



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9790/1
Permit type:	Area permit
Applicant name:	Esspee Holdings Pty Ltd
Application received:	3 July 2022
Application area:	375.97 hectares of native vegetation
Purpose of clearing:	Horticulture
Method of clearing:	Mechanical
Property:	Lot 25253 on Deposited Plan 204454
Location (LGA area/s):	Shire of Merredin
Localities (suburb/s):	South Burracoppin

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 applicant proposes to undertake “sustainable farming”, which will include planting of crops to be rotated between wheat, canola, barley and legumes (Esspee Holdings, 2022). Farming practices proposed to be adopted include:

- no cultivation and tillage apart from actual sowing;
- stubble retention during the fallow period i.e. the fallow period will be reduced by covering all or part of the soil with plastic film or the crop straw;
- soil acidification will be reduced through regular soil analysis and soil will be topped up when required;
- the crop will be rotated to manage soil health, increase nutrients and reduce erosion;
- weeds and pests will be effectively controlled;
- good hygiene practices regarding machinery and seeds used will be adopted;
- latest technology for rainwater harvesting and moisture harvesting to store water will be adopted (Esspee Holdings, 2022b).

1.3. Decision on application

Decision:	Refused
Decision date:	30 June 2023

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 six submissions were received. Consideration of matters raised in the public submissions 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), the findings of a site inspection (see Appendix F), 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 Delegated Officer also took into consideration that whilst the purpose of the clearing is for agriculture, there is no urgent necessity for the clearing to occur to support the development.

The assessment identified that the proposed clearing:

- will remove malleefowl habitat, resulting in significant impacts to this species;
- will remove possible chuditch and Carnaby's cockatoo habitat, which may result in significant impacts to these species;
- may result in impacts to Threatened flora species *Gastrolobium diabolophyllum* and multiple Priority flora species, should these species be present;
- may result in significant impacts to the Eucalypt woodlands of the Western Australian Wheatbelt community, which is listed as Priority 3 Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation and Attractions (DBCA) and a Critically Endangered Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act);
- will remove vegetation that is significant as a remnant within an extensively cleared landscape, with only 14.9 percent or native vegetation remaining; and
- is likely to result in land degradation impacts from salinity.

The Delegated Officer determined the proposed clearing is seriously at variance to principle (e). While it is acknowledged that the applicant was willing to provide a revegetation offset and reduce and modify the clearing area, the Delegated Officer considered that even if very substantial further avoidance and mitigation measures or offsets were undertaken, the resultant clearing would still be likely to result in the loss of vegetation that is significant within a highly cleared landscape and still therefore seriously at variance to principle (e).

Under section 51O(3) of the EP Act, the CEO may make a decision that is seriously at variance with the clearing principles if, and only if, in the CEO's opinion, there is a good reason for doing so. Clearing that has a significant impact on the environment is generally not supported unless there is a good reason for allowing the impacts, such as public benefit or an underlying State planning instrument or policy that identifies the area as a priority area that should be developed. The proposed clearing is not identified as a priority area that should be developed, and there is no urgent necessity for the clearing to occur to provide goods to the public that would warrant the environmental impacts identified above, particularly the loss of vegetation that is significant within a highly cleared landscape.

Noting the above, the Delegated Officer determined to refuse to grant a clearing permit.

1.5. Site map



Figure 1. Map of the application area (cross-hatched blue).

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 polluter pays principle
- 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)
- 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

Within the original application (Esspee Holdings Pty Ltd., 2022a), the applicant submitted the following information regarding consideration of avoidance / mitigation measures:

- The clearing area is relatively degraded regrowth bush/shrubs;
- To compensate this clearing, we will enhance the remaining 500 hectares of bushland on the property by planting more trees and allowing natural regeneration of native vegetation;
- Big trees and trees around fences will be avoided;
- Trees will be replanted around fences.

The above information did not adequately demonstrate that all reasonable efforts had been taken to avoid and minimise potential impacts of the proposed clearing on environmental values. During the assessment of this application, DWER raised several concerns with the applicant regarding the impacts of the clearing, to which the applicant responded with the following (Esspee Holdings Pty Ltd., 2022a):

- The applicant is willing to discuss a more suitable clearing area/size to reduce the clearing size and fragmentation resulting from the clearing;
- The applicant is willing to discuss a plan for revegetation and to follow best industry practice to mitigate impacts;
- The applicant is willing to discuss and follow the best industry practice in regard to the proposed horticulture;
- The applicant is happy to have a discussion with DPIRD regarding the land degradation concerns they have raised.

While it is noted that the applicant was willing to consider further avoidance and mitigation of the clearing and potential revegetation offsets, the Delegated Officer considers that even significant further avoidance would still result in clearing of vegetation that is significant as a remnant within a highly cleared landscape and therefore decided to refuse the clearing permit application (refer to Section 1.4 for further details).

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 risk of impacts of the proposed clearing to biological values (fauna and flora), significant remnant vegetation and land and water resources required further consideration, as set out below.

3.2.1. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

Four threatened, two priority and one 'other specially protected' fauna species have been recorded within a 20 kilometre radius of the application area. Of these, the following species were considered likely to occur within the application area, given the presence of suitable habitat:

- *Leipoa ocellata* (malleefowl) (Vulnerable)
- *Dasyurus geoffroii* (chuditch, western quoll) (Vulnerable)
- *Zanda latirostris* (Carnaby's cockatoo) (Endangered)
- *Falco peregrinus* (peregrine falcon) (Other specially protected)

Malleefowl

The National Recovery Plan for Malleefowl identifies the preferred habitat of this species as 'semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or acacias' and that 'a sandy substrate and abundance of leaf litter are required for breeding' (Benshemesh, 2007). This vegetation type and habitat are present within the application area (DWER, 2023). It is also noted that a malleefowl record is present from 2009 within vegetation on the property and contiguous with the application area, approximately 600 metres east of the application area. Although no evidence of malleefowl (e.g. mounds or tracks) was observed during the site inspection (DWER, 2023), only a small proportion of the application area was traversed. It is considered that malleefowl are still likely to persist within the approximately 1,300 hectare patch of vegetation encompassing this record and the application area, noting its relatively large size within a highly cleared landscape.

