



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 8267/1
File Number: DWERVT1827
Duration of Permit: From 31 August 2019 to 31 August 2026

PERMIT HOLDER

Michael Eric Teasdale

LAND ON WHICH CLEARING IS TO BE DONE

Lot 18 on Plan 72490, Korbel

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 6.73 hectares of native vegetation within the area hatched yellow on attached Plan 8267/1.

PERIOD IN WHICH CLEARING IS AUTHORISED

The Permit Holder shall not clear any native vegetation after 31 August 2021.

CONDITIONS

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

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

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

2. Revegetation and rehabilitation

The Permit Holder shall:

- (a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) at an *optimal time* not later than 31 July 2022, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) ripping the ground on the contour to remove soil compaction;
 - (ii) ripping the pit floor and contour batters within the extraction site;
 - (iii) laying the vegetative material and topsoil retained under condition 2(a) on the cleared areas that are no longer required for the purpose for which they were cleared under this Permit; and
 - (iv) undertake additional *planting* as required, ensuring only *local provenance* propagating materials are used to *revegetate* the area.

3. Trees not authorised to clear

This Permit does not authorise the Permit Holder to clear salmon gum (*Eucalyptus salmonophloia*) trees with a diameter at breast height of 50 centimetres or greater.

4. Weed control

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

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

RECORD KEEPING AND REPORTING

5. Records must be kept

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

- (a) in relation to the clearing of native vegetation authorised under this Permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares).; and
 - (iv) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit.

- (b) In relation to the Revegetation and Rehabilitation done pursuant to condition 2 of this Permit:
 - (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (ii) the size of the area *revegetated* and/or *rehabilitated* (in hectares) and
 - (iii) photographic evidence of areas *revegetated* and/or *rehabilitated* under condition this permit from the following monitoring points and directions taken in the month of August each calendar year that this permit is active;
 - A. 118.10089; -31.618273 – facing north;
 - B. 118.101715; -31.617194 – facing south;
 - C. 118.098405; -31.616649 – facing east; and
 - D. 118.103344; -31.616939 – facing west.

6. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before the 31 December each year for the life of this permit, a written report of records required under condition 5 of this Permit.

- (b) Prior to 31 May 2026, the Permit Holder must provide to the *CEO* a written report of records required under condition 5 of this Permit where these records have not already been provided under condition 6(a) of this Permit.

DEFINITIONS

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

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

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

local provenance: means native vegetation propagating material from natural sources within the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

optimal time: means the period June to July for undertaking *planting* (for the Wheatbelt northern region);

planting: means the re-establishment of vegetation by creating favourable soil conditions and planting saplings of the desired species.

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

revegetate/ed/ion: means the re-establishment of a cover of local provenance native vegetation in an area using planting methods;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

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Ryan Mincham

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION





Officer delegated under Section 20 of the Environmental Protection Act 1986

1 August 2019

Plan 8267/1



Legend

-  CPS areas approved to clear
-  Cadastre
-  Local Government Authorities
-  Road Centrelines




Ryan Mincham
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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8267/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: Mr Michael Eric Teasdale
Application received date: 23 November 2018

1.3. Property details

Property: Lot 18 on Plan 72490, Korbel
Local Government Authority: Shire of Merredin
Localities: Korbel

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | Purpose category: |
|--------------------|-----------|--------------------|---------------------|
| 6.73 | | Mechanical Removal | Extractive industry |

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 1 August 2019

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to principle (e), may be at variance to principle (b) and is not likely to be at variance to any of the remaining clearing principles.

The Delegated Officer also noted the measures to mitigate the impact of the loss of native vegetation within an extensively cleared landscape and determined that the proposed clearing is not likely to result in unacceptable environmental impacts.

2. Site Information

| | |
|-------------------------------|--|
| Clearing Description | The application is to clear 6.73 hectares of native vegetation within Lot 18 on Plan 72490, Korbel, for the purpose of sand extraction (Figure 1). |
| Vegetation Description | The majority of the vegetation within the application area is mapped as Beard vegetation association Mt Caroline 356 described as saltbush and/or bluebush with woodland or scattered trees, and the remaining is mapped as Muntadgin 1023 described as woodland. |
| Vegetation Condition | Very Good: Vegetation structure altered, obvious signs of disturbance; to Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery, 1994); The vegetation condition of the application area was determined from a site inspection conducted by Department of Water and Environmental Regulation (DWER) on 26 March 2019. |
| Soil and Landform Type | The application area is mapped as the Wallambin, Stirling Phase subsystem, described as fringe zones on either side of the main salt lake channels with isolated salt lakes, gypsum dunes and lunettes of sand, silt, or clay. Baandee erosional and depositional surfaces (DPIRD, 2017). |
| Local area | The local area referred to in the assessment of this application is defined as a 20 kilometre radius measured from the perimeter of the application area. The local area contains approximately nine per cent native vegetation cover. |

