



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9318/1
File Number: DWERVT8077
Duration of Permit: From 21 October 2023 to 21 October 2026

PERMIT HOLDER

Jamie Peter Burton and Victoria Jane Burton

LAND ON WHICH CLEARING IS TO BE DONE

Lot 9000 on Deposited Plan 66307, Derby

AUTHORISED ACTIVITY

The permit holder must not clear more than 404.77 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. 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.

2. Trees not authorised to clear

- (a) Prior to undertaking any clearing authorised under this Permit, the permit holder must identify, record, and photograph all trees with a diameter at breast height of 50 centimetres or greater within the areas cross-hatched red in Figure 2 of Schedule 1.
- (b) The permit holder must retain all trees with a diameter at breast height of 50 centimetres or greater as identified in condition 2(a).

- (c) On completion of clearing authorised under this Permit, the permit holder must identify, record, and photograph all trees retained in accordance with condition 2(b).

3. 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.

4. Directional clearing

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

5. 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	<ul style="list-style-type: none"> (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 1; and (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 3.

No.	Relevant matter	Specifications
2.	In relation to condition 2	<p>(a) the location of all trees with a diameter at breast height of 50 centimetres or greater identified and retained, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2000 (GDA2000), expressing the geographical coordinates in Eastings and Northings;</p> <p>(b) photographs of all trees identified, taken prior to clearing; and</p> <p>(c) photographs of all trees retained, taken after clearing.</p>

6. Reporting

The permit holder must provide to the *CEO* the records required under condition 5 of this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
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.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
fill	means material used to increase the ground level, or to fill a depression.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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.
weeds	<p>means any plant –</p> <p>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</p> <p>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</p> <p>(c) not indigenous to the area concerned.</p>

END OF CONDITIONS



Meenu Vitarana
A/SENIOR MANAGER
NATIVE VEGETATION REGULATION

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

27 September 2023

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below.