It is considered that the clearing of a 375.97 hectare patch of native vegetation is likely to have a significant impact on any existing malleefowl population, particularly noting that the proposed clearing would fragment the larger patch (refer to Section 3.2.3 for further discussion). Should malleefowl not be currently utilising this patch of vegetation, it is still considered that it provides suitable habitat within the current distribution of the malleefowl, and that clearing of this extent of suitable vegetation would have a significant impact upon the persistence of malleefowl as a species. Malleefowl have been shown to be particularly susceptible to the impacts of climate change (Stenhouse and Moseby, 2022), and as such, in the context of the highly cleared local area, any remaining malleefowl habitat will be important for species survival.

Chuditch

The Chuditch National Recovery Plan states that "chuditch use a range of habitats including forest, mallee shrublands, woodland and desert" and as such the application area may provide suitable habitat for chuditch (DEC, 2012). The application area is within the distribution of the species, although it is noted that chuditch are present at relatively low densities within the wheatbelt region (DEC, 2012) and only one chuditch record is present within 20 kilometres of the application area. However, chuditch have been recorded within a much smaller patch of the same mapped vegetation type 21 kilometres northwest of the application area, and it is considered that if more surveys were conducted within the local area that more chuditch may be identified. As such, in the absence of surveys, it is considered possible that chuditch may inhabit vegetation within the application area. If present, the proposed clearing is likely to have a significant impact upon chuditch habitat.

Carnaby's cockatoo

The application is within, although close to the eastern boundary of, the modelled breeding range of Carnaby's cockatoo. No records, known breeding sites or known roosting sites are present within a 20 kilometre radius of the application area, with the closest record approximately 34 kilometres from the application area within the Merredin townsite, and the closest confirmed white tailed black cockatoo breeding site approximately 125 kilometres southeast of the application area. No trees large enough to support a suitable nesting hollow (i.e. with a diameter at breast height of at least 30 centimetres) or tree species where tree hollows are typically found (i.e. Salmon Gum, Wandoo, Tuart, Jarrah, Flooded Gum (*E. rudis*), York Gum, Powderbark (*E. accedens*), Karri and Marri) were observed during the site inspection (DAWE, 2022). It is therefore considered unlikely that breeding habitat would be present within the application area. Noting that the entire application area was not traversed during the site inspection (DWER, 2023) and no survey for breeding habitat has been done, the presence of suitable breeding habitat cannot be ruled out. Noting the absence of large trees during the site inspection, it is also considered unlikely that significant roosting habitat is present within the application area.

Some plant species present within the application area, such as *Hakea* and *Allocasuarina* species, are likely to provide foraging habitat for Carnaby's cockatoo. A granite outcrop is also present approximately 300 metres to the west of the application area, which may provide a source of water able to be used by Carnaby's at certain times of the year. Noting that the application area is in the very eastern extent of the breeding range of this species and the relative lack of records, breeding sites and roost sites within the region, it is considered that while Carnaby's cockatoo

have the potential to occasionally visit the application area, it is reasonably unlikely that the application area would comprise significant foraging habitat for Carnaby's cockatoos..

Peregrine falcon

The peregrine falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (Australian Museum, 2021). While it is likely that the peregrine falcon may hunt within vegetation within the application area, noting the lack of nesting habitat and that the peregrine falcon is a highly mobile species with a large home range that does not rely on specialist niche habitats, the species is likely to be transient in the application area only and it is unlikely that the application area represents significant habitat for the species.

Conclusion

Based on the above assessment, the proposed clearing is likely to result in significant impacts to malleefowl and may result in significant impacts to chuditch and Carnaby's cockatoo.

3.2.2. Biological values (flora and ecological communities) - Clearing Principles (a), (c) and (d)

Assessment

Flora

Two threatened and 23 priority flora species have been recorded in a 20 kilometre radius of the application area. Of these, the following species were considered likely or possible to occur within the application area:

- *Gastrolobium diabolophyllum* (Threatened)
- *Acacia lirellata* subsp. *compressa* (Priority 2)
- *Conostylis albescens* (Priority 2)
- *Eutaxia hirsuta* (Priority 2)
- *Hibbertia chartacea* (Priority 2)
- *Verticordia multiflora* subsp. *solox* (Priority 2)
- *Eucalyptus subangusta* subsp. *virescens* (Priority 3)
- *Hibbertia glabriuscula* (Priority 3)
- *Leucopogon* sp. *Ironcaps* (N. Gibson & K. Brown 3070) (Priority 3)
- *Rinzia torquate* (Priority 3)
- *Verticordia gracilis* (Priority 3)
- *Banksia shanklandiorum* (Priority 4)

Gastrolobium diabolophyllum grows in yellow-brown sand over laterite on broadly undulating dunes in open mallee shrublands amongst *Eucalyptus salmonophloia* (Salmon Gum), *Acacia*, *Allocasuarina*, *Gastrolobium*, and *Banksia* species (Chandler et al., 2002; Western Australian Herbarium, 1998-). An indicative distribution map of the species (DCCEEW, n.d.) indicates this species is likely to occur within the application area, and it has been recorded within the same mapped soil type and vegetation type as the application area. As such, in the absence of surveys, it is considered that this species may be present within the application area. If this species were to be present, clearing of any individuals or populations of this species would have a significant impact upon its conservation status and range.

The above priority listed species are also considered likely to occur within the application area, noting they are mapped within the same soil and/or vegetation types as the application area and noting the following habitats they are associated with (Western Australian Herbarium, 1998-):

- *Acacia lirellata* subsp. *compressa* - Yellow sand, clayey loam. Sandplains
- *Banksia shanklandiorum* White/yellow sand with lateritic gravel
- *Conostylis albescens* - Yellow sand. Sandplains
- *Eucalyptus subangusta* subsp. *virescens* - Yellow sand, white clay
- *Eutaxia hirsuta* - associated with heath vegetation including *Acacia*, *Melaleuca* and *Allocasuarina* species
- *Hibbertia chartacea* - Sand, laterite. Sandplain with breakaways
- *Hibbertia glabriuscula* - Yellow sand over laterite. Sandplains with some laterite breakaways.
- *Leucopogon* sp. *Ironcaps* (N. Gibson & K. Brown 3070) - Skeletal sand, yellow sandy loam, rocky loam, gravel, laterite, ironstone. Gentle lower slopes, flat uplands, hill tops
- *Rinzia torquata* - found in sand or sand over laterite, sometimes within mallee over shrubland
- *Verticordia gracilis* - Yellow sand, gravelly sand, sandy loam

- *Verticordia multiflora* subsp. *solox* - Yellow sand over gravel, sand over granite

Should the above species be present within the application area, the clearing may have significant impacts upon the occurrence of some of these species at a local and regional scale. Flora surveys would provide further information to inform the significance of impacts.