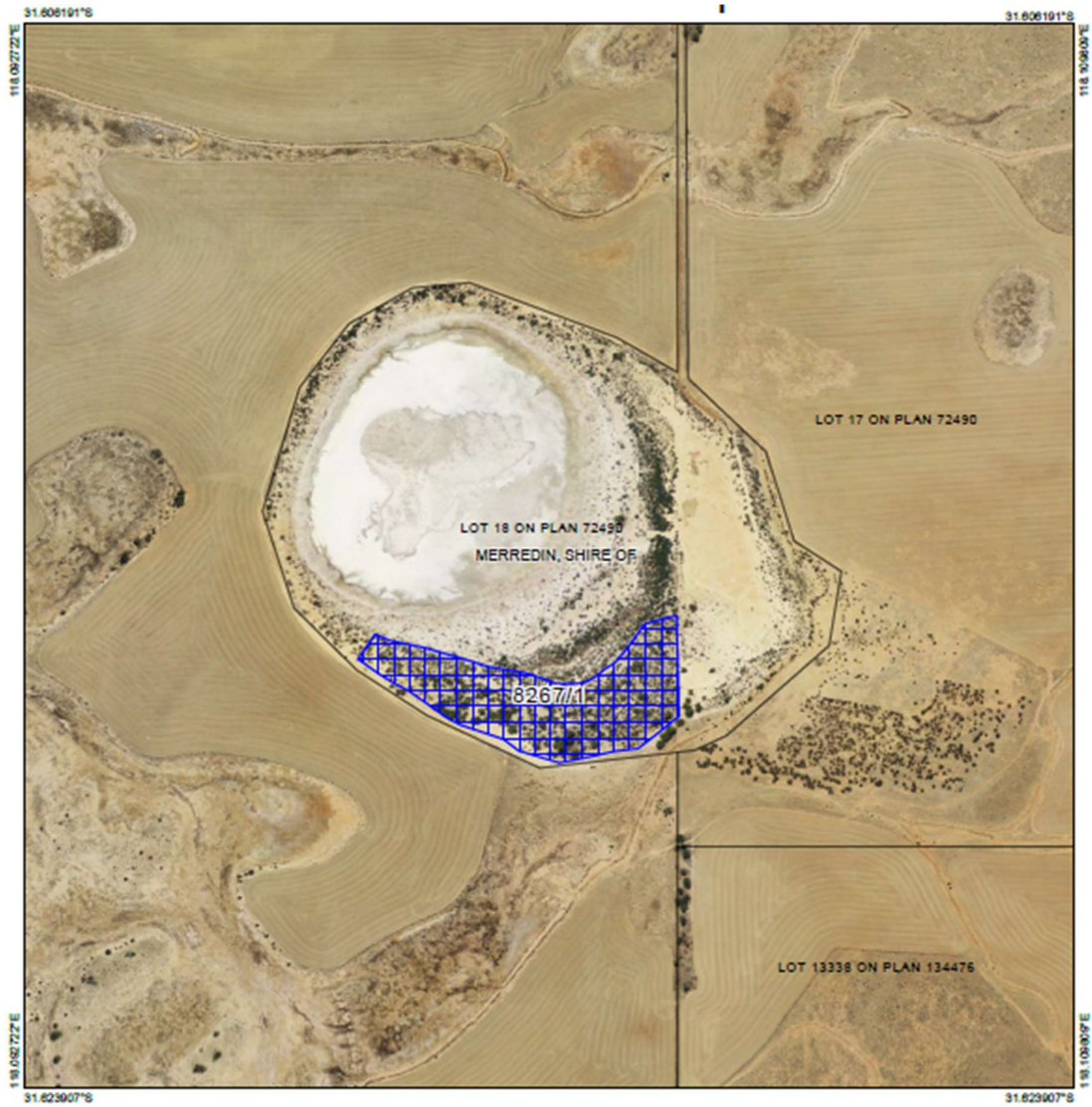


Figure 1 – Application area



Figure 2: Eastern aspect of application area looking north



Figure 3: Eastern aspect of application area looking north-west



Figure 4: Southern aspect of application area looking north-east



Figure 5: Southwestern aspect of application area looking north showing lack of understorey



Figure 6: Western aspect of application area looking north-east, area in completely degraded condition



Figure 7: Eastern aspect of application area looking south-west

3. Minimisation and mitigation measures

The applicant has applied to clear up to 6.73 hectares within the application area. A revegetation and rehabilitation condition will be imposed on the permit as a mitigation measure for the proposed clearing, whereby the permit holder is required to revegetate and rehabilitate the area cleared to re-establish vegetation with the objective of improving the ecological values within the area under application.

