Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9213/1
Permit type:	Area permit
Applicants name:	Mr Tristan John Cornwall Mr Richard Trent Cornwall
Application received:	12 February 2021
Application area:	5.11 hectares of native vegetation (revised)
Purpose of clearing:	Increasing farming efficiency
Method of clearing:	Bulldozer, Chain, and Burn
Property:	Lot 1200 on Deposited Plan 204231 Lot 1201 on Deposited Plan 204231 Lot 2825 on Deposited Plan 210643 Lot 2869 on Deposited Plan 210643
Location (LGA area/s):	Shire of Lake Grace
Localities (suburb/s):	Varley

1.2. Description of clearing activities

The vegetation proposed to be cleared is 5.11 hectares distributed across 35 separate areas (see Figures 1-5, Section 1.5) for the construction of farming infrastructure (sheds, silos), and to facilitate more efficient machinery use, reducing overlap in work areas which can increase fertiliser and chemical application and wear and tear on machinery and reduce the need for weed treatment application in areas around vegetation (Applicant 2021). The initial application was to clear 33.17 hectares (see section 3.1).

1.3. Decision on application

Decision:	Granted
Decision date:	17 November 2021
Decision area:	5.11 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 14 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the clearing principles set out in Schedule 5 of the EP Act (see 0), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing is to increase farming efficiency and reduce the application

of fertilizers and chemicals. The Delegated Officer also noted that the applicant has avoided all of the areas that likely contained higher environmental values.

The assessment identified that:

- the clearing is not likely to have a significant impact on populations of conservation significant flora within the local area (20 kilometre radius);
- the clearing is not considered to contain significant foraging habitat for Carnaby's Cockatoo (*Calyptorhynchus latirostris*) or trees of a suitable size for roosting or breeding;
- the clearing is not likely to impact the mapped occurrences of the "Eucalypt Woodlands of the Western Australian Wheatbelt" (Wheatbelt Woodland) threatened ecological community (TEC) within the properties (see Section 3.2.4);
- the proposed clearing is not considered to be a significant remnant in an extensively cleared landscape; and
- potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's avoidance, minimisation and mitigation measures (Section 3.1), the Delegated Officer considered that the proposed clearing can be managed to unlikely lead to an unacceptable risk to environmental values. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing;
- implementation suitable weed management practices that are appropriate to mitigate the impact of spreading weeds into adjacent vegetation (see Section 3.2.1); and
- undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

The Delegated Officer considered that the applicant has suitably demonstrated avoidance and minimisation measures, sufficient to avoid potential impacts to, suitable foraging habitat for Carnaby's Cockatoos, a TEC, and significant remnants of native vegetation.

