GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS
Area Permit Number: 8849/1
File Number: DWERVT5585
Duration of Permit: From 13 June 2020 to 13 June 2022

PERMIT HOLDER
Department of Education

LAND ON WHICH CLEARING IS TO BE DONE
Lot 608 on Plan 406083, Alkimos

AUTHORISED ACTIVITY
The Permit Holder shall not clear more than 1.72 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8849/1.

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 *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 areas to be cleared.

3. **Wind Erosion Management**
   The Permit Holder must commence construction of the Shorehaven Primary School no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

4. **Records must 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 extent of clearing in accordance with condition 1 of this Permit; and

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

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

22 May 2020

Plan 8849/1

Legend

- CPS areas approved to clear
- Local Government Authorities
- Cadastre - LGATE 218
- Localities - Landgate

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Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

Permit application details

Permit application No.: 8849/1
Permit type: Area Permit

Applicant details

Applicant's name: Department of Education
Application received date: 3 March 2020

Property details

Property: Lot 608 on Plan 406083
Local Government Authority: City of Wanneroo
Localities: Alkimos

Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.72		Mechanical Removal	Construction of Shorehaven Primary School

Decision on application

Decision on Permit Application: Grant
Decision Date: 22 May 2020
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 not likely to be at variance with any of the clearing principles.

The vegetation within the application area is representative of FCT 24, listed as a Priority 3 Ecological Community (PEC) at the state level. However, this PEC is well represented in the local area, including within Conservation Reserves, Bush Forever sites and DBCA managed tenure.

The vegetation in the application area contains flora species known to support Carnaby's black cockatoo foraging. However, the foraging habitat is classed as low quality based on an indicative rating using the Department of the Environment and Energy (DotEE) scoring tool. The bushland immediately adjacent to the south of the application area offers abundant foraging habitat that is available to Carnaby's black cockatoo populations. Residual impacts to black cockatoo foraging habitat attributed to clearing for the original subdivision, which included the vegetation proposed to be cleared under CPS 8849/1, was offset under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval for the referral EPBC 2008/4638. Further discussion on this aspect is covered under section 4.

The sandy nature of the soils within the application area indicate a moderate to high risk of wind erosion at the site. Therefore, DWER has imposed a staged clearing condition to ensure construction commences within three months of the clearing. This condition will mitigate the potential for wind erosion and associated onsite land degradation impacts.

The Delegated Officer decided to grant a clearing permit subject to avoid/minimise, weed and dieback and staged clearing management conditions.

In determining to grant a clearing permit subject to management conditions, the Delegated Officer has given consideration to the above and found that the proposed clearing will not lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description

The application is to clear 1.72 hectares of native vegetation within a 3.5 hectare footprint within Lot 608 on Plan 406083, Alkimos for the purpose of construcing the Shorehaven Primary School. The project area covers 3.5 hectares, consisting of 1.72 hectares of native vegetation, with the remaininder of the project area being cleared and comprising of introduced species, spoil piles of excess construction and landscaping material and internal access tracks.

Vegetation Description

A review of the available data indicated the vegetation is mapped as the following Swan Coastal Plain vegetation complex:

52 - Cottesloe Complex – Central and South: Mosaic of woodland of *Eucalyptus gomphocephala* (Tuart) and open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri); closed heath on the Limestone outcrops (Heddle, 1980).

Beard (Shepherd et al, 2001) also mapped the state of Western Australia at a scale of 1 : 1,000,000 and 1 : 250,000. The mapped vegetation in the application area includes:

949 – Guilderton: Low woodland; banksia.

