GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS
Area Permit Number: 8461/1
File Number: DWERVT2665
Duration of Permit: 6 November 2019 to 6 November 2021

PERMIT HOLDER
City of Rockingham

LAND ON WHICH CLEARING IS TO BE DONE
Jarvis Road Reserve (PIN: 11752711), Baldivis;
Powell Road Reserve (PIN: 11607938), Baldivis;
Lot 2055 on Deposited Plan 210149,Peron;
Lot 29 on Plan 21419, Port Kennedy;
Lot 5070 on Deposited Plan 40535, Rockingham;
Lot 8006 on Deposited Plan 40534, Rockingham;
Hymus Street Road Reserve (PIN: 11757169), Rockingham;
Lot 1429 on Deposited Plan 193817, Secret Harbour; and
Road Reserves (PIN: 11424400 and PIN: 11424401), Shoalwater.

AUTHORISED ACTIVITY
The Permit Holder shall not clear more than a cumulative area of 3.6012 hectares of native vegetation within the areas hatched yellow on attached Plan 8461/1(a), Plan 8461/1(b), Plan 8461/1(c), Plan 8461/1(d), Plan 8461/1(e) and Plan 8461/1(f).

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. **Dieback and 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* and *dieback*:
   (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
   (b) ensure that no known *dieback* or *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 area to be cleared.

3. **Clearing not authorised**
   (a) This Permit does not authorise the Permit Holder to clear trees belonging to the Genus *Eucalyptus* or *Corymbia*, which are endemic to the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) region and have a diameter of 500 millimetres or more at breast height.
   (b) This Permit does not authorise the Permit Holder to clear any Tuart (*Eucalyptus gomphocephala*) tree with a diameter of 100 millimetres or more at breast height.

RECORD KEEPING AND REPORTING

4. Records to be kept

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

(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(b) the date that the area was cleared;

(c) the size of the area cleared (in hectares);

(d) actions taken to avoid, minimise and reduce the impacts and the extent of clearing in accordance with condition 1 of this Permit;

(e) actions taken to minimise the introduction and spread of *weeds* and *dieback* in accordance with condition 2 of this Permit;

(f) actions taken to avoid the clearing of trees belonging to the Genus *Eucalyptus* or *Corymbia*, which are endemic to the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) region and have a diameter of 500 millimetres or more at breast height, in accordance with condition 3(a) of this permit; and

(g) actions taken to avoid the clearing of any Tuart (*Eucalyptus gomphocephala*) tree with a diameter of 100 millimetres or more at breast height in accordance with condition 3(b) of this permit.

5. Reporting

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

DEFINITIONS

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

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

dieback means the effect of *Phytophthora* species on native vegetation;

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

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

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or

(b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or

(c) not indigenous to the area concerned.

Mathew Gannaway
MANAGER
NATIVE VEGETATION PROTECTION

Officer delegated under Section 20
of the Environmental Protection Act 1986

7 October 2019

Plan 8461/1 (a)

Legend

- CPS areas approved to clear
- Roads - Minor Roads
- Cadastre (LGATE_218) - SLIP

0.0 0.01 0.0 Kilometers

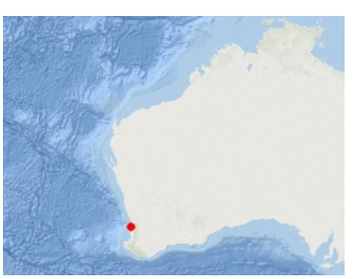
WGS_1984_Web_Mercator_Auxiliary_Sphere

Mathew Gannaway
2019.10.07 13:16:02 +08'00'

Officer *Date*

Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Plan 8461/1 (b)

Legend

- CPS areas approved to clear
- Land Tenure (LGATE_226) - SLIP
- Roads - Minor Roads

0.0 0.02 0.0 Kilometers

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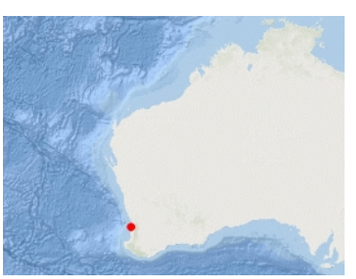
Mathew Gannaway
2019.10.07 13:16:31 +08'00'

Officer *Date*

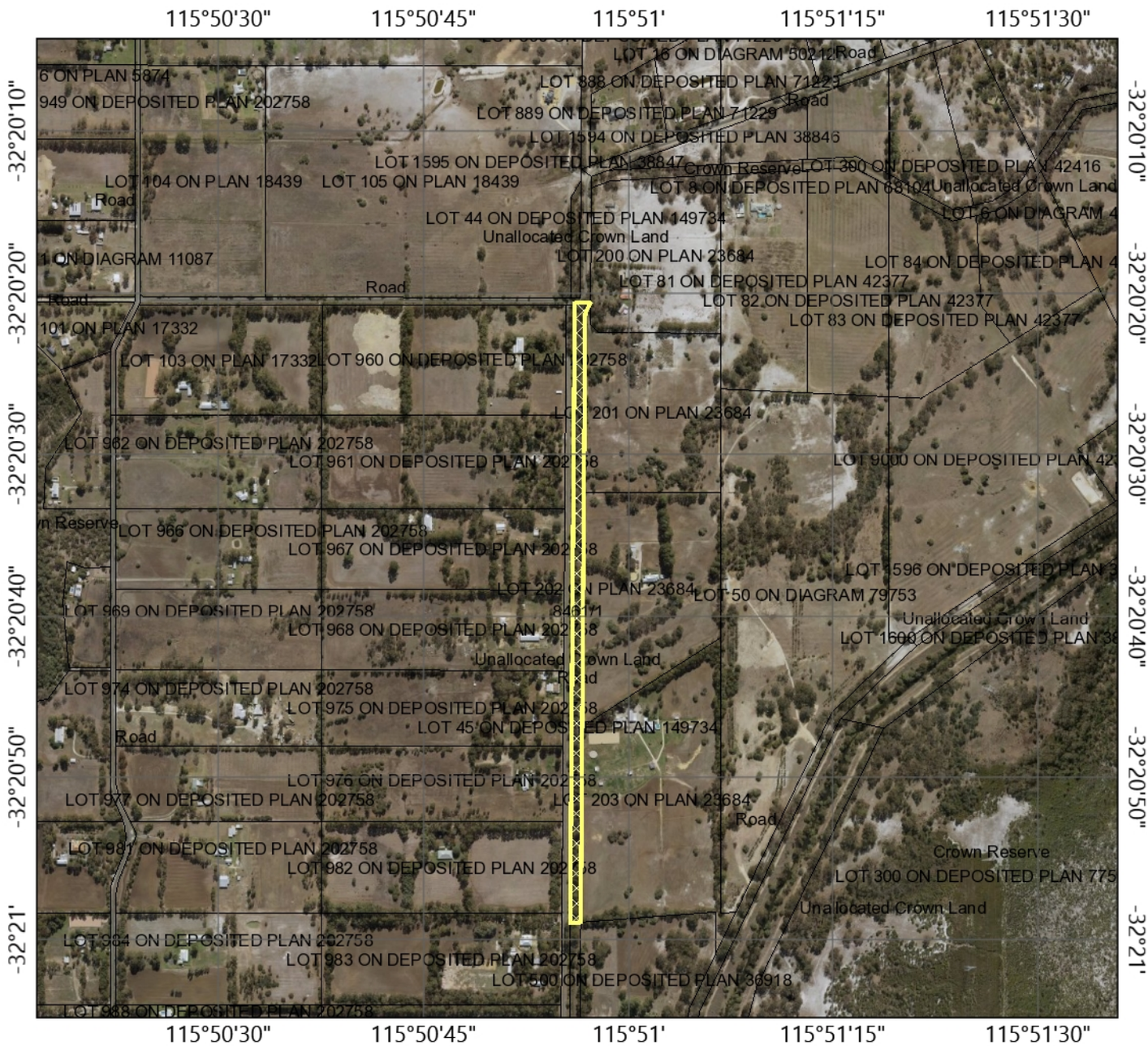
Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Plan 8461/1 (c)