1.5. Site maps

Figure 1 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

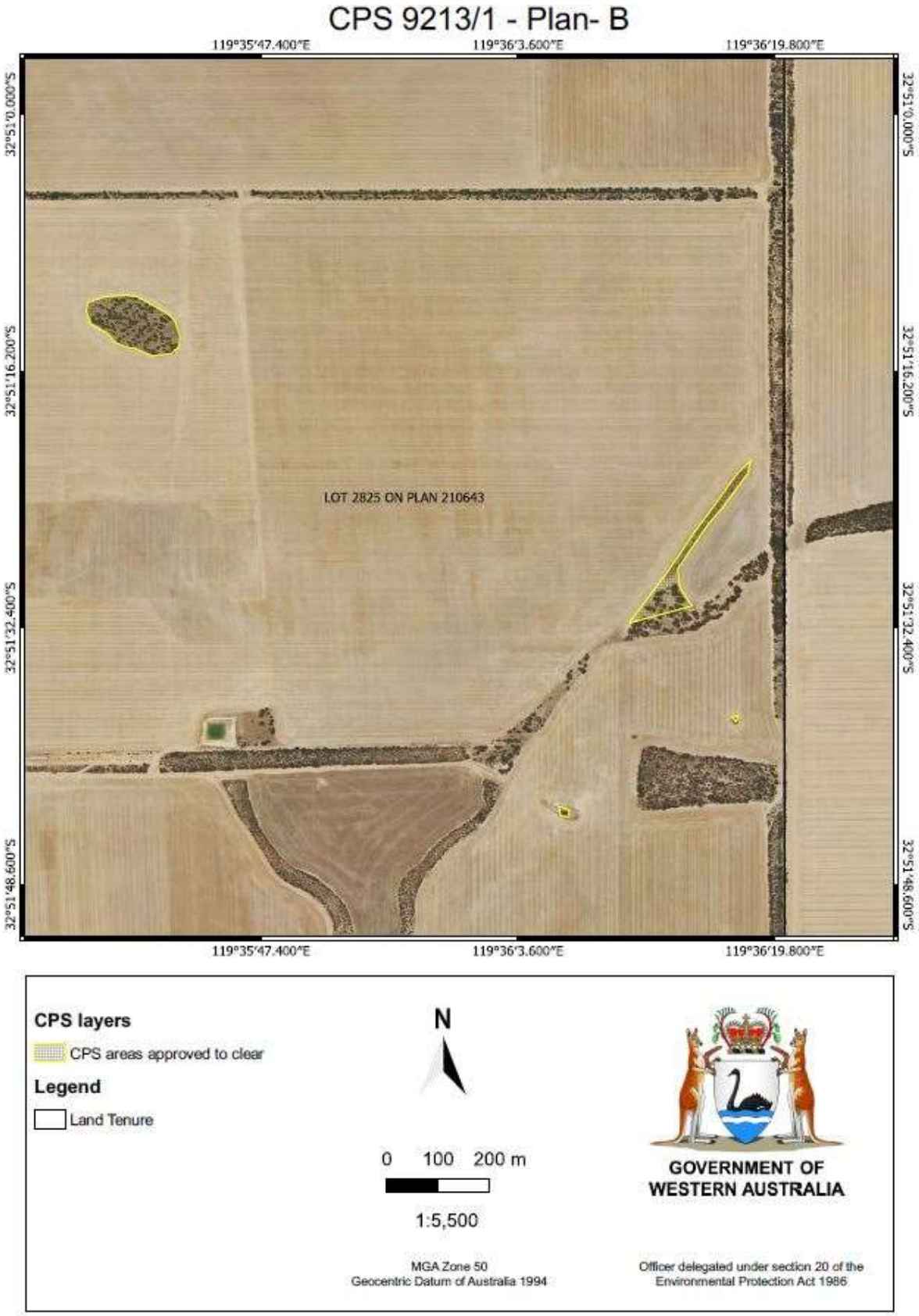


Figure 2 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

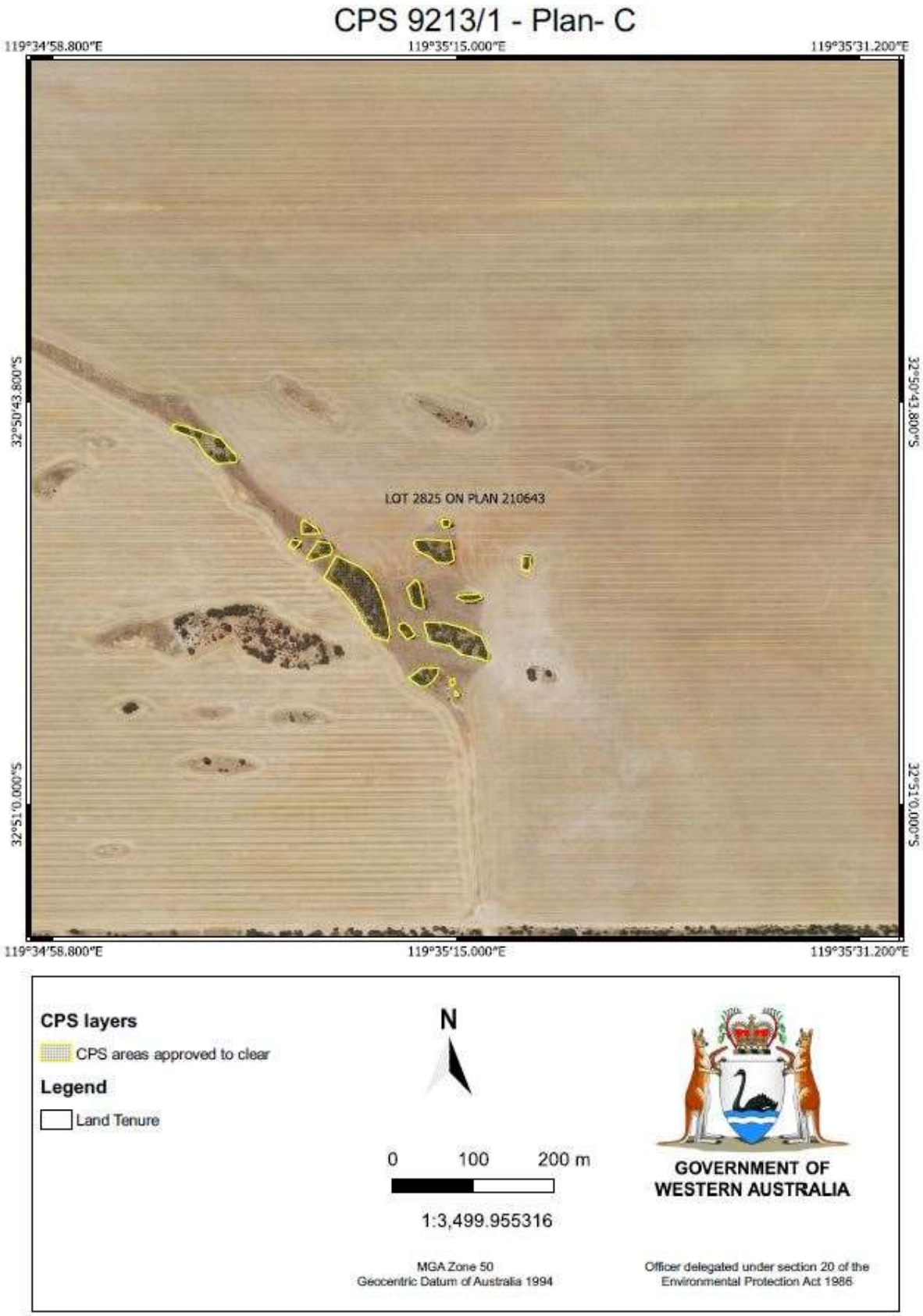


Figure 3 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

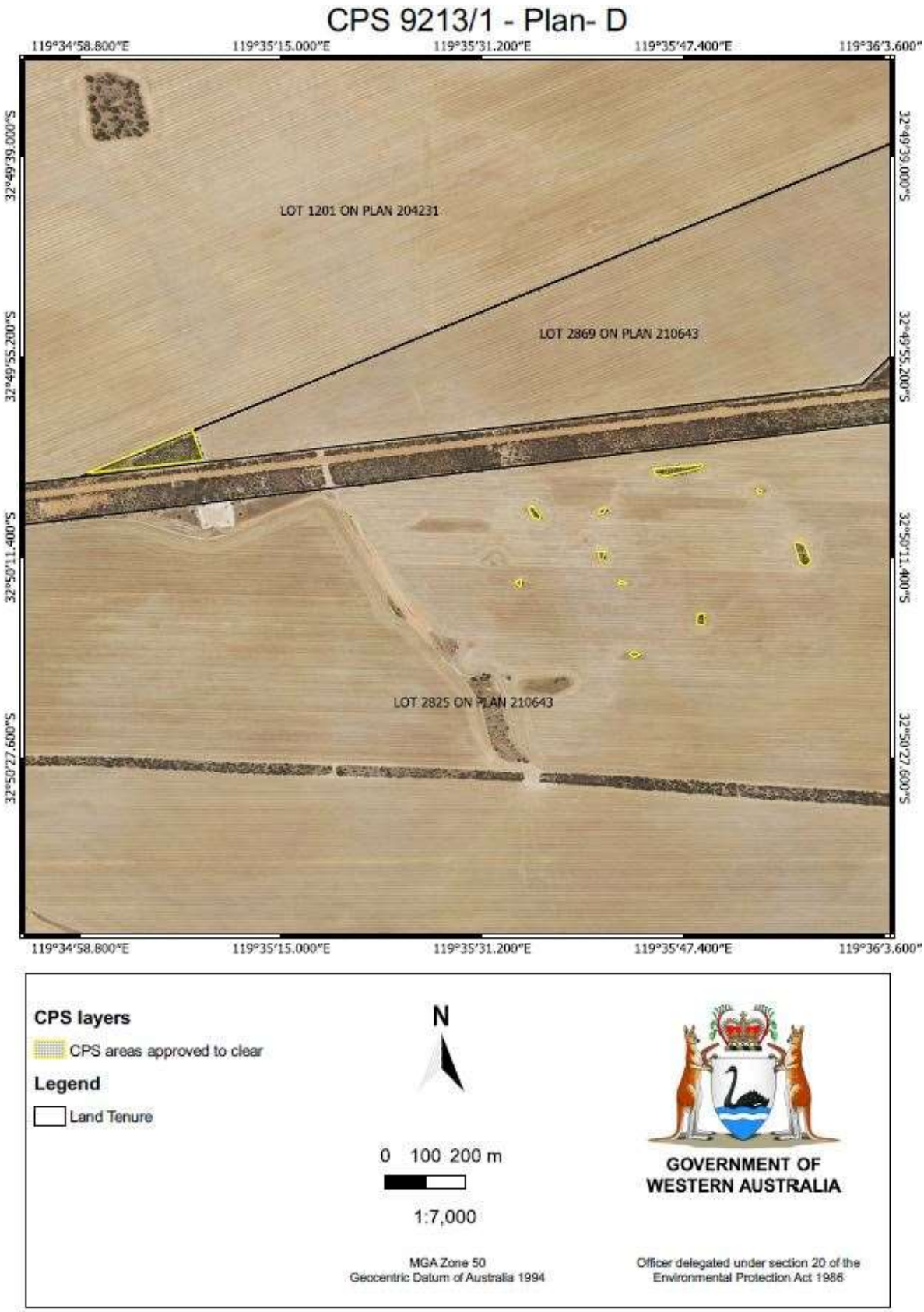


Figure 4 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

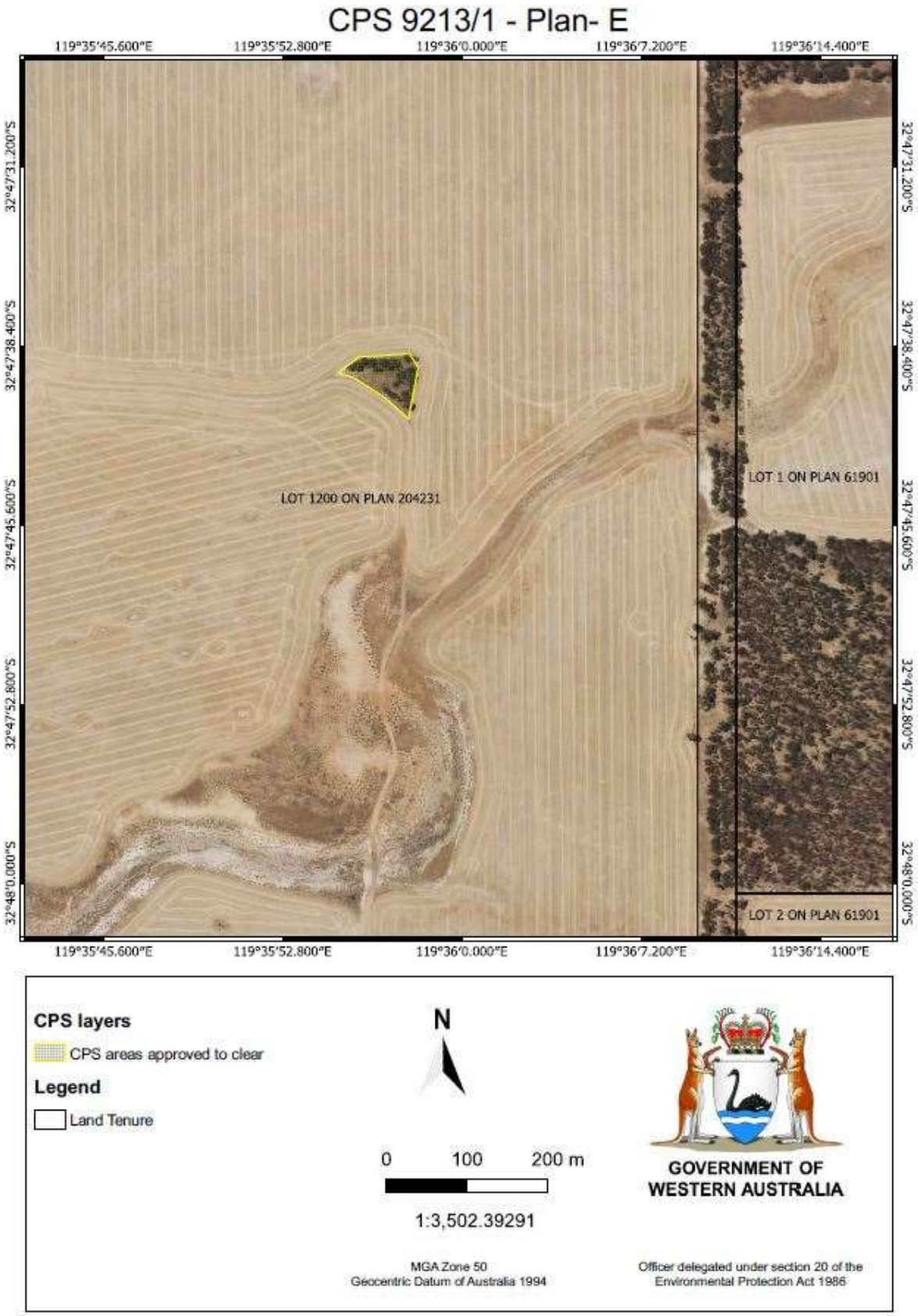


Figure 5 Map of the application area. The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

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 1.4), 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:

- *Country Areas Water Supply Act 1947 (WA) (CAWS Act)*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)*

The key guidance documents which inform this assessment are:

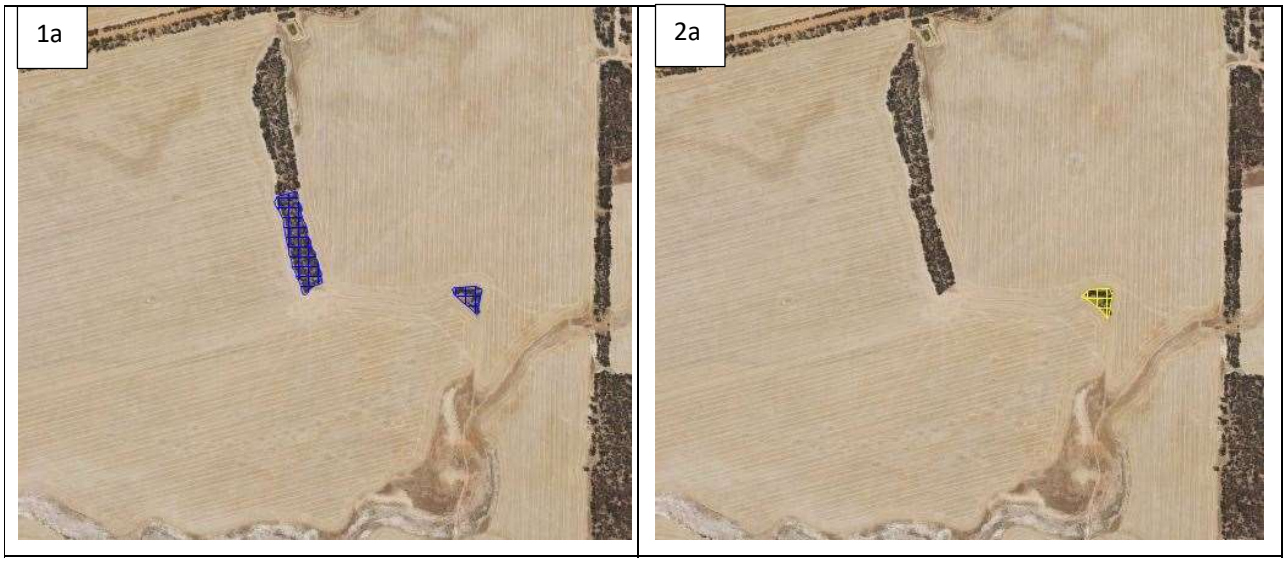
- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The initial application was to clear 33.17 hectares distributed across 35 separate patches of vegetation. A desktop assessment determined a flora and fauna survey was required, given the size of the application area and the potential for the patches of native vegetation to contain high environmental values. After acknowledgment and consideration of the potential impacts of the proposed clearing, the applicant significantly reduced the amount of clearing to 5.11 hectares (Applicant 2021b). This reduction excluded areas of higher environmental value from the application (see Figure 6). 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 and was able to complete the assessment with the information initially provided.

The applicant also provided evidence that revegetation along creek lines had been carried out as a mitigation measure against soils salinity and erosion protection on the property. Evidence was provided in the form of receipts for tube stock, purchased for the purpose of replanting vegetation, along with shapefiles of past and future tree planting locations.