A flora survey was conducted on 14 and 15 May 2020 by PGV Environmental. The survey included a walk over all of the clearing footprint to record all species in the area. In addition, the species composition, height and cover abundance were recorded in six 10m x 10m quadrats. The vegetation in the application area was mapped during the survey which indicated six vegetation units (PGV Environmental, 2020), described as:

Vegetation Type	Description
Bs: *Banksia sessilis* Open Heath over *Calothamnus quadrifidus/Melaleuca systena/Lomandra maritima.* Open Low Heath	This vegetation type occurred at the northern lower slopes of the site. Parrot Bush was absent, reflecting the absence of limestone near the surface. The shrub vegetation was dense, at nearly 100% which reflected in the overall low species richness. The dominant shrubs were *Xanthorrhoea preissii* to nearly 2m but very sparse over a dense cover of *Calothamnus quadrifidus, Hibbertia hypericoides, Jacksonia calcicola, Melaleuca systena* and *Mesomelaena pseudostygia* to 1m. The soils were orange-brown sand.
BsXpAh: *Banksia sessilis/Xanthorrhoea preissii/Allocasuarina humilis* Shrubland over *Calothamnus quadrifidus/Hibbertia hypericoides/Melaleuca systena/Lomandra maritima.* Closed Low Heath	This vegetation type occurred further down the slope in the centre of the site where the limestone was not outcropping but was close to the surface. *Banksia sessilis* was still present but at lower density than the Bs vegetation type and with other co-dominant tall shrubs including *Xanthorrhoea preissii* and *Allocasuarina humilis.* Common smaller shrubs included *Calothamnus quadrifidus, Hibbertia hypericoides, Melaleuca systena, Mesomelaena pseudostygia, Conospermum triplinervium* and *Lomandra maritima. Acanthocarpus preissii* and *Desmocladus flexuosus* were common sub-shrubs. The soils were orange-brown sand with no surface limestone.
XpCqHh: *Xanthorrhoea preissii* Open Shrubland over *Calothamnus quadrifidus/Hibbertia hypericoides/Jacksonia calcicola.* Closed Low Heath	This vegetation type occurred at the northern lower slopes of the site. Parrot Bush was absent, reflecting the absence of limestone near the surface. The shrub vegetation was dense, at nearly 100% which reflected in the overall low species richness. The dominant shrubs were *Xanthorrhoea preissii* to nearly 2m but very sparse over a dense cover of *Calothamnus quadrifidus, Hibbertia hypericoides, Jacksonia calcicola, Melaleuca systena* and *Mesomelaena pseudostygia* to 1m. The soils were orange-brown sand.
BsBm: *Banksia attenuata/B. menziesii* Low Open Woodland over *Allocasuarina humilis/Jacksonia calcicola/Hibbertia hypericoides* Closed. Low Heath	A small stand of young Banksia woodland occurred in the northwestern part of the site. The *Banksia attenuata* and *B.menziesii* trees, totally about 12 trees, were only around 2m high which possibly reflects the clearing of trees from the area in the past, although Banksia trees are generally smaller than typical close to the coast. The understorey was mostly less than 1m high and around 70% cover with areas of bare sand that are likely to contain several annual species if sampled in spring. Common shrub species included *Allocasuarina humilis, Jacksonia calcicola, Hibbertia hypericoides, Hake lissocarpha, Petrophile brevifolia, Corynotheca micrantha.* The soils were orange-brown sand. *Banksia sessilis* is usually indicative of shallow limestone however none was observed at the surface.
As: *Acacia saligna* Tall Shrubland	Some previously cleared parts around the perimeter of the site have regenerated with the native opportunist shrub species *Acacia saligna* and a few other native species such as *Olearia axillaris* and *Jacksonia sternbergiana*. These areas are mapped as a vegetation type on Figure 3 but mostly consist of bare sand and weeds. Common weeds include *Ehrharta longiflora, Carpobrotus edulis, Briza maxima* and *Oenothera* spp.
Ap: *Acacia pulchella* Open Low Heath	A part of the eastern end of the site has regenerated with dense *Acacia pulchella* and some other native species including *Olearia axillaris* and *Acacia saligna*. Very few other native species occur in this area. Common weeds include Veldtgrass (*Ehrharta longiflora*) and Blowfly Grass (*Briza maxima*).