Ecological communities

A site inspection (DWER, 2023) found that the application area appeared to largely consist of mallee *Eucalyptus* trees over an open-heath of multiple species. As such the majority of the vegetation observed did not appear to comprise the Eucalypt woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands) PEC/TEC. Noting that the *Approved Conservation Advice for the Eucalypt Woodlands of the Western Australian Wheatbelt* states that woodlands dominated by mallee forms are not part of the ecological community (Department of the Environment, 2015). However, from discussions with DBCA, it is understood that a survey of vegetation on the property has been undertaken (note this survey was not made available to DWER due to copyright reasons), which identified small areas of vegetation within the property that were indicative of the Wheatbelt Woodlands PEC/TEC. The site inspection (DWER, 2023) also identified a small area within the application area that appeared to contain larger trees (possibly *Eucalyptus capillosa*, although a definitive identification was not undertaken) that may indicate the presence of the Wheatbelt Woodlands PEC/TEC. It is also noted that the entire application area was not traversed during the site inspection and there may have been other areas of potential Wheatbelt Woodlands PEC/TEC that were not identified. From the information above, it is considered likely that, while the majority of vegetation within the application area is not indicative of the Wheatbelt Woodlands PEC/TEC, that some small areas of Wheatbelt Woodlands PEC/TEC are present. In the absence of a survey to delineate its extent within the application area, the impacts of the proposed clearing on the Wheatbelt Woodlands PEC/TEC cannot be quantified.

Conclusion

Based on the above assessment, the proposed clearing may result in impacts to Threatened flora species *Gastrolobium diabolophyllum*, multiple Priority flora species, and the Wheatbelt woodlands PEC/TEC.

3.2.3. Significant remnant vegetation - Clearing Principle (e)

Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application area is within the 'Avon Wheatbelt' IBRA bioregion, which retains approximately 18.51 per cent of its pre-European vegetation extent. The Beard vegetation complex (36) mapped within the application area retains approximately 24.17 per cent of its original vegetation extent, and the local area retains approximately 14.9 per cent of its original vegetation extent. Given this, the application areas occur within an area which has been extensively cleared.

The proposed clearing would result in approximately 14.0 per cent vegetation remaining in the local area, and as such native vegetation cover in the local area would reduce by almost 1 per cent; this is considered to be a significant reduction that is likely to have impacts on biodiversity conservation, ecosystem services (e.g. by reducing and fragmenting habitat for pollinators), and salinity. Clearing of the application area would also sever an ecological linkage between large remnant vegetation to the north and south, which also connect via narrower vegetated corridors to other patches of native vegetation. This is likely to have impacts upon fauna moving through the local area and in particular the Threatened malleefowl, as malleefowl rarely fly and prefer to use corridors of relatively thick vegetation when traversing through open landscapes (Benshemesh, 2007).

While it is acknowledged that the applicant was willing to reduce the size of the application area and modify it, which may in turn reduce the potential impacts of fragmentation, it is considered that any vegetation within the application is significant as a remnant in a highly cleared landscape.

Conclusion

Based on the above assessment, the proposed clearing will remove vegetation that is significant as a remnant within a highly cleared landscape.

3.2.4. Land and water resources - Clearing Principles (f), (g) and (i)

Assessment

Following an inspection and desktop assessment of the application area, the Commissioner of Soil and Land Conservation (The Commissioner) (CSLC, 2022) concluded that the risk of the clearing resulting in salinity causing land degradation is very likely.

The Commissioner advised that based on the significant size of the land clearing proposal, the significant decrease in the area of perennial vegetation and leaf area resulting from the clearing, will likely increase the rate of groundwater recharge in the sub catchments, causing either an expansion of salt affected land or additional volumes of saline groundwater discharging at the surface (CSLC, 2022). Remote sensing mapping has indicated areas surrounding the application area are already beginning to experience the effects of rising groundwater table, waterlogging, and salinity, and the Commissioner advised that they are concerned that any reduction of leaf area index in the catchment will likely result in the expansion of salinity in the area (CSLC, 2022). Noting the above, it is considered that the proposed clearing may also result in a deterioration of groundwater quality in the area. Although the applicant has proposed to undertake revegetation within the remaining vegetated area in their property, it is considered that this would be unlikely to mitigate the impacts of the salinity, particularly considering the lag time for revegetation to establish.

The application area intersects two mapped non-perennial watercourses and the proposed clearing would remove riparian vegetation associated with these watercourses. Noting their non-perennial nature, the relatively small extent of riparian vegetation to be removed and that both of these watercourses are cleared immediately downstream of the application area already, it is considered unlikely that the removal of this riparian vegetation would result in significant impacts to biological values or water quality associated with these watercourses.

Conclusion

Based on the above assessment, the proposed clearing is likely to result in appreciable land degradation impacts from salinity.

3.3. Relevant planning instruments and other matters

The Shire of Merredin did not have any objections to the proposed clearing (Shire of Merredin, 2023). The application area is zoned as "General farming" in the Shire of Merredin Local Planning Scheme.

No Aboriginal sites of significance have been mapped within the application area or within a 10 kilometre radius.

End

Appendix A. Additional information provided by applicant

In response to a letter sent to the applicant informing of the Department's intent to refuse the clearing permit, the applicant provided the following information (Applicant, 2023).