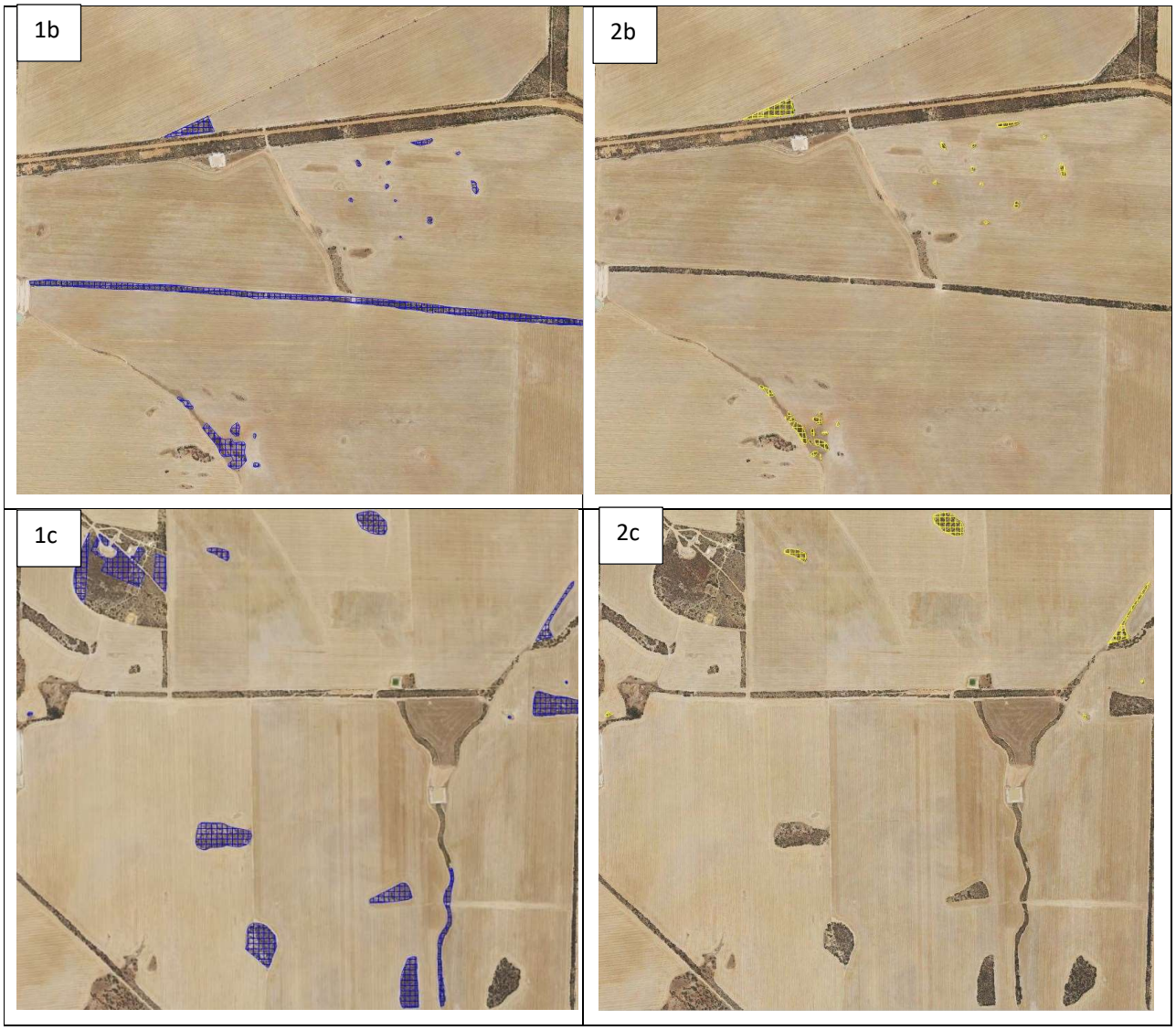


Figure 6 1a-c, Blue cross hatch indicates area proposed to clear in initial application. 2a-c , Yellow crosshatch area indicate the area authorised to clear after a significant reduction in the size of the application area.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) 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, adjacent flora and vegetation) and significant remnant vegetation. 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 - Biodiversity - Clearing Principles (a)

Assessment

Vegetation Condition:

A review of the photographs supplied by the applicant along with a desktop assessment identified that the vegetation ranges in condition from 'Good' (Keighery 1994) to 'Completely Degraded' (Keighery 1994) across the application area. The majority of the proposed clearing area is in 'Degraded' (Keighery 1994) to 'Completely Degraded' (Keighery 1994) condition (see Appendix E for vegetation condition rating scale and Appendix F for examples photographs of vegetation). One portion of the application area that is determined to be in 'Good' (Keighery 1994) condition may provide some foraging value for Carnaby's Cockatoos (see figure 7 (a); assessed in section 3.2.2). During

assessment, some portions of the application area were identified as the Wheatbelt Woodlands, listed as Priority 3 Priority Ecological Community (PEC) by DBCA and critically endangered TEC under the EPBC Act. This ecological community is assessed in further detail in section 3.2.4 below.

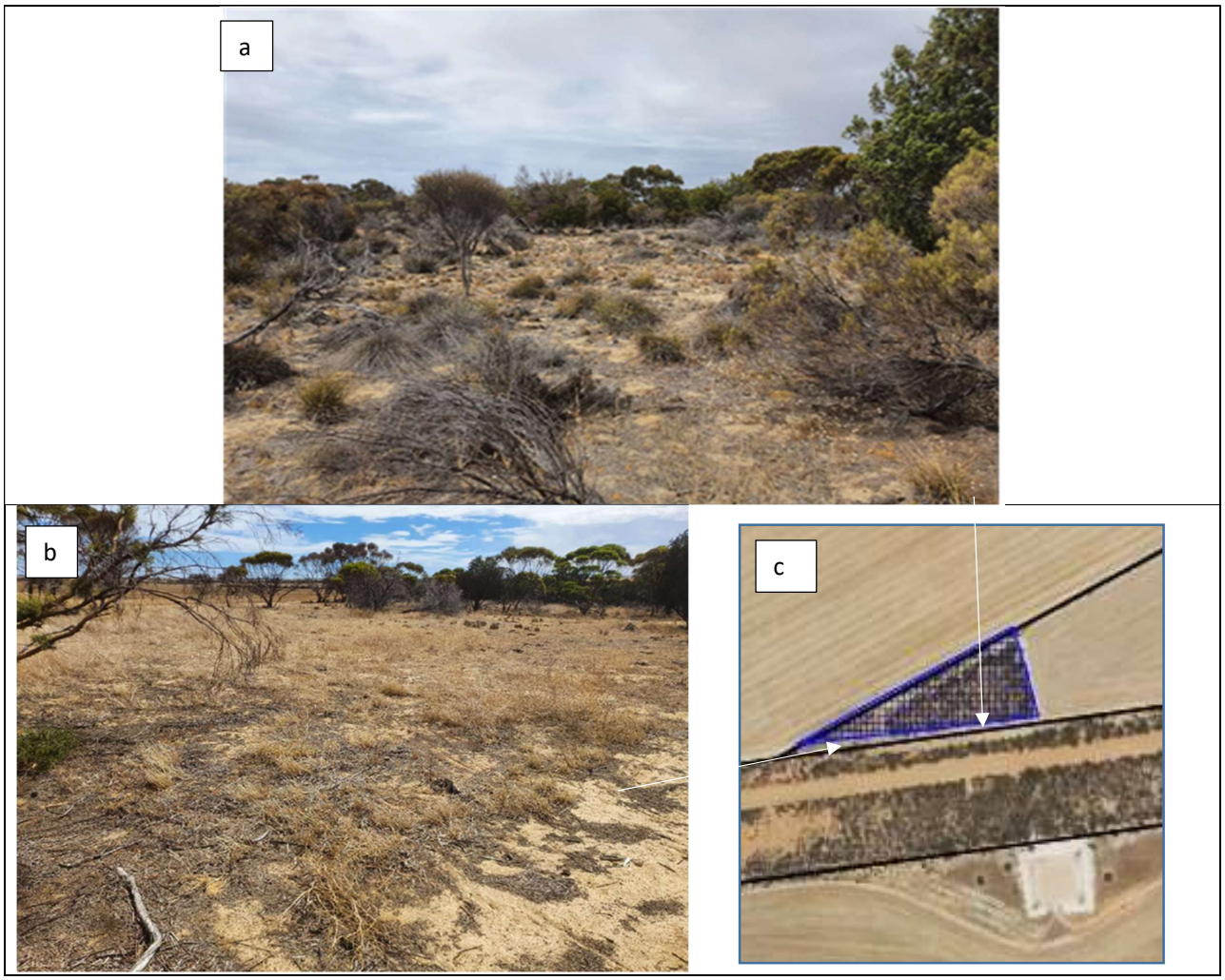


Figure 7 (a) Vegetation determined to be in good condition. (b) Vegetation determined to be in degraded (Keighery 1994) to completely degraded (Keighery 1994) condition. (c) Portion of the application area containing (a) and (b). See Figure 4 for the position of the vegetation within the application area.