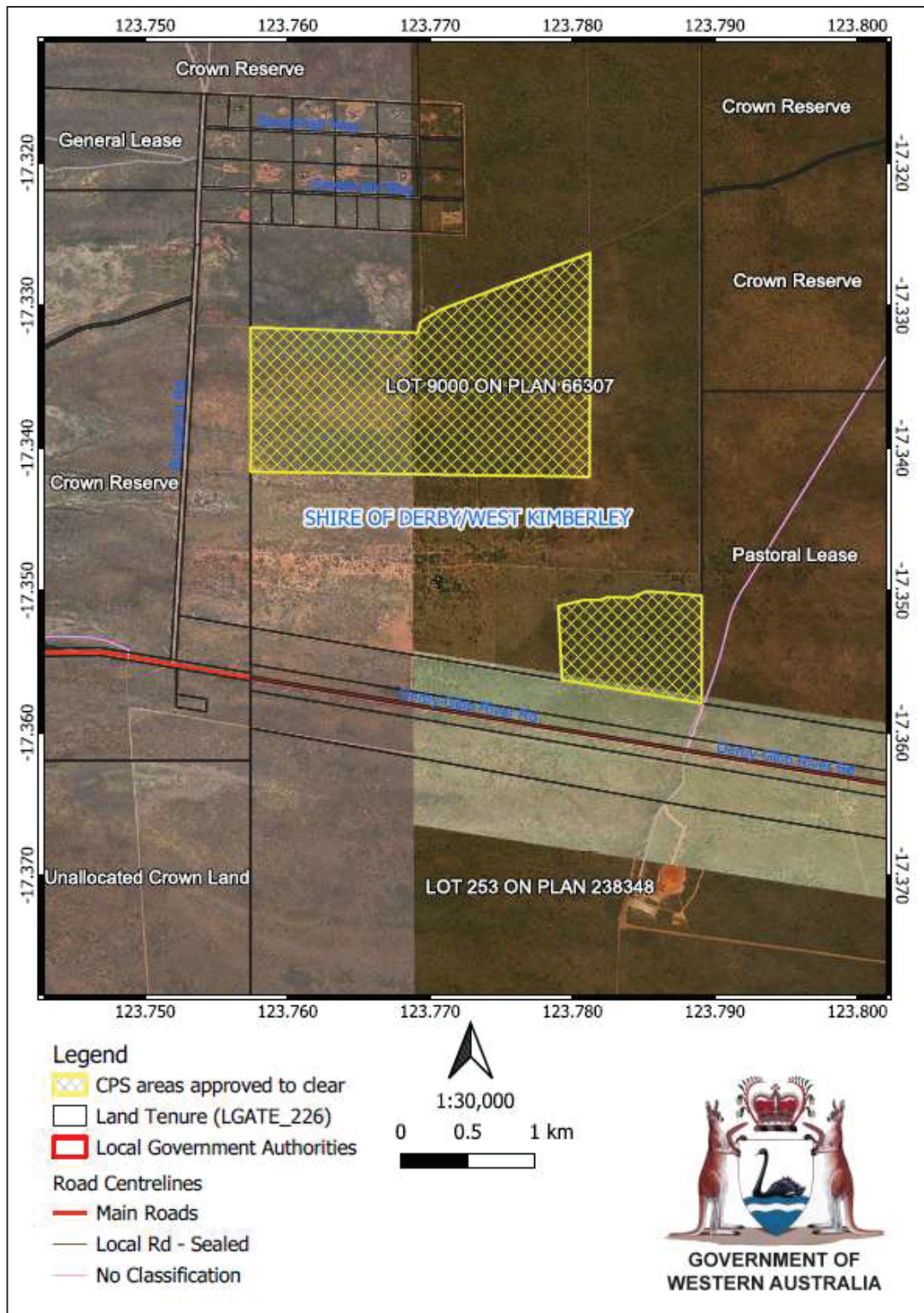


Figure 1: Map of the boundary of the area within which clearing may occur

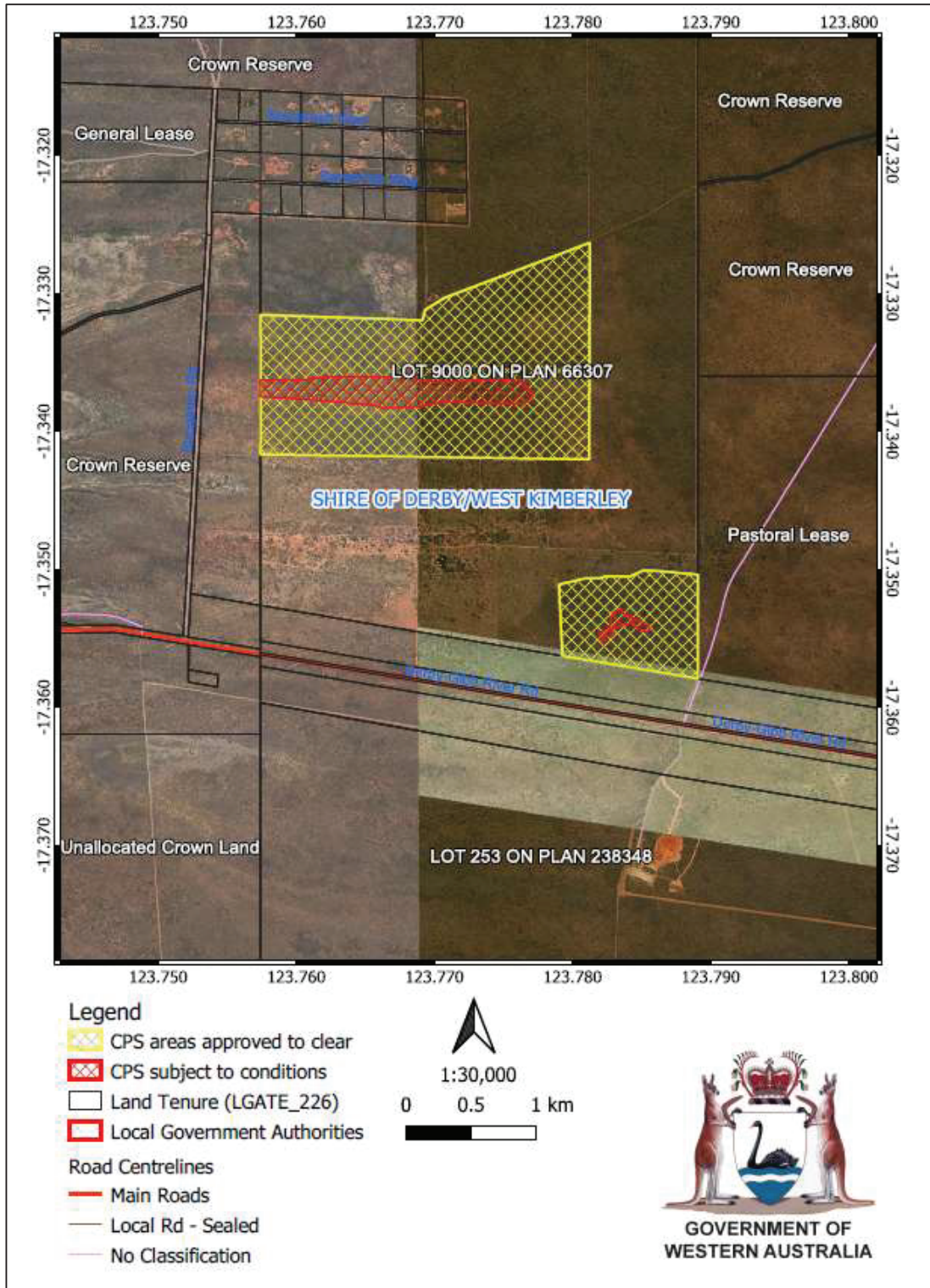


Figure 2: Map of the areas subject to condition 2 (crosshatched red)