4. Assessment of application against clearing principles

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

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

According to available databases, seven Threatened flora species and 19 priority flora have been recorded within the local area. Based on the mapped soil and vegetation type within the application area, two Priority 3 flora species could potentially occur within the application area. These species are outlined below:

- *Angianthus micropodioides* is known from 40 records (Western Australian Herbarium, 1998-) and 80 records (DBCA, 2007-) from Canning, Cunderdin, Dalwallinu, Dandaragan, East Fremantle, Greater Geraldton, Kellerberrin, Koorda, Melville, Morawa, Perenjori, Perth, South Perth, Wongan-Ballidu, Yilgarn and areas further south such as Cranbrook, Esperance and Kent. This species has been recorded on dunes close to salt lakes.
- *Lepidium genistoides* is known from 23 records (Western Australian Herbarium, 1998-) and 36 records (DBCA, 2007-) from Dalwallinu, Koorda, Merredin, Mount Marshall, Mukinbudin, Westonia, Wyalkatchem and Yilgarn. This species has been recorded on a flat on the edge of a salt lake.

These species occur in a similar habitat as the application area. Noting the distribution of these species and the number of records, the proposed clearing is not likely to have a significant impact on the conservation status of the flora species above.

As assessed under principle (b), the application area provides potential breeding habitat for the conservation significant Carnaby's cockatoo. The local area has been extensively cleared (refer to Principle (e)). The vegetation located within the application area is likely to function as linkage stepping stone between areas of remnant vegetation in the local area, and is likely to facilitate landscape connectivity and contribute to fauna dispersal between larger isolated bushland fragments in an extensively cleared landscape.

As assessed under principle (c), the proposed clearing is not likely to impact upon any Threatened flora species.

As assessed under principle (d), no priority or threatened ecological communities have been recorded within the application area. The federally listed TEC 'Eucalypt woodlands of the Western Australian Wheatbelt' is mapped within the local area. The *Approved Conservation (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* states that these woodlands are dominated by a complex mosaic of eucalypt species with a tree or mallet form over an understorey that is highly variable in structure and composition (Threatened Species Scientific Committee [TSSC], 2015). The application

area comprises of woodland dominated by Casuarina trees with scattered eucalypt trees which were mostly of mallee form (DWER, 2019), therefore the application area is not representative of this TEC.

The application area may provide significant habitat for fauna, and the majority of the application area contains vegetation in very good to good (Keighery, 1994) condition. However, the application area is not likely to contain Threatened or priority flora, and is not part of a TEC or a PEC, therefore is not considered to comprise a high level of biological diversity.

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

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Proposed clearing may be at variance to this principle

According to available databases, three Threatened fauna species listed as rare or likely to become extinct have been recorded within the local area (DBCA, 2007-): Carnaby's cockatoo (*Calyptorhynchus latirostris*), malleefowl (*Leipoa ocellata*) and numbat (*Myrmecobius fasciatus*).

Carnaby's cockatoo is listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Black Cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012). From the site inspection conducted, the application area contains a small number of salmon gums which may be a suitable size for black cockatoo breeding (DWER, 2019). A fauna management condition may assist in reducing impacts to potential habitat trees in the application area.

Black Cockatoos have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (Commonwealth of Australia, 2012). Noting the lack of proteaceous plant species and the absence of any confirmed breeding locations in the local area, the application area is not likely to comprise significant foraging habitat for this species.

The malleefowl is recognised as a threatened species under State and Commonwealth legislation. Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils and are most commonly seen in reserves and private property within and around the Wheatbelt region. A sandy substrate and abundance of leaf litter are required for successful construction of nest mounds (DPaW, 2016). The application area is not considered to have an abundance of leaf litter and no malleefowl mounds were observed during the site inspection (DWER, 2019), therefore it is unlikely that the proposed clearing will impact upon this species.