Legend

- CPS areas approved to clear
- Cadastre (LGATE_218) - SLIP

0.3 0.17 0.3 Kilometers

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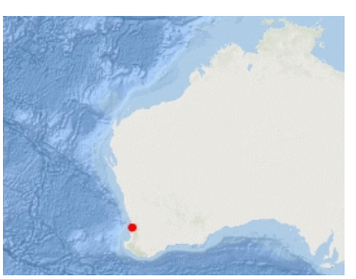
Mathew Gannaway
2019.10.07 13:17:03 +08'00'

Officer *Date*

Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Plan 8461/1 (d)

Legend

- CPS areas approved to clear
- Cadastre (LGATE_218) - SLIP

0.0 0.02 0.0 Kilometers

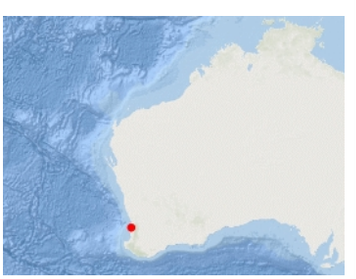
WGS_1984_Web_Mercator_Auxiliary_Sphere

Mathew Gannaway
2019.10.07 13:17:31 +08'00'

Officer *Date*

Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Plan 8461/1 (e)

Legend

- CPS areas approved to clear
- Land Tenure (LGATE_226) - SLIP

0.1 0.04 0.1 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere

Mathew Gannaway
2019.10.07 15:15:03 +08'00'

Officer *Date*

Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Plan 8461/1 (f)

Legend

- CPS areas approved to clear
- Cadastre (LGATE_218) - SLIP

0.1 0.04 0.1 Kilometers

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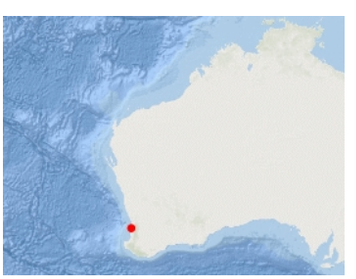
Officer *Date*

Officer with delgated authority under Section 20 of the Environmental Protection Act 1986.

Locality Map



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8461/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: City of Rockingham
Application received date: 12 April 2019

1.3. Property details

Property: Jarvis Road Reserve (PIN: 11752711), Baldivis;
Powell Road Reserve (PIN: 11607938), Baldivis;
Lot 2055 on Deposited Plan 210149,Peron;
Lot 29 on Plan 21419, Port Kennedy;
Lot 5070 on Deposited Plan 40535, Rockingham;
Lot 8006 on Deposited Plan 40534, Rockingham;
Hymus Street Road Reserve (PIN: 11757169), Rockingham;
Lot 1429 on Deposited Plan 193817, Secret Harbour; and
Road Reserves (PIN: 11424400 and PIN: 11424401), Shoalwater.
Local Government Authority: City of Rockingham
Localities: Baldivis, Peron, Port Kennedy, Rockingham, Secret Harbour and Shoalwater.

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
3.6012		Mechanical Removal	Hazard reduction or fire control

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 October 2019
Reasons for Decision: This clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing may be at variance to Principle (a) and is not likely to be at variance to any of the remaining clearing principles.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

The Delegated Officer determined through the assessment that the application area has the potential to provide suitable habitat for fauna species of conservation significance and may be representative of a threatened ecological community. To mitigate the risk of the clearing to these environmental values, a condition has been placed on the permit requiring the maintenance of *Eucalyptus* sp. and *Corymbia* sp. trees which meet designated size thresholds. The Delegated Officer also determined that the proposed clearing may increase the spread of weeds and dieback into adjacent vegetation. To minimise this risk, a condition has been placed on the permit requiring the implementation of weed and dieback management measures.

2. Site Information

Clearing Description This application proposes the clearing of a cumulative area of up to 3.6012 hectares of native vegetation within the cadastral boundaries detailed in Section 1.3 of this report, to facilitate the creation of strategic firebreaks and access tracks. These will reduce the spread and severity of local fire events and enhance ingress into and egress from surrounding properties in the event of a fire. This clearing permit application is comprised of six separate clearing areas, hereafter referred to as Area's 1 – 6. The location and extent of these clearing areas is depicted in Figure's 1 - 6.