Summary of comments	Consideration of comment
Applicant believes that impacts from soil degradation and water quality are already present in the area and that the amount of clearing being proposed is unlikely to make any impact, particularly noting they have proposed to offset it.	Expert advice received (refer to Table C.1 and Section 3.2.4) refutes that the clearing would not make any impact upon soil degradation. It is acknowledged that the applicant has advised that they would be willing to provide an offset, however it considered that it would be very difficult to offset the impacts of the clearing upon salinity, particularly in the short term.
<p>The applicant believes it is not fair that he would only be allowed to clear 20% of his property if this clearing were not approved, noting other land owners in the area have cleared greater proportions of vegetation in their property because they have already cleared the land.</p> <p>The applicant believes they should be allowed to use at least 50% of his property for farming.</p>	It is acknowledged that private land owners in the area have already cleared the majority of land for agriculture. The vast majority of this clearing would have been undertaken prior to clearing legislation coming into effect with the EP Act. The clearing legislation was put in place in an effort to protect the native vegetation remaining in Western Australia. Now that this legislation is in effect, the department is required to administer it. The department has previously refused other permits for clearing for agricultural purposes within the wheatbelt region. There is no requirement for DWER to ensure that landowners are able to use at least 50% of their land for farming purposes.
Vegetation on the property has regrown over the last 10-15 years of not using it for farming.	It is acknowledged that vegetation within the application area is regrowth vegetation. This is factored into the assessment of vegetation condition and its subsequent assessment of impacts of the clearing.

Appendix B. Details of public submissions

The matters raised in the six submissions received are summarised in the table below.

Summary of comments	Consideration of comment
<p>Degraded nature of vegetation</p> <ul style="list-style-type: none"> Although the land may be degraded, it can still provide important habitat for fauna and flora Application area may be less degraded than the applicant believes it to be 	A site visit determined that, while vegetation does appear to have been previously cleared, it is in Degraded to Excellent condition. It is acknowledged that even clearing of Degraded areas is likely to have environmental impacts, and this has been taken into consideration in the assessment of the clearing principles and more detailed assessment under Section 3.2.
<p>End land use of sustainable agriculture</p> <ul style="list-style-type: none"> No details provided with application regarding <ul style="list-style-type: none"> how agriculture will be conducted sustainably proposed water use for horticulture and what impact this may have on flora and fauna whether agriculture is suitable in this area Asking whether DWER to seek more information on this Sustainable agriculture not considered to be possible 	The applicant was asked to provide further details regarding the proposed land management activities, and provided the information outlined in Section 1.2. Regardless, it is not within the remit of this clearing permit assessment to consider the impacts of the end land use; only the impacts of the clearing.

Summary of comments	Consideration of comment
<p>Avoid minimisation measures</p> <ul style="list-style-type: none"> • Asking why cleared land within the property (and adjacent property Lot 27301 on Plan 162948) is not being considered for horticulture instead of application area; the applicant has not provided this reasoning • Insufficient details has been provided regarding several of the proposed mitigation measures (avoid clearing big trees, leaving and replanting trees around fences and enhancing the remaining 500ha of bushland) • Avoiding clearing trees along fence lines will not create the type or extent of habitat currently provided by the large area of native vegetation particularly within the area • Enhancing the remaining 500ha of bushland by “planting more trees and natural regeneration of native vegetation” is not an inadequate offset because: <ul style="list-style-type: none"> ○ remaining vegetation appears intact, is in large blocks and would have natural regeneration capacity without intervention ○ remaining vegetation already exists, thus there is still a significant net loss of vegetation ○ no increased protection of remaining vegetation is proposed. ○ climate change has led to drier, warmer conditions already in the Wheatbelt and this will make it more difficult to grow new trees and have them successfully reach maturity • Noting the applicant has not submitted a formal offset proposal, there will likely be no regulation or monitoring to ensure that above mitigation “plans” have been attempted or achieved. 	<p>It is noted that the avoidance and mitigation measures provided by the applicant are insufficient to counterbalance the impacts of the proposed clearing. During the early phases of the assessment process of this clearing permit, the applicant was advised of this, and the applicant advised that they would be willing to consider offsets and/or mitigation measures to counterbalance environmental impacts from the proposed clearing.</p> <p>However, it is considered that, in the context of the vegetation remaining within the local area, even clearing of a very significantly reduced application area or significant offset in this location would be likely to have impacts that cannot be appropriately mitigated or offset, (refer to Section 1.4 for further details). As such, no further details regarding offsets or mitigation were sought from the applicant. Should a clearing permit have been granted, the applicant would have been asked for further details and/or plans for mitigation and rehabilitation commensurate to the level of mitigation and rehabilitation required.</p>
<p>Wheatbelt region under stress</p> <ul style="list-style-type: none"> • The application area is within the Southwest Western Australian global biodiversity hotspot • The Wheatbelt region is already highly cleared and remaining vegetation is fragmented • The Wheatbelt region is already under stress from wind erosion, soil degradation, salinity and climate change • The Wheatbelt region is fragile and cannot sustain further clearing; remaining vegetation should be conserved to the greatest possible degree 	<p>These comments have been considered in Section 3.2.3 (clearing within a highly cleared and fragmented landscape) and Section 3.2.4 (impacts to land degradation).</p>
<p>Errors in application form</p> <ul style="list-style-type: none"> • The application states the proposed clearing is to commence on 1/09/2022, yet this is within the public comment period and a permit cannot be granted before this date; DWER should ensure that no clearing takes place from this date • The applicant has marked number of trees to clear as zero, but this is likely not to reflect the actual number of trees proposed to be cleared 	<p>The applicant was advised of the clearing permit assessment timeframes at the time of accepting the application, indicating that the scheduled clearing date provided in the application form would not be feasible. Routine monitoring of native vegetation is undertaken by the department that would detect unauthorised clearing.</p> <p>It is understood from the application form and discussions with the applicant that the applicant has applied to clear an area of 375.97 ha, inclusive of trees within this area, rather than designating an exact number of trees to be cleared.</p>