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9318/1
Permit type:	Area permit
Applicant name:	Jamie Peter Burton and Victoria Jane Burton
Application received:	9 June 2021
Application area:	404.77 hectares of native vegetation
Purpose of clearing:	Pasture quality improvement for cattle grazing and hay production
Method of clearing:	Mechanical and burning
Property:	Lot 9000 on Deposited Plan 66307
Location (LGA area/s):	Shire of Derby
Localities (suburb/s):	Derby

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across two separate areas (see Figure 1, Section 1.5). The application is to clear regrowth trees and understory in a parkland to re-establish pasture for cattle grazing and hay production. The proposed clearing area has previously been cleared (Figure 1), but now has substantial woody scrub/acacia regrowth with low quality pastures. Regrowth scrub/acacia is proposed to be removed and significant trees to be retained (JP and VJ Burton, 2021).



Figure 1. Aerial images showing the vegetation cover in the application area in years 1988 (left) and 2018 (right)

1.3. Decision on application

Decision:	Granted
Decision date:	27 September 2023
Decision area:	404.77 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix G.1), the findings of flora and fauna surveys, the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- impacts on fauna individuals present at the application area during the time of the clearing;
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values and

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 impacts of the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning.

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

- Avoid, minimise to reduce the impacts and extent of clearing.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds.
- Undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.
- Retain large trees in areas subject to condition.