During the course of the inspection of the application area undertaken by Officers from the Department of Water and Environmental Regulation (DWER) and in correspondence received following the inspection, the City of Rockingham's Senior Bushfire Risk Officer advised that Area's 1 - 6 are in close proximity to residential dwellings (City of Rockingham 2019). These areas have been identified as being of 'Extreme risk' from fire events, as assessed using International Standards Organisation methodology 3100.2009 (City of Rockingham 2019). Consequently, Area's 1-6 in their current state are considered to present a significant risk to both human life and property in the event of a fire.

Vegetation Description

The application area is situated within the following mapped vegetation complexes (Heddle et al. 1980):

- Dardanup Complex (34): Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford;
- Karrakatta Complex - Central and South (49): Predominantly open forest of Tuart (*Eucalyptus gomphocephala*) - Jarrah (*Eucalyptus marginata*) - Marri (*Corymbia calophylla*) and woodland of Jarrah (*Eucalyptus marginata*) - *Banksia* species. Peppermint (*Agonis flexuosa*) is co-dominant south of the Capel River;
- Herdsman Complex (53): Sedgelands and fringing woodland of Flooded Gum (*Eucalyptus rudis*) - *Melaleuca* species; and
- Quindalup Complex (55): Coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of Rottnest Teatree (*Melaleuca lanceolata*) - Rottnest Island Pine (*Callitris preissii*), the closed scrub of Summer-scented Wattle (*Acacia rostellifera*) and the low closed Peppermint (*Agonis flexuosa*) forest of Geographe Bay.

The inspection of the application area undertaken by Officers from DWER (2019) identified the following vegetation communities within the application area:

- Area 1: **Acacia longifolia* open canopy over dense thicket of Brazilian Pepper Tree (**Schinus terebinthifolius*) and Summer Scented Wattle (*Acacia rostellifera*) over ground cover of Cape Weed (**Arctotheca calendula*), Whiteflower Fumitory (**Fumaria capreolata*) and Beach Evening Primrose (**Oenothera drummondii*);
- Area 2: **Acacia longifolia* dense canopy with occasional occurrences of Brazilian Pepper Tree (**Schinus terebinthifolius*) over Rose Pelargonium (**Pelargonium capitatum*);
- Area 3: Flooded Gum (*Eucalyptus rudis*) over Bulbil Watsonia (**Watsonia meriana*), Brazilian Pepper Tree (**Schinus terebinthifolius*), *Myoporum* sp., **Lantana camara*, Coast Sword-sedge (*Lepidosperma gladiatum*), Annual Veldt Grass (**Ehrharta longiflora*), Rottnest Island Pine (*Callitris preissii*) and *Melaleuca* sp.;
- Area 4: **Acacia longifolia* over Dodder Laurel (*Cassytha racemosa*), Annual Veldt Grass (**Ehrharta longiflora*) and Coast Sword-sedge (*Lepidosperma gladiatum*);
- Area 5: Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) woodland, occurrences of Tuart (*Eucalyptus gomphocephala)*, over Swamp Sheoak (*Casuarina obesa*), Slender Banksia (*Banksia attenuata*), Christmas Tree (*Nuytsia floribunda*), Zamia (*Macrozamia riedlei*), Graceful Grass Tree (*Xanthorrhoea gracilis*), *Melaleuca sp.* over an understorey of Small Nettle (**Urtica urens*) and exotic grasses; and
- Area 6: Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) woodland, occurrences of Tuart (*Eucalyptus gomphocephala)* over *Ficus* sp., Swamp Paperbark (*Melaleuca rhaphiophylla*), *Melaleuca sp.* and Bridal Creeper (**Asparagus asparagoides*). Prominent monocultures of Arum Lily (**Zantedeschia aethiopica*) were also present in some components of the clearing area.

Vegetation Condition

The inspection of the application area undertaken by Officers from DWER (2019) determined the vegetation communities found in the application area met the following condition thresholds:

- Degraded (Keighery 1994): Basic vegetation structure severely impacted by disturbance. Scope for regeneration, but not to a state approaching good condition without intensive management; to
- Completely Degraded (Keighery 1994): The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

Soil Type

The application area has been mapped as occurring within the following land systems (Department of Primary Industry and Regional Development 2017):

- Pinjarra P4 Phase: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils;
- Pinjarra P6c Phase: Very gently undulating alluvial terraces and fans. Moderate to moderately well drained uniform friable brown loams, or well-structured gradational brown earths;
- Quindalup South Qf2 Phase: Relict foredunes and gently undulating beach ridge plain with deep uniform calcareous sands;
- Quindalup South Qf2a Phase: More prominent relict foredune ridges which occur within unit Qf2, with deep uniform calcareous sands;
- Quindalup South Qqs Phase: Actively eroding, poorly vegetated, flat to gently undulating sand sheet with deep uniform calcareous sands;
- Quindalup South Qp1 Phase: Complex of nested low relief parabolic dunes with moderate to steep slopes and uniform calcareous sands showing variable depths of surface darkening; and
- Spearwood S4a Phase: Flat to gently undulating sandplain with deep, pale and sometimes bleached, sands with yellow-brown subsoils.

Comment The local area referred to in the below assessment is defined as the area within a 10 kilometre radius of the application area.

Figure 1: Clearing Area 1 (Shown in blue).

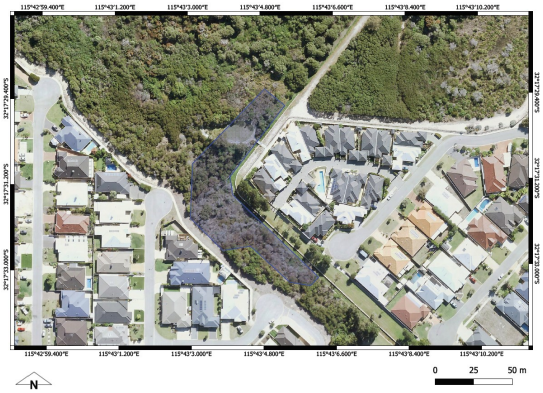


Figure 2: Clearing Area 2 (Shown in blue).

Figure 3: Clearing Area 3 (Shown in blue).

Figure 4: Clearing Area 4 (Shown in blue).