Table 1. Vegetation units recorded as per the targeted survey by PGV Environmental (2020)

The flora surveys of the application determined the vegetation in the application area, described in the table above, as not being representative of the historically mapped vegetation complexes (ENV, 2008; PGV Environmental, 2020).

Vegetation Condition

The vegetation in the application area was recorded as ranging from cleared or completely degraded to excellent (Keighery, 1994) condition (PGV Environmental, 2020).

The undisturbed areas of native vegetation on the site were rated as being in Excellent condition despite the perimeter of the site and the internal tracks being cleared. While additional weed species are likely to be recorded in these areas in spring, they are not likely to affect the Excellent condition rating.

The rest of the site has been disturbed and is either fully cleared of all native vegetation, or is rated as being Completely Degraded due to the regeneration of only a few native opportunist species (PGV Environmental, 2020).

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; or

Excellent: Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks (EPA, 2016; Keighery *et al.,* 1994).

Soil and Landform Type:

The cleared area is mapped within the Spearwood System and mapped as the following soil types (Schoknecht et al., 2004):

- **Karrakatta Sand Yellow Phase -** Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. *Banksia spp*. woodland with scattered emergent *E. gomphocephala* and *E. marginata* and a dense shrub layer.
- **Karrakatta Shallow Soils Phase -** Low hills and ridges. Bare limestone or shallow siliceous or calcareous sand over limestone. Dense low shrub dominated by *Dryandra sessilis*, *Melaleuca huegellii* and species of *Grevillea*. (DPIRD, 2017).

Comments:

The local area referred to in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area.

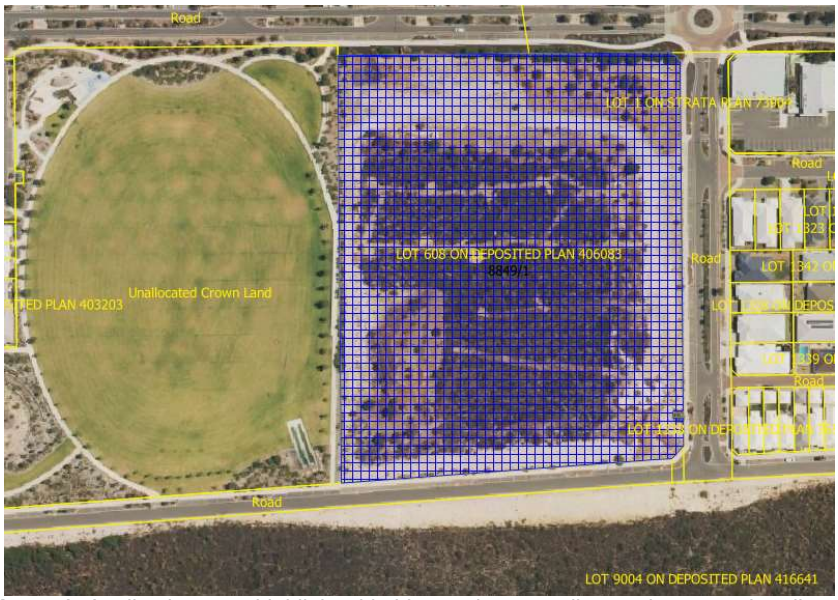

Figure 1: Application area highlighted in blue and surrounding environmental attributes

Plate 1. View of the project area from the top of the spoil pile

Plate 2. Boundary of existing vegetation clearing

Plate 3. Boundary of existing vegetation clearing

Plate 4. Boundary of existing vegetation clearing

Plate 5. Spoil pile

Plate 6. Spoil pile

Plate 7. Internal vegetation clearing for tracks

Plate 8. Internal vegetation clearing for tracks

Plate 9. Internal vegetation clearing for tracks

Plate 10. Relatively undisturbed vegetation

Photo 1. Vegetation unit Bs (PGV Environmental, 2020).