1.5. Site map

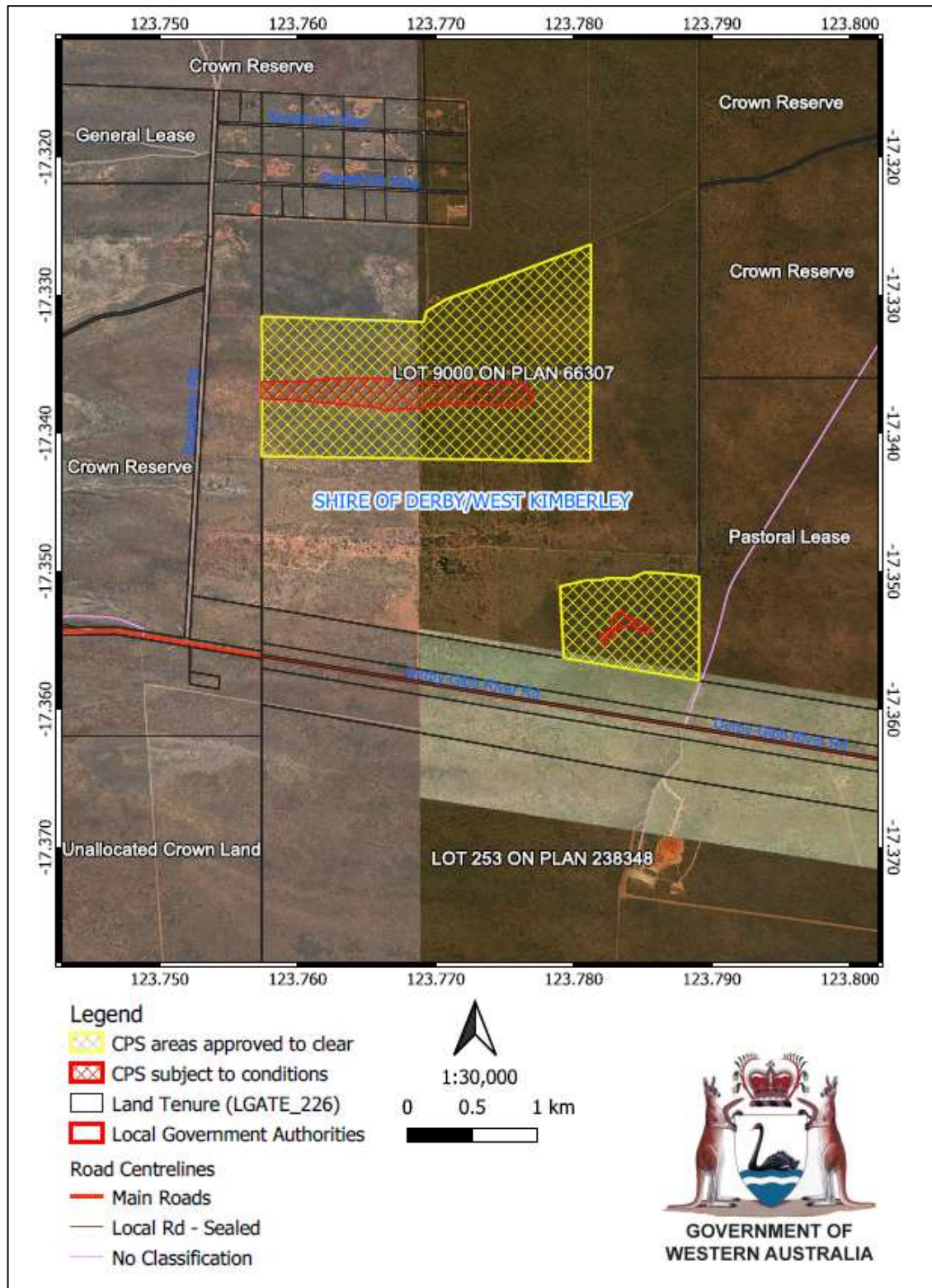


Figure 2. Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. The areas crosshatched red indicate areas within which specific conditions apply.

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D 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

During the assessment process, as per the Department's request, the applicant has proposed to retain large trees in two areas that have high density of larger trees from clearing (Figure 3). In addition, other shade trees outside of these areas may be retained (Kimberly Boab Consulting, 2023).

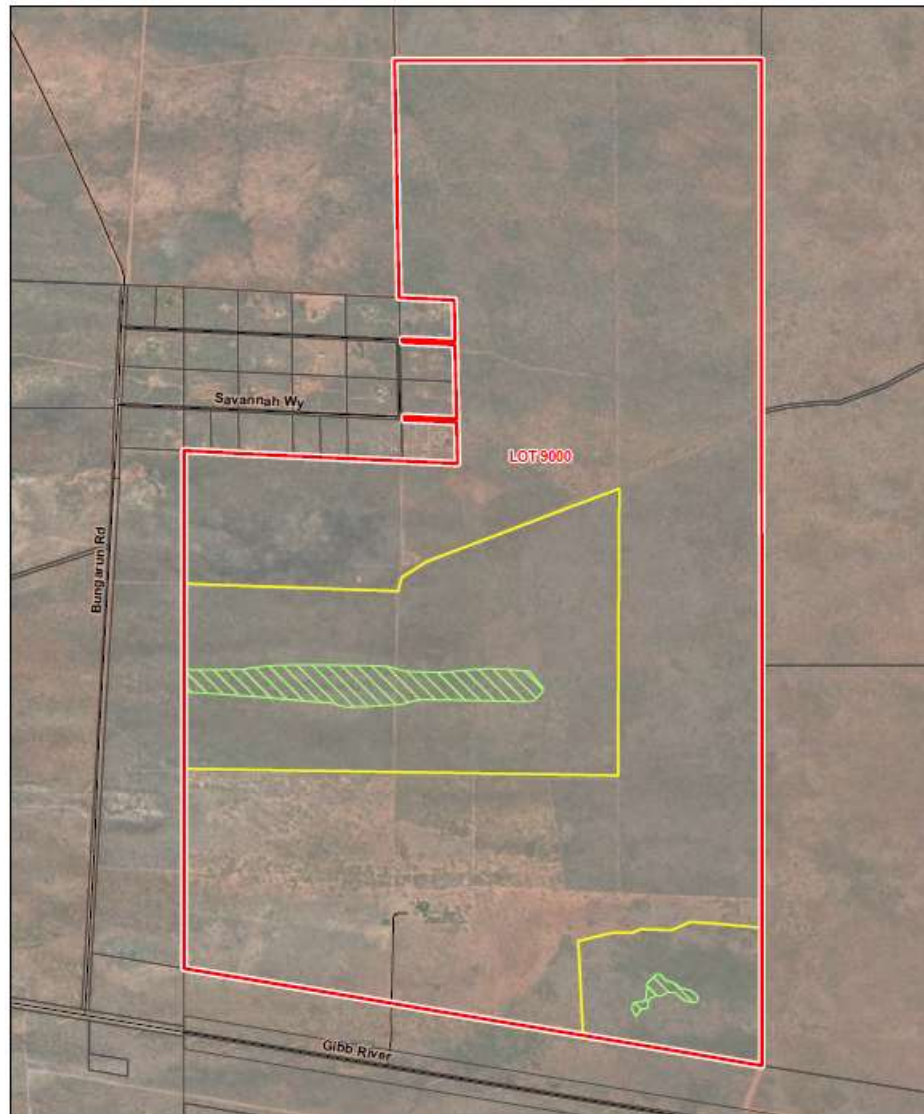


Figure 3. Proposed tree retention areas (green hatched areas). Yellow polygons showing the application area, red polygon showing the lot boundary (Kimberly Boab Consulting, 2023)

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 C) 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 **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a risk to biological values (fauna and 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 and biodiversity) - Clearing Principles (a) and (b)

Assessment

The desktop assessment identified that there are 55 conservation significant fauna species recorded in the local area, including 43 bird species, five mammal species, three reptile species and four fish species. Of which, 39 of these species are migratory bird species or shorebird species associated with coastal habitats not represented within the application area and an additional eight species are species only found in marine or aquatic environments.