The numbat may occur in open eucalypt woodland, however, habitats usually have an abundance of termites in the soil, hollow logs and branches for shelter (DPaW, 2017). One record of the numbat, in 1932, has been recorded with the local area. Given the low number and age of records of this species, and the absence of hollow logs and branches, it is unlikely that this species will occur within the application area.

The local area has been extensively cleared, and the vegetation within the application area may function as a stepping stone between areas of remnant vegetation in the local area, and facilitate landscape connectivity and contribute to fauna dispersal between larger isolated bushland fragments in an extensively cleared landscape. A revegetation and rehabilitation condition to re-establish vegetation and improve the ecological value of the area, will assist in mitigating the potential impacts of the proposed clearing.

Given the above, the application area may support habitat for conservation significant fauna species.

The proposed clearing may be at variance to this principle.

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

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

According to available databases, seven Threatened flora species have been recorded within the local area. The closest Threatened flora species recorded to the application area is approximately nine kilometres north west of the application area. The application area does not support known habitat for any of the recorded Threatened flora species, based on the soil and landform type of the application area (DWER, 2019).

Given the above, the application area is not likely to include or be necessary for the continued existence of Threatened flora, therefore the proposed clearing is not likely to be at variance to this principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

According to available databases, there are no State listed TECs mapped within the local area. One threatened ecological community (TEC) has been mapped within the local area, the federally listed TEC 'Eucalypt Woodlands of the Western Australian Wheatbelt' (WA Wheatbelt Woodlands). This has been addressed in principle (a).

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

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is at variance to this principle

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

The application area is located within the Avon Wheatbelt Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 19 per cent of its pre-European vegetation extent remaining (Government of Western Australia, 2018). While the current pre-European vegetation extent of the IBRA bioregion is below 30 per cent, the Beard vegetation association Mt Caroline 356 which is mapped over majority of the application area, retains approximately 48 per cent vegetative cover (Government of Western Australia, 2018).

Digital aerial imagery indicates that the local area retains approximately nine per cent of the pre-European native vegetation cover. A revegetation and rehabilitation condition will assist in mitigating the impacts of clearing to the native vegetation within the local area. The condition imposed will require the re-establishment of vegetation, with the objective of improving vegetation condition within the application area and the increasing ecological value of the local area. The rehabilitation that will be undertaken under this condition requires the use of local provenance species only. Considering the imposition of this condition and its associated requirements, the proposed clearing is not considered to have a significant residual environmental impact.

Given the above, the proposed clearing at variance to this Principle.

Table 1: Vegetation extents.

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | Current Extent in DBCA Managed Lands | |
|--|-------------------|---------------------|---------------|--------------------------------------|-------|
| | | | | (ha) | (%) |
| IBRA Bioregion | | | | | |
| Avon Wheatbelt | 9,517,110 | 1,761,187 | 18.51 | 174,981 | 9.94 |
| Beard Vegetation Association in Bioregion | | | | | |
| 356 | 4,330 | 2,099 | 48.47 | 99.92 | 4.76 |
| 1023 | 1,522,680 | 165,124 | 10.84 | 17,277.64 | 10.46 |
| Local Area | | | | | |
| 20 kilometre radius | 128,611 | 11,890 | 9.24 | - | - |

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

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

There is a minor, non-perennial watercourse that leads to the application area, however, does not intersect with the application area and this was confirmed during the site inspection (DWER, 2019). The site inspection determined that the native vegetation within the application area is not considered to be growing in, or in association with, an environment with a watercourse or wetland (DWER, 2019).

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

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

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

The soil type 'Wallambin, Stirling Phase subsystem' has been mapped within the application area which is described as fringe zones on either side of the main salt lake channels with isolated salt lakes, gypsum dunes and lunettes of sand, silt, or clay (DPIRD, 2017).

While the soils associated with the application area has a moderate to high risk of salinity (Table 2), DPIRD inspected the application area on 7 December 2018 and reported that no significant change in salinity as a result of the proposed clearing is expected. The report concluded that the application area may be suitable for the proposed activity as the risk of land degradation is low (DPIRD, 2019).