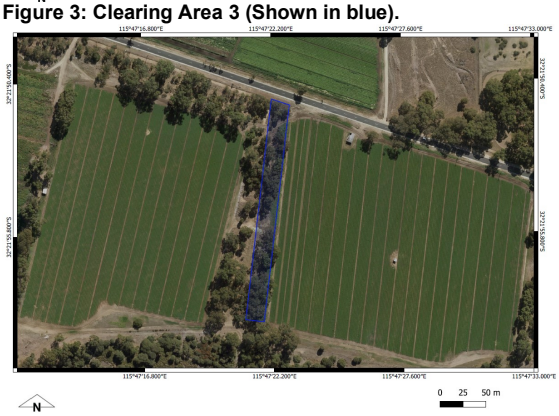


Figure 5: Clearing Area 5 (Shown in blue).

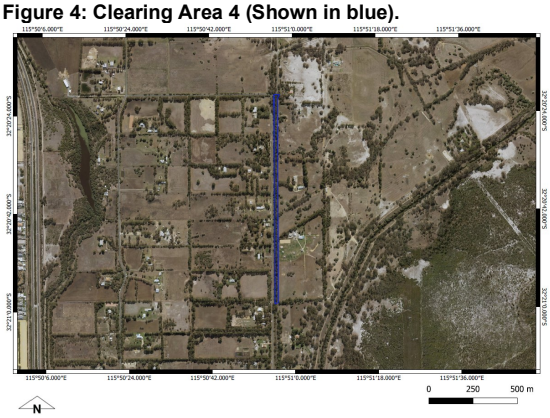


Figure 6: Clearing Area 6 (Shown in blue).

3. Minimisation and mitigation measures

During the course of the inspection undertaken by Officer's from DWER (2019), the applicant's representatives specified that much of the vegetation to be removed would be exotic understorey and mid-storey species which have colonised Area's 1 - 6 as a result of historical urban and agricultural development. Native trees and shrubs will be removed where necessary, but in most instances the native tree species will have their branches pruned to allow these trees to remain in place, while improving access into and egress from the areas identified as being at 'Extreme risk' of fire.

In Area 5, during the course of the aforementioned inspection, a Galah (*Eolophus roseicapilla*) was observed nesting in a hollow in a dead tree. The applicant has committed to leave this tree in place. Area's 5 and 6 also contain a number of *Eucalyptus* sp. and *Corymbia* sp. tree's which have a diameter of 500 millimetres or more at breast height. As discussed in Section 4 of this report, these trees could comprise breeding and foraging habitat for Black Cockatoo species (*Calyptorhynchus* sp.). To ensure potential breeding and foraging habitat for Black Cockatoo species is not lost as a result of the proposed clearing, the applicant has committed to leave all *Eucalyptus* sp. and *Corymbia* sp. trees endemic to the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) region with a diameter at breast height of 500 millimetres or more in situ. The permit has been conditioned to reflect this commitment.

As discussed in Section 2 of this report, the inspection of the application area undertaken by Officer's from DWER (2019) determined Area's 5 and 6 both contain Tuart (*Eucalyptus gomphocephala*) trees within the canopy of the vegetation communities within these clearing areas. These areas could therefore be representative of the Priority 3 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' priority ecological community (PEC). This ecological community is also listed as a 'Critically Endangered' threatened ecological community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The applicant has determined that a small number of Juvenile Tuart trees will need to be cleared in Area 5 to support the creation of the proposed firebreaks and access tracks. No clearing of Tuart Trees will be required within Area 6. To ensure the ecological function and integrity of this ecological community is retained, the clearing permit has conditioned to require the applicant to retain all Tuart trees with a diameter of 100 millimetres or more at breast height.

4. Assessment of application against clearing principles

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

Proposed clearing may be at variance to this Principle

A review of available databases determined that 38 flora species of conservation significance have been recorded in the local area, comprising four Priority 1 flora species, three Priority 2 flora species, 12 Priority 3 flora species, 12 Priority 4 flora species and seven threatened flora species. Given the Degraded to Completely Degraded condition of the vegetation communities identified within the application area (DWER 2019), the application area is not anticipated to represent suitable habitat for any flora species of conservation significance. No species of conservation significant were observed during the site inspection, due to the degraded nature of the understorey.

A review of available databases determined Area's 2 and 5 intercept recorded occurrences of the following ecological communities of conservation significance, respectively:

- The 'Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain', which is endorsed as a 'Critically Endangered' TEC by the Western Australian Minister for Environment. This ecological community is also listed as an 'Endangered' TEC under the EPBC Act; and
- The Priority 3 '*Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region' PEC. This ecological community is also recognised as an 'Endangered' TEC under the EPBC Act.

Area 2 is not considered representative of the 'Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain' ecological community. This matter is discussed further under principle (d).

As discussed in Section 2 of this report, the site inspection of Area 5 undertaken by Officers from DWER (2019) determined the vegetation found in this area is not representative of the '*Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region' TEC in terms of its vegetation composition and condition (Threatened Species Scientific Committee 2015). No adverse impacts to the conservation status or distribution of this ecological community are anticipated to result from the proposed clearing.

As detailed in Section 2 of this report, the inspection of Area's 5 and 6 undertaken by Officers from DWER (2019) identified the presence of Tuart (*Eucalyptus gomphocephala*) trees within the canopy of the vegetation communities found within these areas. These areas may therefore be representative of the Priority 3 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC, which is also listed as a 'Critically Endangered' TEC under the EPBC Act (Threatened Species Scientific Committee 2019). As discussed in Section 3 of this report, the applicant has determined that a small number of juvenile Tuart trees will need to be cleared to support the creation of the proposed firebreaks and access tracks in Area 5. To ensure the ecological function and integrity of this ecological community is retained, the applicant has committed to retain all Tuart trees with a diameter of 100 millimetres or more at breast height. The permit has been conditioned to reflect this commitment. No clearing of Tuart trees will be required in Area 6. Since all semi-mature and mature Tuart trees encountered within the application area will be maintained in situ, no adverse impacts to the conservation status or distribution of the above ecological community is anticipated to result from the proposed clearing.

A review of aerial photography of the application area determined clearing Area's 1, 3 and 4 do not serve as ecological linkages connecting ecological communities of conservation significance to each other or other areas of remnant vegetation. A review of aerial photography of Area 2 determined this area comprises an ecological linkage which leads into Lake Richmond and the aforementioned 'Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain' TEC. Given the knowledge that the vegetation community in this area is in 'Completely Degraded' condition, and comprises a thicket of mostly exotic flora species, this area is anticipated to currently have limited value as an ecological linkage. The proposed clearing is not anticipated to adversely impact species diversity and recruitment within either Lake Richmond or the recorded occurrence of the 'Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain' TEC.