Based on the analysis on suitability on habitat, distance of closest mapped records, number of known records in the local area, the application area is likely to provide suitable habitat for three conservation significant fauna species. In addition, due to the suitability of habitat available within the proposed clearing area and that the application area is within the species' modelled distribution, the greater bilby is also considered to likely occur in the application area although no records of this species are mapped within the local area (See C.4 for fauna analysis table).

Greater bilby

The greater bilby (*Macrotis lagotis* - Vulnerable) is a medium-sized burrowing marsupial, occupying three major habitat including open tussock grassland on uplands and hills, mulga woodland or shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas (TSSC, 2016a). Bilbies also utilise complex burrow systems up to three metres deep for diurnal refuge, rest, and shelter (TSSC, 2016a).

Although no greater bilby records have been mapped within the local area, noting that the application area is within the current distribution of this species (DCCEEW, 2023), advice from the Department of Biodiversity Conservation and Attractions (DBCA) has been sought. DBCA advised that the application area is potentially suitable habitat for bilby and a pre-clearance survey should be undertaken (DBCA, 2021). As per DBCA's advice, a fauna survey to determine whether greater bilby is using the application area was requested in August 2021.

The survey targeted on greater bilby was undertaken in three days in May 2023 (ecosystem solutions, 2023). Survey methods using camera traps and searching for evidence of the species (tracks, scats, diggings and burrows) were applied. Burrows were observed within the application area, however the characteristics of the burrows and the surrounding scats was confirmed to not be suitable for a bilby (ecosystem solutions, 2023). No evidence of the greater bilby was found within the application area (ecosystem solutions, 2023).

Grey falcon

The grey falcon (*Falco hypoleucos*) (Vulnerable) occurs at low densities in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia and mainly found where annual rainfall is less than 500 millimetres (TSSC, 2020). They frequent lowland plains with acacia shrublands and their foraging habitat are associated with treeless area, tussock grassland and open woodland (TSSC, 2020). Five records of this species have been mapped within the local area, with the closest distance of approximately 16 kilometres from the application area. Considering that the mean annual rainfall (approximately 700 millimetres) of the application area is not consistent with the grey falcon's preferred habitat and the native vegetation in the local area is extensive, the proposed clearing area is unlikely a significant habitat of this bird species.

Peregrine falcon

The peregrine falcon (*Falco peregrinus*) (Other Specially Protected Fauna) is found Australia-wide and occurs in a range of habitats including woodlands, grasslands and coastal cliffs, usually near watercourses (DAWE, 2020). Preferred roosting and breeding habitat for the peregrine falcon includes granite outcrops and coastal cliffs, but in the absence of these habitats, the species has been known to utilise the nests of other bird species or tree hollows for breeding (Marchant et al., 1993). Seven records of this species have been mapped within the local area, with the closest distance of approximately 2.4 kilometres from the application area. It is considered that the habitat present within the application area may also provide suitable transient foraging habitat for this species as individuals migrate through the landscape. However, noting that the peregrine falcon is a highly mobile species with a large home range that does not rely on special niche habitats and the native vegetation within the local area is extensive, it is unlikely that the application area represents significant habitat for the species.

Gouldian finch

The Gouldian finch (*Erythrura gouldiae*) (Priority 4) is found in northern Australia from Cape York Peninsula through north-west Queensland and the north of the Northern Territory to the Kimberley Region of Western Australia (TSSC, 2016b). This bird species consumes seeds of relatively small number of grass species and nests in tree hollows

(TSSC, 2016b). Five records of Gouldian finches are mapped within the local area, the closest record is approximately 13 kilometres from the proposed clearing area. Noting the limited number of records in the local area, the distance of the closest record, and the time of the most recent record (which was in 1984), it is unlikely that the Gouldian finch occur in the proposed clearing area.

It is noted that the fauna survey did not record any conservation significant fauna species within the application area (ecosystem solutions, 2023).

Conclusion

Based on the above assessment, the proposed clearing is unlikely to impact on significant habitat for any conservation listed fauna species. However, the proposed clearing may result in fauna fatalities should they occur within the application area during the clearing.

Conducting the clearing in a slow progressive manner from one direction towards the adjacent vegetation will allow any fauna present to move into the adjacent native vegetation ahead of the clearing activity.

Conditions

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

- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

3.2.2. Biological values (flora and biodiversity) - Clearing Principle (a) and (c)

Assessment:

No threatened flora species are mapped within the local area (GIS database).

