (DPIRD, 2020) identified that after the clearing of native vegetation has occurred, the soils mapped within the application area have a high risk of land degradation from water and wind erosion.

The potential impacts of wind erosion can be adequately mitigated by maintaining an adequate vegetative ground cover of greater than 50%. The applicant has committed to seeding the application area post-clearing to maintain ground cover for the retention of topsoil and grasses for grazing. The maintenance of adequate ground cover will also reduce the land degradation risk from water erosion and the addition of a condition restricting clearing to the period of lower rainfall (between April and October), will further minimise the likelihood of erosion posing a significant land degradation risk.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions in relation to this environmental value.

Conditions:

To address the above impacts, a condition has been imposed which restricts clearing to the period between April to October. This condition will limit clearing to the seasonal period of lower rainfall and cyclonic events to reduce the likelihood of significant erosion.

3.3. Relevant planning instruments and other matters

The Shire of Wyndham-East Kimberley advised DWER that local government approvals are not required, and that the clearing is consistent with the Shire’s Local Planning Scheme. The Shire did not have any objections to the clearing.

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.

Appendix A – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

1. Site characteristics

Site characteristic	Details
Local context	<p>The proposed clearing area is on the south-east side of Mulligans Lagoon Road and comprises 16.32 hectares within an expansive tract of native vegetation. The proposed clearing area is part of larger lot used for agricultural purposes and surrounded by extensive remnant vegetation. Aerial imagery and current spatial data indicate the local area (50 kilometre radius of the proposed clearing area) retains approximately 97% of the original native vegetation cover.</p>
Vegetation description	<p>Information from a site visit conducted by botanist Casey Causley on 15 May 2020 (Causley, 2020) and photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of five vegetation types within the 16.32 hectare application area.</p> <ul style="list-style-type: none"> • <i>Calytrix stipulata</i> shrubland, • Open grassland with <i>Adansonia gregorii</i>, • <i>Acacia</i> shrubland (incl. <i>Brachychiton tuberculatus</i>), • Sparse grassland with <i>Acacia</i> sp. • various low woodland and shrubland. <p>Representative photos and the full survey descriptions and mapping are available in Appendix D.</p> <p>This is broadly consistent with the Pre-European (Beard) mapped vegetation type:</p> <ul style="list-style-type: none"> • Victoria Bonaparte, 909, which is described as grasslands, high grass savanna woodland; bloodwood, stringybark & woollybutt over upland tall grass & curly spinifex on sandplain (Shepherd et al, 2001).
Vegetation condition	<p>Aerial photography, and a vegetation survey report including on-site photographs (Causley, 2020), indicates the vegetation within the proposed clearing area to be in Completely Degraded to Very Good (Trudgen, 1991), condition, described as:</p> <ul style="list-style-type: none"> • 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.

Site characteristic	Details
	<ul style="list-style-type: none"> 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. <p>The full Trudgen condition rating scale is provided in Appendix C, below. Representative photos and the full survey descriptions and mapping are available in Appendix D.</p>
Soil description	<p>The soil is mapped as Ivanhoe Land System and interpreted to be plain adjacent to sandstone hills land unit. This is described as having Manbuloo and Katherine sandy soils supporting northern box – bloodwood woodland over grasses including <i>Aristida sp.</i> <i>Chrysopogon fallax</i> and <i>Sorghum sp.</i> Department of Primary Industries and Regional Development (DPIRD, 2020). On-site observations are comparable to this and describe the soils present within the application area as:</p> <ul style="list-style-type: none"> Shallow sand over lateritic soil. Rocks (90%); Sand (10%). Sand (80%) with some lateritic rocks (20%); and Sand
Land degradation risk	<p>Advice provided by the Department of Primary Industries and Regional Development (DPIRD, 2020) raises the likelihood of water and wind erosion occurring after vegetation is cleared.</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that no watercourses or waterbodies transect the application area.</p>
Conservation areas	<p>The nearest conservation area is Gooming Conservation Park located over 5 kilometres north of the application area.</p>
Climate and landform	<p>Rainfall: 800-900 mm per year Evapotranspiration: 600-700 mm per year Geology: Marine and continental sedimentary and volcanic rocks Landform: Level to undulating plains Acid Sulfate Soil Risk: No Groundwater Salinity (Total Dissolved Solids): 500-1000 mg/L</p>

2. Flora, fauna and ecosystem analysis

Based on a review of currently available databases, three Priority 1 Ecological Communities and seven Priority 3 Ecological Community are recorded within the local area (50 kilometre radius from application area). Current records do not show any commonwealth listed conservation significant ecological communities mapped within the local area.