The review of aerial photography of Area 5 determined this area comprises a narrow corridor of remnant vegetation between two paddocks used for horticulture and connects occurrences of the '*Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region' TEC situated within the Stake Hill Swamp to other areas of remnant vegetation in the surrounding landscape. Clearing in this area will comprise mostly the removal of the understorey and mid-storey layers which have experienced significant colonisation by exotic flora taxa to create a fire emergency access track. It is anticipated that most of this area will remain undisturbed by the proposed clearing activities. The aforementioned aerial photography review also determined there are other ecological linkages connecting the aforementioned occurrences of the above TEC to other areas of remnant vegetation and therefore the proposed clearing will not result in the isolation of these TEC occurrences.

Area 6 comprises part of a network of remnant roadside vegetation corridors. These corridors link occurrences of the Priority 3

'Low lying *Banksia attenuata* woodlands or shrublands' PEC (listed as an 'Endangered' TEC under the EPBC Act) and the aforementioned '*Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region' TEC to other areas of native vegetation, including a wetland situated approximately 1 kilometre to the west of Area 6. When the above is considered alongside the knowledge that clearing in this area will mostly comprise the understorey and mid-storey layers which have experienced significant colonisation from exotic plant taxa, while leaving the canopy intact, the proposed clearing is not anticipated to significantly undermine the value of this area as an ecological linkage.

A review of available databases determined that 92 fauna species of conservation significance have been recorded in the local area (Department of Biodiversity, Conservation and Attractions 2007-). Area's 5 and 6 were identified during the inspection undertaken by Officers from DWER (2019) as containing *Eucalyptus* sp. and *Corymbia* sp. trees with a diameter of 500 millimetres or more at breast height. As discussed in Section 3 of this report, these trees could provide suitable breeding and foraging habitat for Black Cockatoo species (*Calyptorhynchus* sp.). To ensure potential breeding and foraging habitat for Black Cockatoo species is not lost as a result of the proposed clearing, the applicant has committed to leave all *Eucalyptus* sp. and *Corymbia* sp. trees with a diameter at breast height of 500 millimetres or more in situ. The permit has been conditioned to reflect this commitment. The application area could provide suitable habitat, but is unlikely to provide significant habitat, for 13 other conservation significant fauna species. This matter is discussed further under principle (b).

The proposed clearing has the potential to introduce weed and dieback species into the surrounding vegetation, potentially degrading habitat for flora and fauna species of conservation significance. Weed and dieback management measures should mitigate this impact.

Given the application area's potential representation as part of the 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' ecological community, the application area may comprise an area of high biodiversity. The proposed clearing may 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 is not likely to be at variance to this Principle

A review of available databases determined that 92 fauna species of conservation significance have been recorded in the local area (Department of Biodiversity, Conservation and Attractions 2007-). When migratory and marine species, species who are wetland and river habitat specialists and species whose habitat requirements are not met by the application area were accounted for, the application area may comprise suitable habitat for 16 fauna species of conservation significance. These species comprise one species listed as 'Vulnerable' under both the *Biodiversity Conservation Act 2016* (BC Act) and the EPBC Act, two species listed as 'Endangered' under both the BC Act and the EPBC Act, one species listed as 'other specially protected fauna' under the BC Act, four Priority 3 listed fauna species and eight Priority 4 listed fauna species.

Given the Degraded to Completely Degraded condition of the vegetation found in the application area, the application area may provide suitable habitat for fauna species of conservation significance but is not anticipated to provide significant habitat for any fauna species of conservation significance, with the exception of the following:

- *Calyptorhynchus banksii* subsp. *naso* (Forest Red-tailed Black Cockatoo) (listed as 'Vulnerable' under both the BC Act and the EPBC Act);
- *Calyptorhynchus baudinii* (Baudin's Cockatoo) (listed as 'Endangered' under both the BC Act and the EPBC Act); and
- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo) (listed as 'Endangered' under both the BC Act and the EPBC Act).

All three Black Cockatoo species are known to breed in hollows in very long-lived trees, with hollows large enough to support nesting for Black Cockatoo species usually only found in trees that are more than 200 years old. All three Black Cockatoo species generally breed in woodland or forest, but may also breed in former woodland or forest areas now present as isolated trees (Department of Sustainability, Environment, Water, Population and Communities 2012). As discussed in Section 3 of this report, Area's 5 and 6 contain *Eucalyptus* sp. and *Corymbia* sp. trees of a suitable size to either contain hollows suitable for Black Cockatoo nesting or to develop suitable hollows over time. The Baudin's Cockatoo could nest in the hollows of live or dead Marri and Tuart trees within Area's 5 and 6 and both the Carnaby's Cockatoo and the Forrest Red-tailed Black Cockatoo could nest in the hollows of live or dead Tuart, Marri and Jarrah trees found in Area's 5 and 6. The *Eucalyptus* sp. and *Corymbia* sp. trees identified within Area's 5 and 6 likely also comprise suitable foraging habitat for Black Cockatoo species (DWER 2019).

As discussed in Section 3 of this report, the applicant has committed to maintain all *Eucalyptus* sp. and *Corymbia* sp. trees with a diameter at breast height of 500 millimetres or more and all Tuart trees with a diameter at breast height of 100 millimetres or more in situ. These commitments have been reflected in the conditions applied to the clearing permit. This will ensure that the potential Black Cockatoo habitat values identified within the application area will remain unaffected by the proposed clearing. Based on the above, no adverse impacts to the conservation status or distribution of any fauna species of conservation significance will result from the proposed clearing.

Given the above, the proposed clearing is not likely to 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

As discussed under principle (a), a review of available databases determined that seven threatened flora species have been recorded in the local area. As discussed in Section 2 of this report, the inspection of the application area undertaken by Officers from DWER (2019) determined the vegetation communities found in the application area are Degraded to Completely Degraded in condition due to historical urban and agricultural developments and colonisation by exotic flora species. Given the above, the application area is unlikely to comprise suitable habitat for any threatened flora species.

Given the above, 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

As discussed under principle (a), a review of available databases determined Area 2 intercepted a recorded occurrence of 'The 'Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain' ecological community. This ecological community is endorsed as a 'Critically Endangered' TEC by the Western Australian Minister for Environment and is also recognised as an 'Endangered' TEC under the EPBC Act.