Given the mapped soil, vegetation types and suitable habitat, the following priority flora species may occur within the application area (see Appendix C.3 for the flora analysis table):

- *Heliotropium calvariavis* (P1)
- *Eriochloa fatmensis* (P3)
- *Goodenia sepalosa* var. *glandulosa* (P3)

As per DBCA advice, the above species are herbaceous plants or grass which may persist in areas that have historically been cleared of overstorey species; and the application area appears to provide suitable habitat for these species based on photograph provided by the applicant (DBCA, 2021).

There are only seven specimen records of *Heliotropium calvariavis* (Priority 1), all collected from different locations. As this species has not been recorded for 20 years, the impacts on *H. calvariavis* from the proposed activity may be significant if the species occurs within the application area (DBCA, 2021).

Eriochloa fatmensis (Priority 3) is represented by seven records at five locations in the Kimberly and Pilbara Region in Western Australia, including within three kilometres of the application area. It is also known from numerous locations in the Northern Territory and Queensland and is likely to be under-recorded in Western Australia (DBCA, 2021).

Goodenia sepalosa var. *glandulosa* (Priority 3) has 23 records in the Kimberly Region. If the species is present within the application area, impacts are unlikely to be significant to the conservation of the species but may be significant at the regional level (DBCA, 2021).

Based on DBCA advice, a flora survey targeted on these flora species has been requested. The targeted flora survey was undertaken in May 2023 and none of these species were observed within the application area (ecosystem solutions, 2023).

Weed species of *Azadirachta indica*, *Citrullus lanatus* and *Stylosanthes hamata* were observed within the application area (Docherty, 2022). The proposed clearing will increase the risk of spreading these weeds into surrounding remnant vegetation.

Conclusion:

Given the above assessment, the proposed clearing is unlikely to impact on threatened and priority flora species, however it will increase risk of spreading weeds into adjacent vegetation.

Conditions:

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

- implement weed control measures to minimise the risk of the introduction and spread of weeds into adjacent remnant vegetation.

3.2.3. Environmental Value: Land resources - Clearing Principle (g)

Assessment

Most of the application area is located on the Camelgooda land system which is characterised by extensive dune fields supporting pindan vegetation and other low woodlands with curly spinifex and ribbon grass. The soils are mainly deep red Cooookatoo sands and reddish sandy Yaddagoddy soils which are likely to have reasonable phosphorus retention based on their red colour (CSLC, 2021). However, the Commissioner of Soil and Land Conservation (the Commissioner) advised that the likelihood of eutrophication impacts is very small because of drainage to Indian Ocean and the associated rapid dilution due to high tidal ranges (CSLC, 2021).

The Commissioner advised that the soils are not susceptible to degradation or erosion, except that recently burnt areas have minor susceptibility to wind erosion but stabilise rapidly after fire (CSLC, 2021). Noting the Commissioner's advice and that the purpose of clearing is to re-establish the pasture which does not let the soils exposed to the weather for long-term and one of the proposed methods of clearing is using fire (JP and VJ Burton, 2021), the proposed clearing is not likely to have an appreciable impact on land degradation.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to pose a risk to the land degradation.

Conditions

No management conditions required.

3.3. Relevant planning instruments and other matters

The Shire of Derby - West Kimberley advised DWER that the application area falls under the control of the Shire's Local Interim Development Order No.9, in which there is an express exemption to the need for development approval for any development associated with the pastoral industry (Shire of Derby, 2023).

The proposed clearing is for removing "substantial woody weed burden" to re-establish pastures for cattle grazing and potential hay production. The applicant is recommended to avoid replanting any species that is considered to be weedy fodder (Submission, 2021).

The clearing is proposed to be undertaken by mechanical method and using fire. Noting that the landscape is fire dependent which was demonstrated by the fact that the vegetation regrew into very good condition five months after a bushfire (Docherty, 2022), the clearing method using fire can be considered appropriate and acceptable. However, the clearing must be done in a way that minimises long-term damage to the environmental values of the vegetation. Care should also be taken, for example, to prevent burning from spreading to a neighbouring property. DWER has prepared a guideline to assist in understanding requirements to prevent long term damage to the vegetation which is available at <https://www.wa.gov.au/system/files/2023-05/A-guide-to-burning-under-the-native-vegetation-clearing-provisions.pdf>

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The applicant requested for the duration of the clearing to be extended to three years to allow for securing contractors and for working around seasonal conditions and the Delegated Officer considered this a reasonable request considering the remoteness of the location.