A total of 58 conservation significant fauna and 63 conservation significant flora area recorded within the local area. The local area retains over 95 percent remnant native vegetation. The vegetation types mapped within the application areas are widely represented within the local area and are unlikely to present regionally, or locally unique habitat for conservation significant flora or fauna.

With consideration of the site characteristics set out above, relevant datasets (see Appendix E), and biological survey information (Appendix D), it is not likely that conservation significant flora, fauna species and ecological communities will be significantly impacted by the proposed clearing. The only conservation significant species identified within the application area during the flora and vegetation survey was the priority 3 flora species *Brachychiton tuberculatus*. The survey observed that the soil types within the application area are not consistent with those associated with the Ivanhoe Land System Priority Ecological Community (PEC), which has been mapped over the application area (Causley, 2020).

3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA bioregion					
Victoria Bonaparte	1,870,996.17	1,847,137.03	98.72	319,471.71	17.28
Beard vegetation association					
909	281,414.86	278,753.2	99.05	21,935.38	7.79

Appendix B – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u></p> <p>The proposed clearing area does not contain locally or regionally significant fauna habitats or assemblages of plants. The Ivanhoe Land System Priority Ecological Community (PEC), is mapped over the application area, however, the soil types associated with this PEC are not mapped over the area and an on-site survey confirms that the correct soil types are not present (Causley, 2020). The proposed clearing area contains <i>Brachychiton tuberculatus</i>, a priority 3 species under the <i>Biodiversity Conservation Act 2016</i>, however, the impacts of the clearing will not significantly impact local populations or compromise the conservation status of the species.</p>	Not likely to be at variance.	Yes, further consideration required. See section 3 principle (c).
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u></p> <p>The proposed clearing area does contain some habitat that may be suitable for conservation significant fauna, however, given the surrounding area contains large tracts of similar habitat in better condition than the application area and the highly mobile nature of the conservation significant fauna species that occur in the region, the proposed clearing is unlikely to impact the conservation status, or viability of fauna species in the region or local area.</p>	Not likely to be at variance.	No.
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u></p> <p>The proposed clearing area does not contain vegetation necessary for the continued existence of threatened flora.</p>	Not likely to be at variance.	No.

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>According to currently available databases and the flora survey report (Causley, 2020), there are no state listed Threatened Ecological Communities (TEC’s) within the application area.</p>	Not likely to be at variance.	No.
Environmental values: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The local area retains over 97 percent of currently mapped remnant native vegetation. The extent of the mapped vegetation type and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia which 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).</p> <p>Remnant vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance.	No.
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The Goomig Conservation Park is over five kilometres away and has no connectivity to the application area. The area proposed to be cleared is not likely to have an impact on the environmental values on conservation areas.</p>	Not likely to be at variance.	No.
Environmental values: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>No watercourses or wetlands are recorded within the application area and there is no significant topographical connectivity between the proposed clearing area and any watercourses or wetlands.</p>	Not likely to be at variance.	No.
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>Advice provided by the Department of Primary Industries and Regional Development (DPIRD, 2020, A1903751) raises the likelihood of water and wind erosion occurring after vegetation is cleared.</p>	May be at variance	Yes, further consideration required. See section 3 principle (g).

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (i):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</p> <p><u>Assessment:</u></p> <p>Given no watercourses, wetlands, Public Drinking Water Sources Areas are recorded within the application area and that there is no topographical connectivity from the application area to any wetland or watercourse, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance.	No.
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>No watercourses or wetlands are recorded within the proposed clearing area, and there is no topographical connectivity between the application area and any watercourses or waterbodies.</p>	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.

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 / photographs of the vegetation

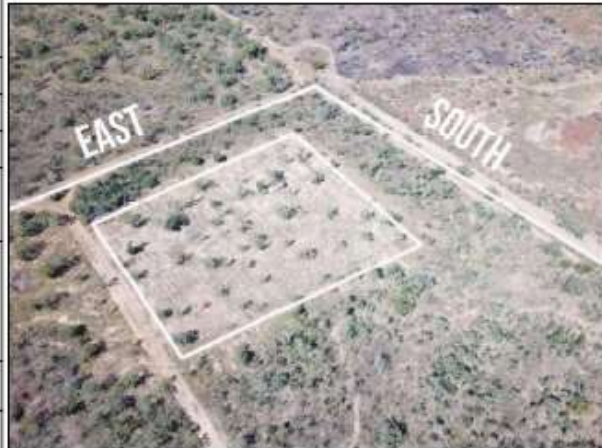
<i>Calytrix</i> shrubland over rocky lateritic soil	
Location (UTM 52L):	Easting: 478265.89 Northing: 8270997.68
Habitat:	Undulating gravelly plain
Soil:	Sand over lateritic soil. Rocks 90%; Sand 10% (shallow).
Aspect:	Flat
Vegetation Condition:	Poor
Vegetation Composition:	Open <i>Calytrix exstipulata</i> shrubland over rocky lateritic soil. Small <i>Acacia</i> sp. shrubs and native grasses.
Disturbances:	Vehicle tracks, rubbish.
Fire Age:	None evident.