Table 2: Land degradation risk levels

| Risk categories | Spearwood S2b Phase subsystem |
|--------------------------|--|
| Wind erosion | 10-30% of map unit has a high to extreme wind erosion risk |
| Water erosion | <3% of map unit has a high to extreme water erosion risk |
| Salinity | 50-70% of map unit has a moderate to high salinity risk or is presently saline |
| Subsurface Acidification | 10-30% of map unit has a high subsurface acidification risk or is presently acid |
| Subsurface compaction | 10-30% of the map unit has a high subsurface compaction risk |

| | |
|------------------------|--|
| Flood risk | <3% of the map unit has a moderate to high flood risk |
| Waterlogging | 50-70% of map unit has a moderate to very high waterlogging risk |
| Water repellence | 10-30% of map unit has a high water repellence risk |
| Phosphorus export risk | 10-30% of map unit has a high to extreme phosphorus export risk |

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

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

According to available databases, the nearest conservation area is an un-named Nature Reserve approximately five kilometres north-west of the application area. Noting the distance to the nature reserve, the proposed clearing is unlikely to impact on the environmental values of the conservation area.

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

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

The clearing of native vegetation in the Wheatbelt region and its replacement with shallow rooted, annual cropping species has resulted in a reduction in water use by vegetation (evapotranspiration) (DoW, 2005). This has in turn caused a rise in watertables and mobilisation of salt previously stored deep within the soil profile (DoW, 2005). No watercourses are mapped within the application area therefore the proposed clearing is not likely to impact on the quality of surface water.

Groundwater salinity (total dissolved solids) is mapped as more than 35,000 milligrams per litre which is considered to be brine. The area has been impacted by previous agriculture activities, the proposed clearing is not likely to cause deterioration to groundwater and lead to a perceptible rise in the water table. Additionally, the application area will be rehabilitated after the completion of the sand extraction operations.

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

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

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

The application area is located in a low rainfall area, where the average rainfall is 400 millimetres per year. Based on the low rainfall it is considered that the proposed clearing is unlikely to cause, or exacerbate the incidence or intensity of flooding.

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

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

Planning instruments and other relevant matters.

The Shire of Merredin issued the applicant an extractive industry licence which included planning consent for the proposed activity (Shire of Merredin, 2018). The licence was issued subject to conditions, including rehabilitating the area using local provenance species which is required to be completed within 12 months of the conclusion of operations. DWER has imposed a rehabilitation condition on the clearing permit to align with this requirement.

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

The clearing permit application was advertised on the DWER website on 8 December 2018 with a 21 day submission period. No submissions were received in relation to this application.

5. References

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
Commonwealth of Australia (2012). EPBC Act referral guidelines for three threatened black cockatoo species. Department of Sustainability, Environment, Water, Populations and Communities, Canberra.
Department of Biodiversity, Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed April 2019.
Department of Parks and Wildlife (2016) Fauna profile Malleefowl *Leipoa ocellata* <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/malleefowl> (Accessed April 2019).
Department of Parks and Wildlife (2017). Numbat (*Myrmecobius fasciatus*) Recovery Plan. Wildlife Management Program No. 60. Prepared by J.A. Friend and M.J. Page, Department of Parks and Wildlife, Perth, WA.

Department of Primary Industries and Regional Development (DPIRD) (2017). NRInfo Digital Mapping. Accessed at <https://maps.agric.wa.gov.au/nrm-info/> Accessed April 2019. Department of Primary Industries and Regional Development. Government of Western Australia.

Department of Primary Industries and Regional Development (DPIRD) (2019) Advice on land degradation impacts associated with CPS 8267/1. Received 17 January 2019 (DWER ref: A1756386).

Department of Water (2005) Water notes for management: the Ecology of Wheatbelt Lakes, https://www.water.wa.gov.au/__data/assets/pdf_file/0014/3362/56257.pdf (accessed April 2019)

Department of Water and Environmental Regulation (DWER) (2019) Site inspection report for CPS 8267/1. (DWER ref: A1802109)

Government of Western Australia (2018) 2018 Statewide Vegetation Statistics. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth, <https://catalogue.data.wa.gov.au/dataset/dbca>

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Shire of Merredin (2018) Extractive industry licence and planning approval for Lot 18 Korbrelkulling Road Merredin. Received 18 December 2018. (DWER ref: A1751231)

Threatened Species Scientific Committee (2015) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt.

Western Australian Herbarium (1998-). FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> Accessed June 2019.

GIS Databases:

- Aboriginal Sites of Significance
- Department of Biodiversity, Conservation and Attractions, Managed Tenure
- Geomorphic Wetlands Management Category
- Hydrography Linear – Linear
- Hydrography WA 250K – Surface Water Lines
- Remnant vegetation
- SAC bio datasets
- TPFL March 2019
- Vegetation Complexes; pre – European Vegetation
- WA Herb Data March 2019
- WA TEC PEC Boundaries