End

Appendix A. Additional information provided by applicant

Summary of further information provided	Consideration of information
Flora survey in 2022, which provided information on vegetation types, vegetation conditions, absence of TEC/PEC within the application area	This information is presented in Section 3.2.2 and Appendix C.1 of the Report
Targeted flora and fauna survey in 2023, which provided information on targeted flora and fauna species within the application area as requested in the request for further information	This information is presented in Section 3.2.1 and 3.2.2 of the Report
Shapefile of areas where large trees will be retained	This information is presented in Section 3.1 of the Report

Appendix B. Details of public submissions

The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and one submission were received. The summary of submitter' comments and DWER's relevant consideration are presented in the following table.

Summary of comments	Consideration of comment
The need to complete a more detailed assessment of flora and fauna given the extent of the clearing	Targeted flora and fauna survey has been undertaken as per DWER's request and provided further information on flora and fauna species within the application area. This has been discussed in the Section 3.2.1 and 3.2.2.
The assessment needs to encompass the proposed replanting for the purpose of pastoral enterprise. The replanting of any species that is considered to be weedy fodder should be avoided	The matter of species included in the replanting for pasture is beyond the scope of the native vegetation clearing permit application assessment and therefore is not included in the assessment. However, the recommendation of not replanting weedy fodder species has been discussed in the Section Planning and other matters.
A sufficient assessment of the consideration to avoid and mitigate the proposed extent of the clearing is required	The applicant provided further information on the trees proposed to retain. This information is presented in Section 3.1. A relevant condition has been imposed in the permit.

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared including two separate patches of native vegetation which are parts of an expansive tract of native vegetation in the extensive land use zone of Western Australia. The north-western patch is surrounded by remnant vegetation, whilst the south-eastern patch is adjacent to the Derby Gibb River Road to its south and surrounded by remnant vegetation in other sides. The proposed clearing areas are parts of a large area of vegetation.</p> <p>Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 99 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is not within any mapped ecological linkages.

Characteristic	Details
Conservation areas	There are no conservation areas mapped within the local area. The closest on-land conservation area is Bandilngan National Park, located approximately 123 kilometres from the application area.
Vegetation description	<p>A survey (Docherty, 2022) identified two native vegetation types within the site:</p> <ul style="list-style-type: none"> • Open woodland of <i>Eucalyptus miniata</i> with <i>Ethrophleum chlorostachys</i>, or <i>Planchonia careya</i> over scattered tussock grassland on sand dune ridges. • Pindan shrubland with isolated trees including <i>Corymbia greeniana</i> and <i>Petalostigma pubescens</i> over a dense shrubland of predominately <i>Calytrix extipulata</i> and <i>Dodonea hispidulus</i> in sand dunes interdunes and flats. Representative photos and maps are available in Appendix F. <p>This is inconsistent with the mapped vegetation type:</p> <ul style="list-style-type: none"> • Beard 764 and 755, which is described as Acacia thicket with scattered low trees over spinifex <i>Acacia eriopoda</i>, <i>Corymbia dichromophloia</i>, <i>Triodia pungens</i>, <i>T. bitextura</i>. (Shepherd et al, 2001) <p><i>The mapped vegetation types retain approximately 97.6 to 99.8 per cent of their original extents (Government of Western Australia, 2019).</i></p>
Vegetation condition	<p>The survey on 2022 (Docherty) indicated the vegetation in the area is in very good (Trudgen, 1991) condition, described as:</p> <ul style="list-style-type: none"> • Very good: Some relatively slight signs of damage caused by human activities since European settlement. <p>The full Trudgen (1991) condition rating scale is provided in Appendix E. Representative photos are available in Appendix F.</p>
Climate and landform	<p>Climate: Mean maximum temperature is 34.7 degrees Celsius. Mean minimum temperature is 21.5 degrees Celsius.</p> <p>Rainfall: Mean annual rainfall is 705.4 millimetres. (BOM, 2023)</p> <p>The application area lays within two types of landforms:</p> <p>337Cm: Sandplains and dunefields, with little organised drainage; stable dunefields with swales opening locally into sandplain; restricted marginal plains with thin sand cover occur adjacent to dissected tracts and there are minor, isolated hills up to 60 m high; limited surface drainage mainly as sheet-flow in tracts downslope from uplands and extending for short distances into dunefields; relief up to 12 m (majority of the application area);</p> <p>337Wa: Sandplain and dunefields with through-going drainage; sandplain, mainly in the upper parts, with stable dunefields, low-lying sandplain, and scattered pans and depressions; sparse to moderately dense branching drainage pattern; relief up to 9 m (DPIRD, 2022).</p>
Soil description	The soils are mapped as 337Cm and 337Wa, which are described as sandplains, swales and linear sand dunes supporting low pindan woodlands of acacias and low woodlands of bauhinia and bloodwood with curly spinifex and ribbon grass.
Land degradation risk	The mapped soil types are not susceptible to erosion and degradation (DPIRD, 2022). The soils are likely to have reasonable Phosphor (P) retention based on their red colour (CSLC, 2021).
Waterbodies	The desktop assessment and aerial imagery indicated that no watercourses transect the areas proposed to be cleared. The closest watercourse is a non-perennial minor river, located approximately 65 - 100 metres and 900 metres away from the north-western part and south-eastern part of the proposed clearing area, respectively.
Hydrogeography	The application area falls within the Canning-Kimberley Groundwater Area, as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act).