Summary of comments	Consideration of comment
<p>Lack of information of vegetation or surveys provided</p> <ul style="list-style-type: none"> No information regarding vegetation of the property has been provided The applicant describes the area as degraded but provides no information to substantiate this description No desktop or on-ground flora surveys have been provided; it is considered highly likely that there are unrecorded populations of threatened and priority flora present within the local area that are not recorded on available databases No attempt has been made to survey for fauna or determine what fauna may be present The onus should be on the applicant to provide environmental information and not on the public to research and assess this information in order to provide comments 	<p>It is noted that in order to accept a clearing permit application, it does not need to include information about the vegetation or flora or fauna surveys. Should it be determined that surveys are warranted in order to undertake a clearing permit assessment, these will be requested during the assessment stage. It is acknowledged that a lack of available information at the time of advertising a clearing permit for public comment may create some difficulties for the public when submitting comments. However, it is noted that surveys can create a financial burden upon applicants that may not be necessary. In the instance of this clearing permit, the applicant was not asked to provide surveys, as it would be unlikely that they would change the outcome of the permit decision and would therefore have been an unnecessary expense for the applicant.</p>
<p>Extensively cleared area</p> <ul style="list-style-type: none"> The National Objectives and Targets for Biodiversity Conservation 2001- 2005 (Environment Australia, 2001) and WA EPA state that vegetation types represented by less than 30% are considered ecologically endangered and in need of protection and restoration wherever they are located. Only 11.7% of remnant vegetation remains in the Shire of Merredin in a variety of tenures from nature reserves to privately owned land. The proposed clearing would further reduce this extent. 	<p>It is acknowledged that both the extents of native vegetation within both the local area (10 kilometre radius) and mapped vegetation type (36) are less than 30% (i.e. the targets identified by the submitter) and even less is protected within the conservation estate. This is discussed further in Section 3.2.3.</p>
<p>Fragmentation of existing remnants</p> <ul style="list-style-type: none"> The proposed clearing will remove a large amount of native vegetation that will result in the separation of two moderately large tracks of remaining native vegetation (i.e. vegetation in the property to the north and vegetation within the southeast of the property), which can impact fauna. 	<p>This is considered in Section 3.2.3.</p>
<p>Salinity</p> <ul style="list-style-type: none"> The proposal clearing is likely to result in impacts from salinity. The Merredin Shire including the Burracoppin area lies in the high to moderate salinity risk mapping zone and many parts of the Shire are already salt affected. The area lies in the high risk zone for predicted risk of shallow groundwater for Agriculture areas in southwest WA. The application area comprises Tandegin System soils which are highly susceptible to wind erosion particularly in large cleared areas devoid of shallow or deeply rooted perennial vegetation The applicant has not at all discussed how clearing will not contribute to land degradation or how impacts will be prevented 	<p>The impacts of clearing on salinity are considered in Section 3.2.4. As discussed in Appendix D, advice received from the Commissioner of Soil and Land Conservation is that careful management during the initial clearing period and establishment with suitable ground cover would reduce the likelihood of wind erosion and the risk of wind erosion from the clearing causing land degradation is low.</p>
<p>Aboriginal Heritage</p> <ul style="list-style-type: none"> No information is provided on Aboriginal Heritage. 	<p>It is the permit holder's responsibility to comply with the <i>Aboriginal Heritage Act 1972</i> (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process. It is noted that there are no Aboriginal Heritage</p>

Summary of comments	Consideration of comment
	Sites mapped within the application area or within a 10 kilometre radius.
<p>Clearing at variance or may be at variance to several principles</p> <ul style="list-style-type: none"> • Principle (a) - No biological diversity information is provided to assess this. As the application area is large, intact and lies in an highly cleared and fragmented landscape, with multiple vegetation types present thus is likely to contain a high level of biodiversity thus would be at variance with this principle. Without adequate survey the precautionary principle must apply and no application be granted. • Principle (b) – No biological diversity information is provided to assess this however the site is large, contains multiple vegetation types, thus the precautionary principle must apply and no application be granted. • Principle (c) – Due to extensive clearing and high levels of endemism, the Merredin shire contains a significant number of rare flora taxa. Many areas, particularly on private property remain unsurveyed but may support unrecorded populations. No detail of rare flora habitat or occurrences are provided, in the absence of this the precautionary principle must apply and the application should be rejected. • Principle (d) - No assessment of threatened communities has been undertaken, thus the precautionary principle must apply and the application should be rejected. • Principle (e) – The proposed clearing is a significant area with a significant larger remnant in an area that has been extensively cleared, with only 11.7% of vegetation remaining in the Shire. No avoidance measure can apply in this instance. It is therefore at variance to this principle and should be rejected. • Principle (f) – The area is not within a watercourse or wetland. • Principle (g) – The clearing is likely to cause appreciable land degradation through salinization, soil compaction, increased weed invasion through fertiliser use and wind erosion, the shallow groundwater increasing salinity risk, with these risks unable to be avoided or mitigated, as such is at variation to this principle. • Principle (h) – The area is not nearby formal conservation area, but would impact surrounding native vegetation. • Principle (i) –The area has been mapped as high to moderate salinity risk with shallow groundwater making any activity that involves water abstraction, as is likely with horticulture, high risk for increase in salinity of underground water. The proposal is at variation with this principle. 	The assessment against the clearing principles is provided in Appendix D. DWER has identified that the proposed clearing is seriously at variance with principle (e) and either ‘at’ or ‘may be’ at variance to a number of the remaining clearing principles.
<p>Impacts to fauna</p> <ul style="list-style-type: none"> • The application area is directly adjacent to known habitat for malleefowl. A comprehensive fauna survey should be conducted prior to any clearing of this area and full habitat offset plan drafted. 	Impacts of the proposed clearing on malleefowl are considered in Section 3.2.1. Impacts of the proposed clearing to a significant remnant of native vegetation which