No *Brachychiton tuberculatus* identified within this vegetation type.
Lateritic soil inconsistent with Ivanhoe Land System PEC.

Open grassland with *Adansonia gregorii*

Location (UTM 52L):	Easting: 478266.03 Northing: 8270844.04
Habitat:	Flat plain
Soil:	Sand
Aspect:	Flat
Vegetation Condition:	Very Good
Vegetation Composition:	Open grassland with trees including <i>Adansonia gregorii</i> (boab tree).
Disturbances:	None.
Fire Age:	None evident.



No *Brachychiton tuberculatus* identified within this vegetation type.
 Sand inconsistent with Ivanhoe Land System PEC.
 Presence of *Azadirachta indica* on the southern boundary (access road).

Shrubs and trees over grassland (incl. <i>Brachychiton tuberculatus</i>)	
Location (UTM 52L):	Easting: 477968.28 Northing: 8270843.75
Habitat:	Flat plain
Soil:	Sand over lateritic soil
Aspect:	Flat
Vegetation Condition:	Poor
Vegetation Composition:	Shrubs and trees over grassland.
Disturbances:	Weeds (<i>Azadirachta indica</i>) and vehicle tracks.
Fire Age:	None evident.



Several individuals (10+) of *Brachychiton tuberculatus* were identified within this vegetation type. Sand inconsistent with Ivanhoe Land System PEC.

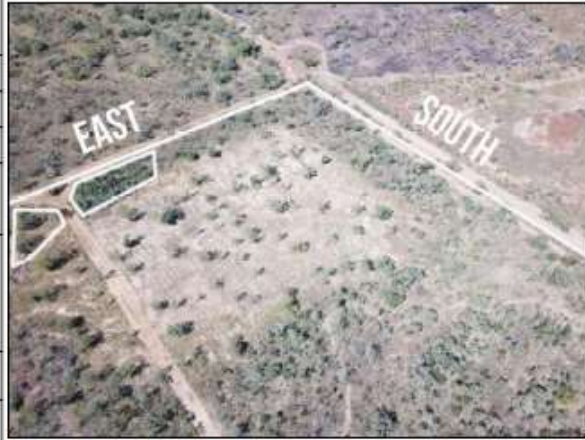
Open grassland with sparse shrubs and trees

Location (UTM 52L):	Easting: 478563.78 Northing: 8270844.32
Habitat:	Flat plain
Soil:	Sand (80%) with some lateritic rocks (20%)
Aspect:	Flat
Vegetation Condition:	Good
Vegetation Composition:	Open grassland with sparse shrubs of <i>Acacia</i> sp. Sparse trees (various).
Disturbances:	Vehicle tracks and clearing.
Fire Age:	None evident.



No *Brachychiton tuberculatus* identified within this vegetation type.
Sand inconsistent with Ivanhoe Land System PEC.

Various low woodland and shrubland	
Location (UTM 52L):	Easting: 478415.20 Northing: 8270536.90
Habitat:	Flat plain
Soil:	Sand
Aspect:	Flat
Vegetation Condition:	Very Good
Vegetation Composition:	Various small trees and medium shrubs over low grasses.
Disturbances:	None.
Fire Age:	None evident.



No *Brachychiton tuberculatus* identified within this vegetation type.
Sand inconsistent with Ivanhoe Land System PEC.

Appendix E – References and databases

1. GIS datasets

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

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)

2. References

Causley, C. (2020), Reconnaissance Flora and Vegetation Survey, Deposited Plan 211565 at Lot 333, Mulligan's Lagoon Road, Kununurra.

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

Department of Biodiversity, Conservation and Attractions (DBCA, 2020), Priority Ecological Communities for Western Australia Version 30. <https://www.dpaw.wa.gov.au>. (Accessed August 2020).

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 August 2020).

Department of the Environment and Heritage (2001), National Objectives and Targets for Biodiversity Conservation 2001–2005, Canberra.

Department of Primary Industries and Regional Development (DPIRD) (2020), Advice provided on land degradation risk by the Commissioner of Soil and Land Conservation, letter 27 February 2020 (A1903751). Department of Primary Industries and Regional Development (DPIRD) (2017), NRInfo Digital Mapping. Accessed at <https://maps.agric.wa.gov.au/nrm-info/> Accessed August 2020. Department of Primary Industries and Regional Development. Government of 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.

Trudgen, (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.