A review of the historical aerial photography determined that Area 2 was cleared to facilitate urban development around 2004 (Landgate 2019). The site inspection of the Area 2 undertaken by Officers from DWER (2019) determined that this area has since been colonised with a Degraded to Completely Degraded vegetation community comprised mostly of exotic flora species. Consequently, Area 2 is not considered representative of the above TEC and no adverse impacts to occurrences of this ecological community of conservation significance are anticipated to result from the proposed clearing activities.

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 not likely to be 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 (i.e. pre-European settlement) (Commonwealth of Australia 2001). This is the threshold level below which species loss appears to accelerate exponentially at an ecosystem level. The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region to be a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA 2008). The application area is located within the mapped extent of the Perth Metropolitan Region Scheme. Noting that the EPA considers a constrained area to be an area where there is an expectation that development will proceed, and that the cleared area is zoned 'Urban' in the Perth Metropolitan Region Scheme, the 10 per cent threshold is considered within the application area.

As indicated in Table 1, the Swan Coastal Plain IBRA region retains approximately 38.6 per cent of its pre-European native vegetation extent (Government of Western Australia 2019a). Vegetation associations 34, 49, 53 and 55 retain approximately 5.7 per cent, 23.49 per cent, 32.11 per cent and 60.49 per cent of their pre-European clearing extents, respectively (Government of Western Australia 2019b).

Whilst vegetation associations 34 and 49 retain less than the 30 percent threshold, the vegetation identified within the application area is in a Degraded to Completely Degraded condition due to the extensive colonisation by exotic flora species and disturbance arising from historical urban and agricultural developments.

It is acknowledged that the application area may comprise an area of high biodiversity. However, the proposed clearing activities will also mostly target understorey and mid-storey layers within the application area which have experienced significant colonisation by exotic flora taxa, with the permit conditioned to maintain *Eucalyptus* sp. and *Corymbia* sp. trees of appropriate sizes in situ. Therefore, the proposed clearing will not result in the loss of a significant remnant of native vegetation. The proposed clearing is not likely to be at variance to this principle.

Table 1: Native Vegetation extents

	Pre-European (Ha)	Current Extent (Ha)	Remaining (%)	Current Extent in DBCA Managed Lands (ha)	(%)
IBRA Region					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	38.45
Vegetation Complex					
Dardanup Complex (34)	8,948.33	510.43	5.7	134.95	1.51
Karrakatta Complex - Central and South (49)	53,080.99	12,467.20	23.49	4,282.73	8.07
Herdsman Complex (53)	9,665.15	3,103.70	32.11	1,058.25	10.95
Quindalup Complex (55)	54,573.87	33,011.64	60.49	5,994.64	10.98

(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

A review of available databases and the inspection of the application area determined no watercourses exist within the application area (DWER 2019). Therefore, no vegetation growing in association with watercourses will be adversely impacted by the proposed clearing.

A review of available databases determined Area 2 is situated within a High Value Swan Coastal Plain wetland which has been demarcated for conservation purposes. This area is consistent with UFI 6162, also known as the Lake Richmond Surrounds. The review of available databases also determined Area 5 is situated within a lower value Swan Coastal Plain damp land demarcated for conservation and multiple use purposes. This area is also consistent with the Sixty Eight Road Dampland (UFI 6407). Area 6 is situated within two lower value Swan Coastal Plain Palusplain environments, both of which have been demarcated for conservation and multiple use purposes. This area is consistent with the Mundijong Road Palusplain (UFI 16021).

The inspection of Area's 2, 5 and 6 undertaken by Officers from DWER (2019) determined the vegetation found within these areas to not contain vegetation growing in association with a wetland environment. Therefore, no impacts to vegetation growing in association with wetland environments is anticipated to result from the proposed clearing.

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

A review of available databases, the application area is situated within the Pinjarra P4 Phase, Pinjarra P6c Phase, Quindalup South Qf2 Phase, Quindalup South Qqs Phase, Quindalup South Qp1 Phase, Spearwood S4a Phase and Quindalup South Qf2a Phase land systems (Department of Primary Industry and Regional Development 2017). This database review determined all the Quindalup South Phase and the Spearwood S4a Phase land systems have a moderate to high risk of developing wind erosion impacts and a moderate risk of developing salinity impacts in response to disturbance (Department of Primary Industry and Regional Development 2017). Only the Quindalup South Qf2a Phase land system has a moderate risk of developing water erosion impacts, with the other land systems at low risk of developing water erosion impacts (Department of Primary Industry and Regional Development 2017). The Spearwood S4a phase land system has a moderate to high risk of developing subsurface acidification, with the other land systems at negligible risk of developing subsurface acidification in response to disturbance (Department of Primary Industry and Regional Development 2017).

The Spearwood S4a phase land system has a moderate risk and the Pinjarra P6c phase land system has a high risk of developing subsurface compaction, with the other land systems at negligible risk of experiencing this form of land degradation in response to disturbance (Department of Primary Industry and Regional Development 2017). The Pinjarra P4 Phase land system is at high risk of developing water logging, with the other landsystems at negligible risk of developing water logging in response to disturbance (Department of Primary Industry and Regional Development 2017). All the Quindalup South Phase and the Spearwood S4a Phase land systems have a moderate to high risk of developing water repellence, with the other landsystems at negligible risk of experiencing this form of land degradation in response to disturbance (Department of Primary Industry and Regional Development 2017). All the land systems have a negligible risk of experiencing flooding in response to disturbance (Department of Primary Industry and Regional Development 2017).

The inspection of the application area undertaken by Officers from DWER (2019) did not identify any land degradation impacts within the application area or its surrounds, despite the extensively cleared nature of the surrounding landscape due to historical urban and agriculture developments. When the above is considered alongside the knowledge the proposed clearing is comprised of six separate clearing areas with a relatively small cumulative area of 3.6012 hectares, the proposed clearing is not anticipated to result in any land degradation impacts.

Given the above, 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

A review of available databases determined the local area contains a number of conservation reserves, with the Class A Shoalwater Islands Marine Park situated approximately 100 metres west of the application area, the closest conservation reserve to the application area. Given the separation distances between the application area and conservation reserves, no impacts to any conservation reserve are anticipated to result from the proposed clearing. A review of aerial photography of the local area determined the application area does not form part of an ecological linkage linking conservation reserves to each other, or other areas of native vegetation. Therefore, the proposed clearing is not anticipated to adversely impact species diversity and recruitment within any conservation areas.