Priority flora:

According to available databases, *Banksia xylothemelia* (Priority 3), *Cryptandra dielsii* (Priority 3), *Grevillea lullfitzii* (Priority 1), *Eremophila serpens* (Priority 4), and *Verticordia stenopetala* (Priority 3), are known from a single location with the local area, that has been cleared since the date of their recording. Flora analysis (Refer to Appendix B table B3) found that the majority of priority species recorded in the local area occurred in association with soils significantly different from those occurring within the application area. *Eucalyptus quaerenda* (Priority 3), *E. exigua* (Priority 3), *Fitzwillia axilliflora,* (Priority 2), *Frankenia* sp. southern gypsum (M.N. Lyons 2864) (Priority 3), *Gyrostemon prostratus* (Priority 3), *Salicornia globosa* (Priority 3) and *Hydrocotyle decorata* (Priority 2) occurred in association with sandy or saline soils adjacent to salt lakes or skeletal soils associated with gannet outcropping as with *Isoetes brevicula* (Priority 3).

Adenanthos gracilipes (Priority 3), has three records occurring in similar habitat within the local area. These records are on the western most extent of the known range of the species. The rest of the known records are clustered at least 70 km east within the Great Western Woodlands. Any potential removal of individuals is not likely to significantly impact on this species given the records within the Great Western Woodlands and within DBCA legislated tenue. Given the degraded to completely degraded condition of the application area, and lack of suitable soil types for the majority of species, it is unlikely that any Priority species will occur within the proposed clearing envelopes.

Biodiversity:

The application area is not likely to contain significant habitat for conservation significant fauna recorded in the local area (assessed further in section 3.2.2 below). Due to avoidance measures by the applicant, no direct impacts to the Wheatbelt Woodlands PEC is likely to occur (assessed further in section 3.2.4 below).

Conclusion
Given the majority of the proposed clearing is in degraded (Keighery 1994) to completely degraded (Keighery 1994) condition and comprises unsuitable habitat for priority flora and is not likely to impact conservation significant fauna or the Wheatbelt Woodlands PEC, the application area is not considered to be an area of high biodiversity.

As some portions of the application area adjoin areas of vegetation in good condition, possible impacts to adjacent vegetation can be managed by taking steps to minimise the risk of introduction and spread of weeds. The risks to biodiversity from the clearing can be managed and does not constitute a significant residual impact.

Conditions
To address the above impacts, weed management measures will be required as a condition of the clearing permit to mitigate impacts to adjacent vegetation.

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

Assessment

***Calyptorhynchus latirostris* (Carnaby's Cockatoo):**

According to available data sets, the application area is located at the eastern edge of Carnaby's Cockatoo mapped range. Carnaby's Cockatoo breeding locations are mapped 22 kilometres east, within the Great Western Woodland and within blocks of remanent vegetation to the southeast. Assessment of the photos supplied by the applicant (Applicant 2021c) indicated the application area does not include trees of a suitable size (with a diameter above 30 centimetres diameter at breast height (DBH)) to be utilised for breeding.

Portions of the application area in completely degraded and degraded condition (see Figures 2 & 3) are generally devoid of mid storey vegetation with some areas consisting of a sparse canopy of mallee, over a sparse understorey of weed species and heath remnants. Vegetation in the above condition is unlikely to provide any significant foraging or roosting habitat for Carnaby's Cockatoo.

Vegetation within the application area determined to be in Good (Keighery 1994) condition, included Allocasuarina sp., Hakea sp., Banksia sp., and Eucalyptus sp. These areas maintain a relatively intact vegetation structure, with an over, mid, and understorey comprising a variety of native vegetation and weed species. Based on the genus' present and vegetation condition, it is likely that these species may be utilised for foraging (Valentine and Stock 2008) and roosting purposes (DSEWPaC 2012). However, given the limited extent of good quality Carnaby's Cockatoo foraging habitat in the application area, the proposed clearing does not represent a significant portion of the total available feeding and roosting habitat within the local area. In the local area there are several extensive tracts of woodland and heath, including approximately 12,157 hectares within Lake king, Kathleen, Jackson, Lake Ace and unnamed reserves, plus a further 23,245 hectares of the Great Western Woodland. The application area is therefore not considered to contain significant foraging habitat for Carnaby's.

Leipoa ocellata (malleefowl):

Malleefowl has 17 records within the local area, 13 of which occur within an extensive tract of native vegetation approximately 12.5 kilometres northeast of the application area, within a crown reserve adjacent to Lake Gulson. This area is well connected via roadside vegetation, and remanent vegetation retained as wind breaks. Subsequently, malleefowl may range through the application area for foraging purposes. The proposed clearing does not contain vegetation remnants of sufficient size or quality to support mallee fowl nest mounds.

***Pseudomys shortridgei* (Heath mouse, heath rat, Dayang)**

The local area includes two records for Heath Mouse. In Western Australia this species prefers mature stands of scrub mallee and mixed scrub with *Banksia* on loamy soils, unburnt for at least 30 years (DEC 2012). This type of habitat was not present within the application area.

***Paroplocephalus atriceps* (Lake Cronin snake):**

Within the local area Lake Cronin snake, is known to occur at one location within a crown reserve, west of the application area. Due to the degraded nature of the vegetation proposed to be cleared it is unlikely this species is present within the application area.

***Platycercus icterotis xanthogenys* (western rosella (inland)):**

The inland variant of the western rosella is found in eucalypt and sheoak woodlands and scrubs, especially those containing wandoo (*E. wandoo*), flooded gum, salmon gum (*E. salmonophloia*), tall mallee and rock sheoak (*Allocasuarina huegeliana*) (DEC 2009). Photographs provided by the applicant (Applicant 2021c) indicate the above habitat occurs in degraded (Keighery 1994) condition or is limited to small pockets, within the application area. Though inland western rosella may range through the application area the proposed clearing is unlikely to impact significant habitat for this species.

***Notamacropus irma* (western brush wallaby)**

Notamacropus irma (western brush wallaby) is recorded approximately 4.6 kilometres to the southeast of the application area in a large (over 1200 hectares) block of remanent native vegetation. The application area is too isolated and does contain patches of vegetation extensive enough to provide habitat for the western brush wallaby.