Summary of comments	Consideration of comment
<ul style="list-style-type: none"> Noting the significant size of the application area it is important for bird conservation. The application area may be a stopover/feeding point for birds flying between local areas of native vegetation, for instance between the Maughan Nature Reserve and the area south of Bodallin. 	is likely to provide significant habitat for other fauna is considered in Section 3.2.3.
<p>The clearing should be considered in the context of wider bioregional planning</p> <ul style="list-style-type: none"> The recently released Native Vegetation Policy outlines the need for bioregional planning, an intention to achieve a net gain in native vegetation and a prioritised focus on regenerative efforts in the Wheatbelt This clearing should be considered in this context noting it is one of the few larger parcels of native vegetation located west of Burracoppin South Road. 	It is noted that the Native Vegetation Policy acknowledges the importance of regional planning, net gains in native vegetation and a prioritised focus on regenerative efforts in the Wheatbelt. In this clearing permit assessment, DWER has considered the significance of this vegetation within the wheatbelt region (refer to Section 3.2.3) and this has informed its decision.
<p>Climate change</p> <ul style="list-style-type: none"> In order to reduce the impacts of climate change in Western Australia and beyond, native vegetation should be retained for carbon storage (in the plants and in the soil), temperature reduction, and water retention Land used for horticulture does not contribute to long-term carbon storage; instead it results in a reduction in carbon storage and soil moisture, and an increase soil temperature 	Impacts of climate change to the extent that environmental values particularly vulnerable to climate change may be more severely impacted by the proposed clearing (see Section 3.2.1 regarding malleefowl) have been considered. It is considered that the proposed clearing is unlikely to significantly worsen climate change (through the loss of carbon storage, temperature reduction, water reduction or otherwise) to the extent that impacts of the clearing on climate change are a relevant matter to factor in to this clearing permit decision making process.
<p>Impact of clearing upon pollination</p> <ul style="list-style-type: none"> Flowering flora within the application area may play an important role in assisting pollination locally. 	This comment is considered in the context that clearing of vegetation within a highly cleared landscape may impact pollination, as discussed in Section 3.2.3.

Appendix C. 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 the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

C.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an approximately 1,250 hectare isolated patch of native vegetation in the intensive land use zone of Western Australia. It is surrounded by cleared agricultural land to the west, northwest and south and native vegetation to the north and southeast.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 15 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The northern portion of the application area plays an integral role in an ecological linkage between vegetation to its north and south. The southern portion of the vegetation to be cleared is part of this same ecological linkage, although clearing of this portion of the application would weaken but not sever this linkage. The application area is not part of a formal ecological linkage. Roadside vegetation to the west (along Ellery Road) and south (along Davies Road) of the application area has been assessed as having "High" conservation value (Roadside Conservation Committee,</p>

Characteristic	Details
	<p>2011). Vegetation within “High” conservation value road reserves generally displays the following characteristics:</p> <ul style="list-style-type: none"> • Intact natural structure consisting of a number of layers, i.e. ground, shrub, tree layers; • Greater than 70% native vegetation, i.e. has little or no disturbance; • High diversity of native flora, i.e. greater than 20 different species; • Few weeds, i.e. less than 30% of the total plants; and • High value as a biological corridor, i.e. may connect uncleared areas; contain flowering shrubs, tree hollows and/or hollow logs for habitat (Roadside Conservation Committee, 2011).
Conservation areas	The closest conservation area to the application area is a land parcel subject to a DBCA covenant, located approximately 2.9 km west of the application area.
Vegetation description	<p>A site inspection (DWER, 2023) indicates the majority of vegetation within the application area consists of:</p> <ul style="list-style-type: none"> • Overstorey of mallee <i>Eucalyptus</i> species (including <i>Eucalyptus burracoppinensis</i> and <i>Eucalyptus leptopoda</i> subsp. <i>leptopoda</i> among others). The density of eucalypts varied from occasional emergent trees to low open-woodland to low woodland. • Middle storey of open-heath of a mixture of species, including <i>Acacia</i> spp., Casuarinas (including possibly <i>Allocasuarina acutivalvis</i>, <i>Allocasuarina corniculata</i>, <i>Allocasuarina campestris</i>), <i>Melaleuca</i> spp. and <i>Hakea</i> spp. • Understorey of dead annuals and various grasses sedges and rushes. Wheat is prevalent around the edges of the vegetation adjacent to the tracks, becoming scarcer further from vegetation edges (refer to Figures F-1 to F-6, Appendix F for photographs). <p>An area of riparian vegetation associated with a mapped watercourse crossing the northern border of south-western clearing area contained a combination of grasses, sedges, rushes and shrubs (refer to Figure F-7, Appendix F).</p> <p>A small area of vegetation within the north-eastern application area contained Eucalypts of a tree (i.e. not mallee) form, possibly <i>Eucalyptus capillosa</i> subsp. <i>capillosa</i> (refer to Figure F-8, Appendix F).</p> <p>This is consistent with the mapped vegetation type:</p> <ul style="list-style-type: none"> • Beard 36, which is described as Shrublands; thicket, acacia, casuarina alliance (Shepherd et al, 2001) <p>The mapped vegetation type retains approximately 24 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	A site inspection (DWER, 2023) indicates the vegetation within the application area is in Degraded to Excellent (Keighery, 1994) condition. Areas of vegetation closest to the tracks tended to be in poorer condition, and vegetation further from tracks in better condition. The full Keighery (1994) condition rating scale is provided in Appendix E. Representative photos are available in F.
Climate	<p>Rainfall: 400 mm</p> <p>Evapotranspiration: 400 mm</p>
Topography	Elevation within the application area ranges from 380 m AHD in the north-western corner to 420 m AHD in the south-eastern corner. The Commissioner of Soil and Land Conservation (CSLC, 2022) noted that the terrain across the application area is mainly gentle valley slopes (up to 4%).
Soil description	The soil is mapped as Tandegin 1 Subsystem (258Ta_1) described as crestal and upper slope sandplain with weakly expressed, weakly indurated breakaways and colluvial backslopes comprising gravelly yellow sands, earths and gravels with Tammar and Kwongan heath.