A review of available databases determined Area 2 intercepts Bush Forever Site 358. This Bush Forever Site has an area of approximately 78 hectares, of which approximately 0.0275 hectares will be disturbed by the proposed clearing. The review of available databases also determined that Area 4 intercepts Bush Forever Site 377 which has an area of approximately 778 hectares, of which approximately 0.09 hectares will be disturbed by the proposed clearing. Advice received from the Department of Planning, Lands and Heritage (DPLH) Landuse Planning Policy division noted the potential impacts on the Bush Forever sites within in the application area and recommended the design and implementation of the fire breaks should clear the minimum amount of native vegetation required and the application be referred to Department of Energy and Environment (DPLH 2019a). However, when the small area of disturbance within each of the above Bush Forever Site's is considered alongside the Degraded to Completely Degraded condition of the vegetation found in the application area, the proposed clearing is not likely to adversely impact the ecological values of either of the above Bush Forever Sites.

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

As discussed under principle (f), the application area does not intercept any watercourses. While the application area does intercept a number of known wetlands, the inspection of the application area did not identify any natural surface water bodies within the application area or its immediate surrounds. Area 2 contains a man-made drainage channel and Area 6 is situated directly east to a historical drainage channel which runs parallel to Powell Road. These drainage channels serve no ecological function and act only to carry surface water away from the adjacent properties. When the above is considered alongside the knowledge the proposed clearing comprises six separate areas with a cumulative area of 3.6012 hectares and the extensive historical disturbance the application area's surrounds, the proposed clearing activities are not anticipated to result in adverse impacts to surface water quality.

Area 2 is situated approximately 130 metres south of Lake Richmond. This waterbody is recognised for its environmental values, including recorded occurrences of the 'Sedgelands in Holocene dune swales of the southern Swan Coastal Plain' and the 'Stromatolite like microbialite community of coastal freshwater lakes' TEC's, both of which are listed as 'Critically Endangered' by the Western Australian Minister for Environment and 'Endangered' under the EPBC Act. This area is also recognised as a site of Aboriginal Heritage Significance due to its use as a fishing ground. When the distance between the application area and Lake Richmond is considered alongside the small extent of Area 2 (0.357 hectares) and the knowledge that the ground between Area 2 and Lake Richmond is extensively vegetated, no impacts to the quality of surface water within Lake Richmond are anticipated to result from the proposed clearing.

A review of available databases determined the groundwater resources underlying the application area have a total dissolved solids content of between 500 and 3,000 milligrams per litre. Given the aforementioned extensive historical urban and agricultural development the application area and its surrounds have experienced, the proposed clearing is not anticipated to adversely impact the quality of local groundwater resources.

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

A review of available databases determined the application area is situated within the South West Catchment, which has an area of approximately 345,581 square kilometres. As discussed under principle (g), the land systems which the application area is situated within have a negligible risk of developing altered flooding regimes in response to disturbance. In addition, as discussed under principle (f), no watercourses or surface water expressions associated with wetland environments are present within the application area or its immediate surrounds. Given the above, no adverse impacts to the flooding regime of the local area are anticipated to result from the proposed clearing.

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

Planning instruments and other relevant matters.

A review of available databases determined that Area 1 is situated within an Aboriginal Site of Significance recognised for its mythological value. Area 2 is situated adjacent to the Lake Richmond Aboriginal Site of Significance, which is recognised for its value as a fishing ground. The review of available databases also determined that Area 6 is situated within the Serpentine River Aboriginal Site of Significance which is recognised for its ceremonial and mythological values. The applicant is advised to liaise with the DPLH to ensure the proposed clearing is undertaken in accordance with all relevant requirements under the *Aboriginal Heritage Act 1972*.

On 17 September 2019, the South West Aboriginal Land and Sea Council provided comment that the GKB Working Group had considered the application and was of the view that a Heritage Survey is required before these works are undertaken (South West Aboriginal Land & Sea Council, 2019). The applicant should consult with the South West Aboriginal Land and Sea Council to discuss the heritage survey requirements.

The clearing permit application was advertised on the DWER website on 28 May 2019 with a 21 day submission period. No public submissions have been received in relation to this application.

On 12 September 2019, the DPLH advised that the application area is situated within or adjacent to Bush Forever Areas 377, 355 and 358 and may impact on threatened and or priority ecological communities. The DPLH (2019a) advised that *State Planning Policy 2.8 – Bushland Policy for the Perth Metropolitan Region* (SPP 2.8), section 5.1.2.1 outlines specific policy measures for Bush Forever Reserves. These include a general presumption against the clearing of regionally significant bushland, except where a proposal *is consistent with the overall purpose…. or can be reasonably justified with regard to wider environmental, social, economic or recreation needs,… and reasonable offset strategies are secured to offset any loss of regionally significant bushland, where appropriate and practical* (DPLH 2019a).

As discussed under principle's (a) and (d) earlier in this report, the vegetation within the application area is not representative of any TEC or PEC and the proposed clearing is not likely to impact on any TEC or PEC.

The DPLH (2019a) recommended the following conditions form part of any clearing permit approval:

- That an offset package be prepared and approved by DWER prior to the clearing of any native vegetation, in accordance with the *Western Australian Environmental Offsets Policy* (2011) and Appendix 4 of *State Planning Policy 2.8*. The DPLH recommended that the offset measures are provided onsite at Bush Forever Site's 358 and 377; and
- There should be no disturbance to Bush Forever vegetation other than the proposed clearing; and
- Informal access to Bush Forever should be discouraged through signage and fencing, if appropriate.

The Delegated Officer determined that due to the small extent of the Bush Forever Site's proposed to be cleared (less than 0.5 percent in each instance) and the Degraded to Completely Degraded condition of the vegetation within the application area, the proposed clearing is not likely to have a significant residual impact upon these Bush Forever Site's and an offset is not required.