***Thinornis rubricollis* (Hooded plover)**

Thinornis rubricollis (Hooded plover) is also recorded in the local area. Hooded plover is shore bird species, restricted to the wetted perimeter of salt lakes within the local area and is unlikely to utilise the woodland and heath, habitats represented by the proposed clearing.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of a small area of low-quality foraging and roosting habitat for Carnaby's Black Cockatoo. Mallefowl and other fauna may also potentially utilise the application area in passing through the landscape. Considering the avoidance and mitigation measures undertaken by the applicant, the proposed clearing is not likely to significantly impact any foraging, roosting or breeding habitat for conservation significant fauna within the local area.

Conditions

To address the above impacts, slow directional clearing to allow fauna to move into other remnants ahead of the clearing activity will minimise impact to individuals that may be present at the time of clearing.

3.2.3. Biological values (threatened flora) - Clearing Principles (c)

Assessment

According to available databases three species of Threatened flora occur within the local area. Each species is assessed below.

***Verticordia staminosa* var. *cylindracea* (Granite featherflower):**

Granite featherflower is listed as Endangered under the EPBC Act. It is endemic to south-west Western Australia, where it is known from eight localities between Pingaring and east of Newdegate. It grows in seasonally wet shallow soil pockets in crevices and on edges of exposed granite outcrops (Patten et al. 2004). An assessment of aerial imagery and photographs provided by the applicant (Applicant 2021c) indicates that granite outcropping does not occur within the application area. It is unlikely that this species will be impacted by the proposed clearing.

***Boronia revoluta*:**

This species is listed as Endangered under the EPBC Act. According to available datasets, *Boronia revoluta* is known to occur on brown and yellow loamy and sandy soils, with mixed heath and scattered tall shrubs. Within the local area *Boronia revoluta* is known from a single record 12.1 kilometres northwest of the application area. This record is dated from 1970 and an assessment of aerial photography indicates the location has now been cleared, since the date of the above record. This species appears to be confined to low ranges of ironstone outcrops approximately 25 kilometres to the northeast (CALM 2001). Considering the above it is unlikely *Boronia revoluta* occurs within the application area.

***Tribonanthes purpurea* (Granite Pink):**

This species is listed as Vulnerable under the EPBC Act. *Tribonanthes purpurea* is also confined to granite outcrops, in seasonally saturated soil pockets (CALM 2000). Given that granite outcropping does not occur within the application area, it is unlikely that this species will be impacted by the proposed clearing.

Conclusion

Based on the above assessment, the application area is unlikely to include suitable habitat suitable for the threatened flora species, *Verticordia staminosa* var. *cylindracea, Boronia revoluta* and *Tribonanthes purpurea.*

Conditions

No threatened flora management conditions required.

3.2.4. Biological values (significant remnant vegetation) - Clearing Principles (d)

Assessment

Eucalypt Woodlands of the Western Australian Wheatbelt:

According to available data sets the Wheatbelt Woodland TEC covers approximately one per cent of the local area. This vegetation type is characterised by a canopy dominated by single trunk *Eucalyptus* ssp., with a tree canopy cover of 10 per cent or above (Department of the Environment and Energy, 2015). During the assessment process, it was identified the proposed clearing may impact approximately one hectare of mapped Wheatbelt Woodland TEC, as shown in Figure 8. However, as an avoidance measure, the applicant removed the vegetation from the application area (refer to section 3.1 for further discussion of avoidance measures).

A review of the photos supplied by the applicant (see Appendix F) indicate that once avoidance measures were taken into consideration, the remaining portions of the application area comprised of single trunk *Eucalyptus* ssp., are unlikely to be representative of the Wheatbelt Woodland TEC. Due to their degraded to completely degraded condition, these areas do not meet the minimum size requirements of two hectares or more; and the vegetation composition of distinct patches must not include more than 30 to 50 per cent weed cover within the ground layer. Therefore, the above vegetation did not meet minimum key diagnostic characteristics for the Wheatbelt Woodlands TEC (Department of the Environment and Energy, 2015).

Figure 8. Map illustrating a portion of the application area transecting, mapped Wheatbelt Woodland TEC (green). This portion of the application area was removed by the applicant as an avoidance measure.

During the assessment process DWER identified a number of previous application areas in the region of higher environmental value, that required surveys to be undertaken to determine the presence of conservation significant flora, representative of the Wheatbelt Woodland species, and potential fauna habitat. As a measure to avoid potential impacts to the above values, the applicant removed approximately 28 ha from the original application area (refer to Section 3.1; Figure 6).

Conclusion

As a result of mitigation measures initiated by the applicant, the proposed clearing will avoid remnant patches of the Wheatbelt Woodland TEC

Conditions

To address the above impacts, weed management measures will be required as a condition of the clearing permit to mitigate impacts to adjacent vegetation.

3.2.5. Biological values (significant remnant vegetation) - Clearing Principles (e)

The application area transects four distinct vegetation associations within the Hyden Vegetation System. These vegetation associations retain between 31 and 44 per cent (see Appendix C.2). The local area (20 km radius from the centre of the application area) retains approximately 34.5 per cent of its original (i.e. pre-European settlement) vegetation cover. The higher value for vegetation cover can be attributed to a number of crown reserve land parcels, including, a Class A Lake King Nature Reserve 5.2 km west, an unnamed Class A reserve is located 2.6 km southeast, also the local area transects the boundary of the Great Western Woodlands, 16 kilometres to the east.

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 (i.e., pre-European settlement) (Commonwealth of Australia, 2001). This is the threshold level below which species loss appears to accelerate exponentially at an ecosystem level. Given the local area retains over 30 per cent of its pre-1750 cover, the proposed clearing is not located within an extensively cleared landscape. Noting the revised application area is not likely to contain a high level of biodiversity, it is not considered a significant remnant.

Although no formally recognised ecological linkages are mapped within the local area, it can be assumed the remanent vegetation functions as an ecological linkage, given the extensively cleared nature of the region. The distribution of vegetation within the local area includes isolated patches, linear strips of road reserve vegetation and shelterbelts connecting larger blocks and patches. The application area is mostly composed of isolated patches or adjoining part of a linear strip as above. Due to the isolated nature of the majority of the vegetation patches, it is unlikely the proposed clearing will impact the function of ecological linkages within the local area.

Conclusion

The local area retains over 30 per cent of the vegetation present pre-1750, with a large proportion within crown land or nature reserves, the proposed clearing is unlikely to impact long term biodiversity. The application area does not form part of an infimal ecological linkage and is unlikely to impact associated ecological values and function.

Conditions

To address the above impacts, weed management measures will be required as a condition of the clearing permit to mitigate impacts to adjacent vegetation.

3.3. Relevant planning instruments and other matters

The Shire of Lake Grace advised DWER that local government approvals are not required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme.

The Shire did not have any objections to the proposed clearing, however expressed concerns regarding the clearing areas within paddocks. In particular the necessity for these areas and its impacts on drainage protection, salinity, and erosion (Shire of Lake Grace, 2021). Advice was sought from the Department of Primary Industries and Regional Development (DPIRD) during the assessment process in relation to land degradation. DPIRD undertook a site assessment of the application area and raised no concerns to the clearing in relation to land degradation, in particular drainage, salinity, and erosion (CSLC 2021).

There are no mapped Aboriginal Sites of Significance within 10 km of the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Further justification of clearing	The supplying of information elaborating on the justification for the clearing allowed for a more accurate assessment of the application (see Section 1.2) (Applicant 2021a).
The applicant supplied further information relating to avoidance and minimisation measures	The supplying of information detailing avoidance and minimisation measures (see Section 3.1) allowed for a more accurate and thorough assessment of the application (Applicant 2021b).
Applicant provided additional photographs and clarity as to the location they were taken in relation to the application areas.	The photographs and the locations they were taken allowed the condition and composition of the vegetation to be assessed (Applicant 2021c).