Characteristic	Details
	The groundwater salinity level is mapped as less than 500 milligrams total dissolved solids per litre
Flora	No threatened flora species and 11 priority flora species are mapped within the local area (excluding the ocean). None of these priority flora species are recorded within the application area. The closest recorded priority species is <i>Nymphoides beaglensis</i> , located approximately 2.2 kilometres from the application area. There are five species found on the same soil type and vegetation type as the application area.
Ecological communities	No threatened ecological communities are mapped within the local area. The closest mapped priority ecological community is Gogo Land System, located approximately 21 kilometres away from the application area.
Fauna	The desktop assessment identified that a total of 55 threatened or priority fauna species have been recorded within the local area (excluding the ocean), including 11 threatened fauna species, nine priority fauna species, and 35 specially protected fauna species.

C.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*					
Dampier land	8,343,944.95	8,319,879.14	99.71	142,055.31	1.70
Vegetation complex					
Beard vegetation association 764*	53,248.07	51,954.64	97.57		
Beard vegetation association 755*	428,287.59	427,621.40	99.84		

*Government of Western Australia (2019)

C.3. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix G.1), 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]
<i>Eriochloa fatmensis</i>	P3	Y	Y	N	2.6	2	Y
<i>Euploca calvariavis</i>	P1	Y	N	N	31.8	1	Y
<i>Gomphrena cucullata</i>	P3	N	Y	Y	2.6	6	N/A
<i>Goodenia sepalosa</i> var. <i>glandulosa</i>	P3	Y	Y	Y	13.8	5	Y
<i>Nymphoides beaglensis</i>	P3	N	Y	Y	2.2	3	N/A

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]
<i>Utricularia byrneana</i>	P1	N	Y	Y	2.4	1	N/A
<i>Utricularia tubulata</i>	P1	N	Y	Y	2.4	1	N/A

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

C.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area	Most recent record in local area	Are surveys adequate to identify? [Y, N, N/A]
<i>Erythrura gouldiae</i> (Gouldian finch)	P4	Y	13.3	5	1984	N/A
<i>Falco hypoleucos</i> (Grey falcon)	VU	Y	15.9	5	1999	N/A
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	2.4	7	2010	N/A
<i>Macrotis lagotis</i> (Greater Bilby)	VU	Y	61.8	No records in local area		Y

VU: vulnerable, OS: Other Specially Protected, P: priority

C.5. Land degradation risk table

Risk categories	<i>Land Unit 337Cm</i>	<i>Land Unit 337Wa</i>
Erosion	Not prone to erosion and degradation; minor susceptibility to wind erosion but stabilise rapidly after rain	Not prone to erosion and degradation
Salinity	100% of the map unit has a slight to nil hazard	
Subsurface Acidification	100% of the map unit has a low hazard	

(DPIRD, 2022)

Appendix D. 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 area proposed to be cleared does not contain suitable habitat for locally/regionally conservation significant flora and fauna species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1 and 3.2.2, above.</i>
<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 area proposed to be cleared does not contain significant habitat for conservation significant fauna.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to contain flora species listed under the BC Act.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<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>The area proposed to be cleared does not contain species that can indicate a threatened ecological community.</p>	Not at variance	No
Environmental value: 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 extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not 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>Given the distance to the nearest conservation area, the proposed clearing does not have an impact on the environmental values of nearby conservation areas.</p>	Not at variance	No
Environmental value: 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>Given that no watercourses are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</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>The mapped soil Unit 337Cm is slightly susceptibility to wind erosion but quickly stabilize after fire (CSLC, 2021). Considering the final land use purpose, the proposed clearing is unlikely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>Given that no watercourses are recorded within the application area, the proposed clearing is unlikely to impact surface water quality.</p> <p>Groundwater salinity is mapped at less than 500 milligrams per litre of Total Dissolved Solids which is considered to be fresh. Given the low salinity levels of the groundwater within the area under application and that the local area (50-kilometre radius) is highly vegetated, the clearing proposed is not likely to cause deterioration in the quality of groundwater.</p>		
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></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>	Not likely to be at variance	No

Appendix E. 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 F. Biological survey information excerpts / photographs of the vegetation



Figure F1. Some representative photos of vegetation in the application area
(Top: from JP and VJ Burton, 2021; Bottom: from Kimberly Boab Consulting, 2022)

Appendix G. Sources of information

G.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)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- 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)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- 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

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

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