The DPLH (2019b) noted that the City of Rockingham will still need to comply with the requirements of clauses 6(2) and 6(3) of the *Planning and Development Act 2005*. These clauses require the City of Rockingham:

- have regard for the purpose and intent of the Metropolitan Region Scheme;
- have regard for the principles of orderly and proper planning and the preservation of the amenity of the locality; and
- consult the Western Australian Planning Commission to ensure that the proposed public works will comply with section 6(2) of the *Planning and Development Act 2005.*

In correspondence received from the City of Rockingham's Senior Bushfire Risk Officer following the inspection of the application area, further information was provided specifically in relation to the fire risk presented by the vegetation currently found in Area's 5 and 6 (City of Rockingham 2019). In regards to Area 5, Figure 7 was extracted from the Western Australian State Government Bushfire Risk Management System (BRMS) (City of Rockingham 2019). Within Figure 7 the bright red boundaries represent residential properties located in the middle of the Stakehill Swamp area (City of Rockingham 2019). The residents in this area access their properties on Jarvis Road via the southern entry at Stakehill Road (City of Rockingham 2019). This road is bitumen sealed up to the end of 90 Jarvis Road, the road is then gated off, with undeveloped vegetation between this area and Sixty Eight Road (City of Rockingham 2019). The properties within Stakehill Swamp are assessed in the BRMS as having an 'Extreme risk' of fire impacts (City of Rockingham 2019). This is further complicated as the residents only have point of egress at the southern end of Jarvis Road, and therefore any fire which originated to the south of this location would trap the residents within the swamp area (City of Rockingham 2019).

The City of Rockingham (2019) proposes to address this risk by installing a firebreak and emergency fire access track from the northern entry at Sixty Eight Road through to the fence line of the Western Australian Planning Commissioned (WAPC) owned Stakehill Swamp (visible in Figure 8 as the area encapsulated inside the blue rectangle and consistent with Area 5 in this application). The City of Rockingham (2019) is also working with the WAPC to upgrade the already installed firebreaks in between Area 5 and the end of the bitumen at Jarvis Road (visible within Figure 8 as the area highlighted by the green rectangle). The installation of an emergency fire access and egress track from the northern end of Jarvis Road will provide a necessary escape route for the residents while also providing firefighters the capability to enter this area in the event of a fire (City of Rockingham 2019).

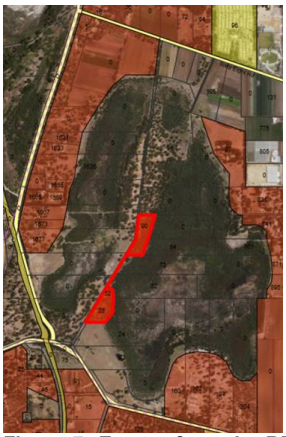


Figure 7: Extract from the BRMS depicting the risk to residents within the Stakehill swamp location.

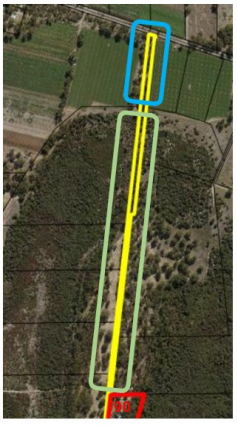


Figure 8: Extent of Area 5 (represented by the blue rectangle). The green rectangle represents the proposed upgrade to the already installed firebreaks in between Area 5 and the end of the bitumen at Jarvis Road (not part of this clearing permit

application).

In regards to Area 6, the BRMS extract shown in Figure 9 depicts in red the boundaries of residential properties located to the east of Powell Road which have been assessed as being at 'Extreme risk' of fire impacts (City of Rockingham 2019). The only access to these dwellings in some instances are bridges which cross the man-made drainage channel to the east of Powell road (City of Rockingham 2019). The residents are then required to pass through the dense vegetation lining the side of Powell road into their property (shown in Figure 10) (City of Rockingham 2019). This increases the risk of these residents becoming trapped in the event of a fire as there is only one point of ingress into and egress from their property (City of Rockingham 2019). The Senior Bushfire Risk Officer for the City of Rockingham expressed fears to the Officers from DWER during both the inspection and in follow up correspondence that if the vegetation alongside Powell Road ignited, it would quickly spread along Powell Road, trapping these residents within their property (City of Rockingham 2019, DWER 2019).

The City of Rockingham (2019) intend to reduce the excessive fuel load, which the Officers from DWER identified in this area as mostly comprising an understorey of exotic flora species (DWER 2019). The City of Rockingham (2019) also intend to prune branches on established trees to increase access into Area 6 and to completely clear all vegetation 10 metres either side of the residents bridge access, with the exception of the *Eucalyptus* sp. and *Corymbia* sp. trees conditioned on the clearing permit to remain in situ. This clearing will also have the benefit of enhancing access for future maintenance campaigns managing fuel loads in Area 6 (City of Rockingham 2019).

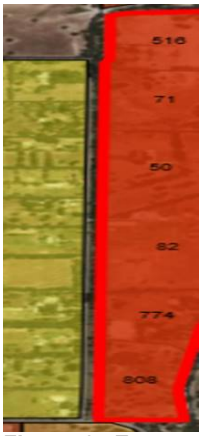


Figure 9: Extract from the BRMS depicting the risk to residents east of Powell Road.

Figure 10: Aerial photo depicting a residential driveway bridge passing through dense vegetation to the east of Powell Road.

The application area is located within the Rockingham and Stakehill Ground Water Area's and the Serpentine River System Surface Water Area, as proclaimed under the *Rights in Water and Irrigation Act 1914*. Any groundwater abstraction in this proclaimed area is subject to licensing by the Department, other than the supply from the shallow water table (superficial aquifer) for domestic and non-intensive stock watering purposes. Any taking or diversion of surface water in this proclaimed area (whether by direct pumping, construction of a dam, or excavation) can be subject to licensing. Any interference with watercourses (such as the construction of a dam or crossing, or excavation of the watercourse) may also require a permit to interfere with the watercourses bed or banks from the Department. The availability of water resources can be viewed at the Department's public water register at https://maps.water.wa.gov.au/#/webmap/register. The applicant is advised to contact the Department's Mandurah office to determine any licensing and permit requirements relevant to the proposed clearing.

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Threatened Species Scientific Committee (2019) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (s266B) Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain ecological community. Approved Conservation Advice for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/153-conservation-advice.pdf

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

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;
- SAC bio datasets;
- Swan Coastal Plain – Vegetation Complex Mapping;
- TPFL July 2019;
- WA Herb Data July 2019; and
- WA TEC PEC Boundaries.