Characteristic	Details
	The Commissioner of Soil and Land Conservation (CSLC, 2022) found that soils within the application area ranged from shallow sandy and loam gravels to deeper yellow sands, and were consistent with the description of the mapped soil unit.
Land degradation risk	<p>The Commissioner of Soil and Land Conservation (CSLC, 2022) noted the following in regards to land degradation risks within the application area:</p> <ul style="list-style-type: none"> • Salinity: <ul style="list-style-type: none"> ○ The proposed clearing is a groundwater recharge site that sits across two large sub catchments of the Swan Avon Yilgarn Catchment with the majority in the Lake Brown Sub catchment and the remainder in the Belka Catchment. ○ While salinity was not observed on the property, it was observed about 6km to the north of the proposed clearing in the Lake Brown Sub catchment and about 3 km downslope in a south westerly direction in the Belka Catchment. ○ Remote sensing mapping (Land Monitor) has indicated areas surrounding the proposed area to clear are beginning to experience the effects of rising groundwater table, waterlogging, and salinity. ○ The risk of salinity developing on or off site due to clearing of the remnant/regrowth vegetation at the proposed area is possible as any significant decrease in the area of perennial vegetation and associated decreases in leaf area will likely increase the rate of groundwater recharge in the sub catchments. When the aquifer storage capacity in these sub catchments has been exceeded, the area of groundwater discharge or the current groundwater discharge rates will increase causing either an expansion of salt affected land or additional volumes of saline groundwater discharging at the surface. ○ The risk of salinity causing land degradation is very likely based on the significant size of the land clearing proposal due to the significant decrease in the area of perennial vegetation of such a large segment of native vegetation and its subsequent impacts on the groundwater table. ○ The risk of salinity causing land degradation is high. • Eutrophication: <ul style="list-style-type: none"> ○ The soils have good water and nutrient retention qualities. Removal of native vegetation is not expected to increase the Phosphorus export risk in this location. ○ The risk of eutrophication causing land degradation is low. • Wind erosion: <ul style="list-style-type: none"> ○ The proposed area to clear has shallow sandy loam gravels. Careful management during the initial clearing period and establishment with suitable ground cover would reduce the likelihood of wind erosion. ○ No significant change is expected when the planting is established. ○ The risk of wind erosion causing land degradation is low. • Water erosion: <ul style="list-style-type: none"> ○ Water erosion is unlikely on the proposed area due to soil types and the intended land use. ○ The risk of water erosion causing land degradation is low. • Waterlogging: <ul style="list-style-type: none"> ○ The map units' descriptions across the proposal suggest a low level of risk for waterlogging. ○ The risk of waterlogging causing land degradation is low. • Flood risk: <ul style="list-style-type: none"> ○ The map unit present have generally a nil to low risk of waterlogging. ○ The risk of flooding causing land degradation is low. • Acidification: <ul style="list-style-type: none"> ○ The map unit present are presently acid or have a high risk of acidification. ○ The proposed removal of the native vegetation is not expected to impact on current acidification risk levels if standard management practices are employed. ○ The risk of acidification causing land degradation is low. <p>Land degradation risks mapped for the Tandegin 1 Subsystem (258Ta_1) are in Table C.6 below.</p>

Characteristic	Details
Surface water	Two minor, non-perennial watercourses associated with the Yilgarn River catchment transect the application area. The closest mapped wetland to the application area is a wetland associated with a granite outcrop approximately 300 metres west of the application area. The application area is not within a surface water area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> or within a Public Drinking Water Source Area.
Hydrogeography	Groundwater salinity: 14,000-35,000 mg/L Hydrogeology: Rocks of Low Permeability, Fractured and Weathered Rocks - Local Aquifers (granitoid lithology). The application area sits across two large sub catchments of the of the Swan Avon Yilgarn Catchment, with the majority in the Lake Brown Sub catchment and the remainder in the Belka Catchment. The application area is not within a groundwater area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> or clearing control catchment proclaimed under the <i>Country Areas Water Supply Act 1947</i> .
Flora	There are records of two threatened and 23 priority flora species within a 20 kilometre radius, thirteen of which are found on the same mapped soil and vegetation unit as the application area. The closest of these is priority 4 species <i>Grevillea asteriscosa</i> , located approximately 3.3 km northwest of the application area.
Ecological communities	There are numerous records of Wheatbelt Woodland TEC/PEC, mapped within a 20 kilometre radius, thirteen of which are found on the same mapped soil and of vegetation type as the application area. This ecological community has been mapped within the same mapped soil unit, but not the same vegetation unit, as that mapped within the application area.
Fauna	There are records of five threatened, two priority, one other specially protected and one migratory fauna species within a 20 kilometre radius, the closest of which is threatened species <i>Leipoa ocellata</i> (malleefowl), mapped approximately 60 metres east of the application area, within adjoining native vegetation, in 2010.

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*					
Avon Wheatbelt	9,517,109.95	1,761,187.42	18.51	174,980.68	1.84
Vegetation complex within IBRA bioregion					
Beard vegetation association 36 *	300,996.97	72,745.12	24.17	9,676.56	3.21
Local area					
10km radius	42,877.8	6,382.7	14.9	-	-
Post clearing calculations					
Beard vegetation association 36 *	300,996.97	72,369.15	24.04	-	-
10km radius	42,877.8	6,006.73	14.0	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

C.3. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix H) impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Same mapped vegetation type? [Y/N]	Same mapped soil type? [Y/N]	Distance of closest record to application area (km)	Number of Florabase records (total)	Number of records within 20 km	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia dissona</i> var. <i>indoloria</i>	P3	N	N	N	10.4	23	1	N/A
<i>Acacia lirellata</i> subsp. <i>compressa</i>	P2	Y	Y	N	9.9	31	2	N/A
<i>Acacia sclerophylla</i> var. <i>teretiuscula</i>	P1	N	Y	N	18.2	29	2	N/A
<i>Banksia shanklandiorum</i>	P4	Y	Y	Y	4.4	38	7	N/A
<i>Conostylis albescens</i>	P2	Y	Y	N	8.3	9	1	N/A
<i>Eucalyptus caesia</i> subsp. <i>caesia</i>	P4	N	N	N	7.9	55	2	N/A
<i>Eucalyptus caesia</i> subsp. <i>magna</i>	P4	N	N	N	12.6	42	1	N/A
<i>Eucalyptus calycogona</i> subsp. <i>miraculum</i>	P1	N	N	Y	14.9	12	2	N/A
<i>Eucalyptus subangusta</i> subsp. <i>virescens</i>	P3	Y	Y	N	9.8	25	2	N/A
<i>Eutaxia hirsuta</i>	P2	Y	Y	Y	4.0	7	2	N/A
<i>Gastrolobium diabolophyllum</i>	T	Y	Y	Y	11.3	12	7	N/A
<i>Gastrolobium spectabile</i>	P3	N	N	N	10.4	20	3	N/A
<i>Grevillea asteriscosa</i>	P4	N	Y	Y	3.3	49	1	N/A
<i>Hibbertia chartacea</i>	P2	Y	Y	Y	11.3	4	1	N/A
<i>Hibbertia glabriuscula</i>	P3	Y	Y	Y	6.8	29	8	N/A
<i>Isoetes brevicula</i>	P3	N	N	N	12.0	10	2	N/A
<i>Lepidosperma</i> sp. Billyacatting (S.D. Hopper 8630)	P2	N	N	N	13.3	7	1	N/A
<i>Leucopogon</i> sp. Ironcaps (N. Gibson & K. Brown 3070)	P3	Y	Y	Y	8.3	20	3	N/A
<i>Phebalium brachycalyx</i>	P3	N	N	N	8.1	21	1	N/A
<i>Rinzia torquata</i>	P3	Y	Y	N	10.1	19	8	N/A
<i>Symonanthus bancroftii</i>	T	N	N	N	12.0	11	1	N/A
<i>Thysanotus cymosus</i>	P3	N	N	N	13.1	31	1	N/A
<i>Trachymene croniniana</i>	P3	N	N	N	12.0	6	1	N/A
<i>Verticordia gracilis</i>	P3	Y	Y	N	6.2	13	4	N/A
<i>Verticordia multiflora</i> subsp. <i>solox</i>	P2	Y	Y	N	16.6	31	2	N/A