Appendix B. 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 C.

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is a series of isolated patches of native vegetation in the intensive land use zone of Western Australia. The application areas are situated near the eastern edge of the Wheatbelt. It is surrounded primarily by intensive agriculture with some intact patches of remnant vegetation. The proposed clearing areas are small, isolated remnants in a highly cleared and modified landscape. Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 34.5 percent of the original native vegetation cover.
Ecological linkage	The application areas are not located within any mapped formal ecological linkages however the South Coast Macro Corridor is located approximately 15 km to the south and south-west. Given the vegetation within the application area is mostly comprised of isolated patches, it does not serve as a linkage function for fauna passing through the area.
Conservation areas	No conservation areas are intersected by the proposed clearing area. The local area contains four Class A reserves managed by DBCA, including the Lake King Nature Reserve.
Vegetation description	Photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of *Eucalyptus* sp*., Allocasuarina* sp*., Banksia* sp*.,* sedges, mallee growth forms, and scrub and heath species, as well as exotic species. Unidentified Proteaceous species are visible within photographs. Representative photos are available in Appendix E. This is broadly consistent with the mapped vegetation types, (Shepherd et al., 2001): • Hyden vegetation association 128, which is described as bare areas, rock outcrops • Hyden vegetation association 511, which is described as medium woodland; salmon gum and morrel • Hyden vegetation association 519, which is described as shrublands; mallee scrub, *Eucalyptus eremophila* • Hyden vegetation association 2048, which is described as shrublands; scrub-heath in the Mallee Region The mapped vegetation types retain approximately between 31 and 44 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	Photographs supplied by the applicant (Applicant 2021c) indicate the vegetation within the proposed clearing area is in Good, Degraded, or Completely Degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix DD. Representative photos are available in Appendix EE.
Climate	The average annual rainfall for the application area is 400 mm The areal actual evapotranspiration for the application area is 400 mm
Topography	The topography of the application areas ranges between 320 and 360 m AHD.
Soil description	The soil is mapped as: • Hope South 2 Subsystem (250_Ho2) described as various aeolian and alluvial deposits adjacent to playa lakes. Mainly grey and brown sandy and loamy duplexes and some red and brown calcareous loamy earths. • Lillian 2 Subsystem (250Ln_2) described as level to very gently inclined plains in lower slope positions. Stream channels where present are incipient and drain

Characteristic	Details
	to adjoining playa lakes; Alkaline grey shallow sandy duplex soils and associated calcareous loamy earth. • Lillian 1c Phase (250Ln_1c) described as internally drained level to gently undulating plain; dominantly yellow/brown sandy and loamy duplex soils, with minor cracking and non-cracking clays; Mallee-mallett (sandplain & gravelly soil associated vegetation) with low scrub. DPIRD site assessment undertaken in March 2021 (CSLC 2021) confirmed the soil of the application area exhibited the characteristics of the above mapped soil types (250Ln_2, 250Ln_1c).
Land degradation risk	The application areas have the following land degradation risks: Flood (DPRD 2019): • <3% of the map unit has a moderate to high flood risk Salinity: • <3% of the map unit has a moderate to high salinity risk or is presently saline • 3-10% of the map unit has a moderate to high salinity risk or is presently saline Phosphorous export risk: • <3% of map unit has a high to extreme phosphorous export risk • 3-10% of map unit has a high to extreme phosphorous export risk Subsurface acidification risk: • 30-50% of the map unit has a high subsurface acidification risk or is presently acid • >70% of the map unit has a high subsurface acidification risk or is presently acid Water erosion risk: • <3% of the map unit has a high to extreme water erosion risk Waterlogging Risk: • <3% of the map unit has a moderate to very high waterlogging risk • 10-30% of the map unit has a moderate to very high waterlogging risk • >70% of the map unit has a moderate to very high waterlogging risk Wind erosion risk: • <3% of the map unit has a high to extreme wind erosion risk • 10-30% of the map unit has a high to extreme wind erosion risk • 30-50% of the map unit has a high to extreme wind erosion risk A site inspection undertaken by DPIRD (CLSC 2021) identified that the proposed clearing is not at variance with principle (g) and raised no concerns with the clearing of the application area in relation to land degradation.
Waterbodies	The desktop assessment and aerial imagery indicates that a non-perennial tributary of the Lockhart River is intersected by one of the southern application areas. Another non-perennial tributary is located approximately 175 m south of one of the northern application areas. Lake Fox is located approximately 5.7 km east of the application areas.
Hydrogeography	The application areas do not fall within any proclaimed surface or groundwater areas, Public Drinking Water Source Areas, or Country Areas Water Supply zones.
Flora	The local area contains 19 records from 13 species of conservation significance. The most common species is the Threatened *Verticordia staminosa* var. *cylindracea.* Seven of these species occur on the same soil type as the application area. There are no records of conservation significant flora within 1 km of any of the application areas.
Ecological communities	The Priority 3 PEC and federally listed Critically Endangered TEC the 'Eucalypt Woodlands of the Western Australian Wheatbelt', occurs 0.3 kilometres west of the application area. The northern most application area is adjacent to a mapped instance of Wheatbelt Woodlands.

Characteristic	Details
Fauna	The local area contains nine species of conservation significance. The nearest record is for *Notamacropus irma* (western brush wallaby), recorded approximately 4.6 kilometres to the southeast of the application area The most common species is the Priority 3, Lake Cronin snake (*Paroplocephalus atriceps*) and Priority 4 *Thinornis rubricollis* (Hooded plover) with two records each.\ The application area is located within mapped Carnaby's Cockatoo breeding grounds. The local area does not contain any confirmed Carnaby's Cockatoo breeding sites. The closest confirmed Carnaby's Cockatoo breeding site is located approximately 24 km east.

B.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*					
Mallee	7,395,894.36	4,180,937.68	56.53	1,289,384.08	17.43
Vegetation System within bioregion*					
Hyden Vegetation Association 128*	25,931.09	11,579.21	44.65	5,261.72	45.44
Hyden Vegetation Association 511*	102,932.72	38,058.97	36.97	10,962.26	10.65
Hyden Vegetation Association 519*	912,419.50	291,317.29	31.93	93,332.76	10.23
Hyden Vegetation Association 2048*	215,103.42	77,639.12	36.09	19,659.47	9.14
Local area					
20 km radius	168311.1	37041.04	34.5	-	-

*Government of Western Australia (2019a)