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

C.4. Fauna analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix H) impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Likelihood	Distance of closest record to application area (km)	Number of known records within 20 km	Most recent record within 20 km	Are surveys adequate to identify? [Y, N, N/A]
<i>Aganippe castellum</i>	P4	unlikely	18.3	6	2009	N/A

Species name	Conservation status	Likelihood	Distance of closest record to application area (km)	Number of known records within 20 km	Most recent record within 20 km	Are surveys adequate to identify? [Y, N, N/A]
<i>Aspidites ramsayi</i> (southwest subpop.)	P1	unlikely	8	3	1900	N/A
<i>Bettongia penicillata ogilbyi</i>	CR	unlikely	13	1	1982	N/A
<i>Dasyurus geoffroii</i>	VU	possible	12.5	1	Not recorded	N/A
<i>Falco peregrinus</i>	OS	likely	11.3	1	2003	N/A
<i>Leipoa ocellata</i>	VU	likely	0.59	33	2019	N/A
<i>Macrotis lagotis</i>	VU	unlikely	13.6	1	1958	N/A
<i>Zanda latirosis</i>	EN	possible	34	0	none	N/A

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

C.5. Ecological community analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix H) impacts to the following conservation ecological communities required further consideration.

Community 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)	Are surveys adequate to identify? [Y, N, N/A]
Eucalypt woodlands of the Western Australian Wheatbelt	P3	Y	possibly	Y	2.9	NA

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

C.6. Land degradation risk table

Risk categories	Tandegin 1 Subsystem (258Ta_1)
Wind erosion	M2: 30-50% of the map unit has a high to extreme hazard
Water erosion	L1: <3% of the map unit has a very high to extreme hazard
Salinity	L1: <3% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: >70% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L1: <3% of the map unit has a moderate to very high to risk
Phosphorus export risk	L1: <3% of the map unit has a high to extreme hazard

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p>Principle (a): "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u> The area proposed to be cleared may contain conservation significant flora, fauna and ecological communities.</p>	May be at variance	Yes <i>Refer to Sections 3.2.1 and 3.2.2 above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (b):</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 significant habitat for fauna.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared is likely to contain significant habitat for conservation significant fauna, including the threatened Malleefowl as well as common fauna within an extensively cleared landscape.</p>	At variance	Yes <i>Refer to Section 3.2.1 above.</i>
<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> The area proposed to be cleared may contain habitat for <i>Gastrolobium diabolophyllum</i>, a flora species listed under the BC Act due to suitable habitat for this species occurring within the application area.</p>	May 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> The area proposed to be cleared is likely to contain vegetation indicative of the <i>Eucalypt woodlands of the Western Australian Wheatbelt</i> ecological community, which is listed as ‘Critically Endangered’ under the EPBC Act.</p>	May be at variance	Yes <i>Refer to Section 3.2.2 above.</i>
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> The extents of the mapped vegetation type and native vegetation in the local area are inconsistent with the national objectives and targets for biodiversity conservation in Australia. Noting the native vegetation extent, that it provides habitat for conservation significant fauna and that it is part of a significant ecological linkage in the local area, the vegetation proposed to be cleared is considered to be a highly significant remnant of native vegetation in an area that has been extensively cleared.</p>	Seriously at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<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> Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be 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> Two watercourses intersect the application area and riparian vegetation is present.</p>	At variance	Yes <i>Refer to Section 3.2.4 above.</i>
<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> The Commissioner of Soil and Land Conservation advised that the proposed clearing is very likely to result in salinity causing land degradation.</p>	At variance	Yes <i>Refer to Section 3.2.4 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>	May be at variance	Yes <i>Refer to Section 3.2.4 above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<u>Assessment:</u> Noting the risks of salinity identified, it is considered possible that groundwater salinity may increase as a result of the proposed clearing which may in turn affect surface water bodies receiving groundwater downstream.		
<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> Advice provided from the Commissioner of Soil and Land Conservation indicates that the likelihood of the proposed clearing causing land degradation due to flooding or waterlogging is low.</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 Keighery (1994).

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 F. Photographs of the vegetation obtain during site visit (DWER, 2023)



Fig F-1. Looking into north-eastern portion of property – shrubs with emergent mallee *Eucalyptus*. Example of Excellent quality vegetation.



Figure F-2. Looking into north-eastern clearing area – *Melaleuca* (?) and other shrubs with emergent casuarina and mallee *Eucalyptus* trees.



Figure F-3. In north-western corner of north-eastern application area – shrubs in foreground, small trees in background



Figure F-4. Degraded condition vegetation in central portion of application area – wheat, *Acacia* (?) sp, dead vegetation in foreground, casuarinas and shrubland in background



Figure F-5. Degraded to Good condition vegetation in central portion of application area – wheat, *Acacia* (?) sp, dead vegetation, casuarinas, mallee *Eucalyptus* sp.



Figure F-6. Vegetation along southern border of south-western portion of property – shrubs, casuarinas, mallee *Eucalyptus*.



Figure F-7. Excellent condition vegetation including *Poaceae* and shrubs in southwestern portion of application area along mapped watercourse.



Figure F-8. In north-western corner of north-eastern application area – *Eucalyptus* sp. (*capillosa*?), *Acacia* sp., grasses, annuals.

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

Restricted GIS Databases used:

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

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