B.3. Flora analysis table

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]
Verticordia staminosa var. *cylindracea*	T	NO	NO	NO	3.1	9	N/A
Adenanthos gracilipes	P3	YES	YES	YES	3.4	1	N/A
Eutaxia acanthoclada	P3	NO	NO	YES	3.5	1	N/A
Hydrocotyle decorata	P2	NO	NO	NO	4.9	4	N/A
Eucalyptus exigua	P3	NO	YES	NO	5.1	5	N/A
Gyrostemon prostratus	P3	NO	NO	NO	6	1	N/A
Calytrix nematoclada	P3	YES	YES	NO	6.2	4	N/A
Stylidium sejunctum	P3	YES	YES	NO	7.3	3	N/A
Salicornia globosa	P3	NO	NO	NO	7.4	1	N/A
Acacia heterochroa subsp. *robertii*	P2	YES	YES	NO	8.4	5	N/A
Tribonanthes purpurea	T	NO	NO	NO	8.9	2	N/A
Grevillea lullfitzii	P1	YES	YES	NO	9.2	1	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]
Eucalyptus subangusta subsp. *virescens*	P3	YES	YES	NO	10.2	1	N/A
Eucalyptus deflexa	P4	NO	NO	NO	10.4	3	N/A
Grevillea prostrata	P4	YES	YES	NO	10.6	1	N/A
Boronia revoluta	T	YES	YES	NO	12.1	1	N/A
Frankenia drummondii	P3	NO	NO	NO	12.4	3	N/A
Cryptandra dielsii	P3	YES	YES	NO	12.7	1	N/A
Banksia xylothemelia	P3	YES	YES	NO	12.7	1	N/A
Banksia rufa subsp. *flavescens*	P3	YES	YES	NO	13.6	2	N/A
Banksia epimict	P2	NO	NO	NO	15.2	1	N/A
Fitzwillia axilliflora	P2	NO	NO	NO	15.4	3	N/A
Microcorys sp. Forrestania (V. English 2004)	P4	YES	YES	NO	15.4	2	N/A
Dampiera scaevolina	P4	NO	NO	NO	16.1	1	N/A
Eremophila serpens	P4	NO	NO	NO	16.2	1	N/A
Acacia tetraneura	P1	NO	YES	NO	16.8	5	N/A
Banksia lullfitzii	P3	NO	NO	NO	16.8	1	N/A
Pultenaea indira subsp. *monstrosita*	P3	NO	YES	NO	16.9	1	N/A
Eremophila racemosa	P4	Yes	Yes	NO	17.5	1	N/A
Frankenia sp. southern gypsum (M.N. Lyons 2864)	P3	NO	NO	NO	17.7	1	N/A
Acacia repanda	P3	NO	NO	NO	18.3	6	N/A
Isoetes brevicula	P3	NO	NO	NO	18.4	2	N/A
Verticordia stenopetala	P3	YES	YES s	NO	18.7	1	N/A
Daviesia newbeyi	P3	YES	YES	NO	18.8	3	N/A
Phebalium brachycalyx	P3	NO	NO	NO	19.5	1	N/A
Eucalyptus rugulata	P4	YES	NO	NO	19.9	1	N/A
Eucalyptus quaerenda	P3	NO	NO	NO	20	1	N/A

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

B.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Notamacropus irma (western brush wallaby)	P4	NO	NO	4.6	3	N/A
Thinornis rubricollis (Hooded Plover)	P4	NO	NO	5.5	3	N/A
Paroplocephalus atriceps (Lake Cronin snake)	P3	YES	YES	7.3	2	N/A
**Calyptorhynchus latirostris* (Carnaby's cockatoo)	EN	YES	YES	12.3	11	N/A
Falco peregrinus (Peregrine falcon)	OS	NO	NO	NO	1	N/A
Platycercus icterotis xanthogenys (western rosella (inland))	P4	YES	YES	13.1	2	N/A
Leipoa ocellata (malleefowl)	VU	YES	YES	13.2	17	N/A
Pseudomys shortridgei (Heath mouse, heath rat, Dayang)	VU	NO	NO	17.5	2	N/A

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, OS Other specially protected fauna * Includes eight records for Calyptorhynchus sp. 'white-tailed black cockatoo'

B.5. Ecological community analysis table

Community name	Conservation status (State)	Conservation status (Federal)	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Suitable habitat features ? [Y/N]	Number of known records (Local Area)	Are surveys adequate to identify? [Y, N, N/A]
Eucalypt Woodlands of the Western Australian Wheatbelt	P3	CR	N	YES	YES	150	N/A

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

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The local area contains mapped instances of the Wheatbelt Woodlands PEC as well as records of priority flora species. The application areas contain vegetation that may be utilised by Carnaby's Black Cockatoos for foraging.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The areas proposed to be cleared may contain foraging or roosting habitat for Carnaby's Cockatoo fauna (Bamford 2013, DSEWPaC 2012). Desktop assessment identified that the proposed clearing is unlikely to impact on other conservation significant fauna.	May be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The local area contains one species of 'Threatened' flora that occurs on the same soil types as the application area. This species, *Verticordia staminosa* var. *cylindracea,* occurs on granite outcrops, which is incongruous with the application area. The area proposed to be cleared is unlikely to contain habitat for flora species listed as 'Threatened' under the BC Act.	No likely to be at variance	No *Refer to Section 3.2.3, above*
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The Wheatbelt Woodland TEC is mapped within the local area. However, the proposed clearing does not intersect any mapped instances of any Threatened Ecological Communities or contain species that indicate a TEC.	Not likely to be at variance	No *Refer to Section 3.2.4, above*
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of native vegetation in the local area is consistent (34.5%) with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia 2001). The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	At variance	Yes *Refer to Section 3.2.5, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of adjacent and/or nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses or wetlands are intersected by the application area the proposed clearing is unlikely to impact an environment associated with a watercourse or wetland.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: Assessment by the Department of Primary Industries and Regional Development (CSLC 2021) identified that one of the soil types was at high risk of wind erosion, however no evidence of wind erosion from current farming methods was observed. Given this, the proposed clearing is not likely to have an appreciable impact on land degradation.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment The application area is not within any proclaimed surface or groundwater areas, Public Drinking Water Source Areas, or CAWs areas. The extent of clearing in proximity to a waterway is minimal and within a topographically flat area. Given this, the proposed clearing is not likely to impact on ground or surface water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. Advice from DPIRD (CSLC 2021) did not indicate the proposed clearing would result in land degradation, including the incidence of flooding.	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

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

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

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

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

Appendix E. Photographs of the vegetation provided by the applicant (Applicant 2021c)

Figure 9 Numbers (in red) adjacent to portions of the application area (in green) indicate the photograph number for each example of vegetation under application below. Portions 3, 4 and 6 have been removed from the application.

Figure 10 Example of vegetation in (1), refer to Figure 1 in Section 1.5, for its position in the application area.

Figure 11 Example of vegetation in (2), refer to Figure 2 in Section 1.5, for its position in the application area.

Figure 12 Example of vegetation in (5), refer to Figure 2 in Section 1.5, for its position in the application area.

Figure 13 Numbers (in red) adjacent to portions of the application area (in green) indicate the photograph number for each example of vegetation under application below.

Figure 14 Example of vegetation in (7), refer to Figure 4 in Section 1.5, for its position in the application area.

Figure 15 Example of vegetation in (8) refer to Figure 4 in Section 1.5, for its position in the application area.

Figure 16 Numbers (in red) adjacent to portions of the application area (in green) indicate the photograph number for each example of vegetation under application below.

Figure 17 Example of vegetation in (9), refer to Figure 5 in Section 1.5, for its position in the application area.

Appendix F. Sources of information

F.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)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

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

F.2. References

Applicant (2021a) *Clearing permit application CPS 9213/1*, received 12 February 2021 (DWER Ref: A1988785).

Applicant (2021b) *Supporting information for clearing permit application CPS 9213/1,* received 31 May 2021 (DWER Ref: DWERDT458940).

Applicant (2021c) *Supporting information for clearing permit application CPS 9213/1,* received 30 March 2021 (DWER Ref: A1993119).

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Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

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