Photo 2. Vegetation unit BsXpAh (PGV Environmental, 2020)

Photo 3. Vegetation unit XpCqHh (PGV Environmental, 2020)

Photo 4. Vegetation unit BsBm (PGV Environmental, 2020)

Photo 5. Vegetation unit As (PGV Environmental, 2020)

Photo 6. Vegetation unit Ap (PGV Environmental, 2020)

3. Avoidance and minimisation measures

The applicant indicated that extensive site master planning and civil engineering review had been undertaken, however, due to the slope of the land and the ground conditions, including substantial quantities of limestone and calcerous rock, the site requires full clearing. This indicates no vegetation will be left on the site post-clearing.

For Lot 608 on Plan 406083, the Commonwealth Department of the Environment, Water, Heritage and the Arts assessed a 243 hectare area (known in 2008 as Lots 1005 & 1006, Alkimos) that included the vegetaion proposed to be cleared under CPS 8849/1, and determined the proposed action would cause residual impact to Black Cockatoo foraging habitat. An approval was granted in 2009, thereby imposing conditions requiring the development and implementation of an environmental offset. As such, the significant impacts to the Carnaby's Black cockatoo considered under the *EPBC Act* in 2008 have been addressed through the EPBC Approval (EPBC 2008/4638). DWER has received information as part of this assessment which provides demonstration that the offset conditions under this approval (including monetary contribution for offset land aquisition and rehabilitation), have been satisfied.

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 not likely to be at variance with this principle

The application area covers 3.5 hectares, with the area applied to clear covering 1.72 hectares of native vegetation ranging from completely degraded to excellent (Keighery, 1994) condition. The applied area is located in the Swan Coastal Plain IBRA bioregion and the Swan Coastal Plain – Perth (SWA02) sub-region, forming part of the South West Botanical Province, which has a very high degree of botanical species diversity (Mitchell, Williams & Desmond, 2002).

A review of the available databases indicates that twenty three conservation significant flora species, as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the state *Biodiversity Conservation Act 2016,* have been recorded within the local area (10 km radius from the perimeter of the application area). Of these, two species are listed as Priority 1, five Priority 2, nine Priority 3, four Priority 4 and three Threatened species. The Delegated Officer determined that thirteen of these species had the potential to be within the application area given the mapped soil types, vegetation condition and location of the application area. These thirteen species included:

- ***Acacia benthamii* (P2) –** Restricted to the SCP, from Wanneroo to Rockingham. Common in the bushland of Kings Park which is probably the Type location (Barrett & Tay, 2016). Grows typically on limestone breakaways;

- ***Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)* (P1) –** Generally recorded growing in yellow/grey sand in association with limestone on slopes and ridges. Scattered recordings on the Swan Coastal Plain on the same soil type. Recorded at the junction of the two mapped soil types from application area. A large population (>500) of *Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)* (P1) was recorded by Mattiske (2014) in the Yanchep ridges, located on and around a limestone ridge with brown/orange sand over limestone., approximately 5-7 km away;
- ***Conostylis bracteata* (P3) –** scattered across SCP, most recorded in coastal dune systems, however some more inland. Sand, limestone. Consolidated sand dunes (Western Australian Herbarium, 1998-);
- ***Conostylis pauciflora subsp. Euryrhipis* (P4) –** White, grey or yellow sand. Consolidated dunes (Western Australian Herbarium, 1998-);
- ***Conostylis pauciflora subsp. Pauciflora* (P4) –** Only 2 recordings on SCP. Majority of recordings south of Mandurah Grey sand, limestone. Hillslopes, consolidated dunes (Western Australian Herbarium, 1998-);
- ***Eucalyptus argutifolia* (T) –** found between Wanneroo and Guilderton. Grows in shallow sand on limestone ridges and slopes where it emerges from heath and thicket of parrot bush (*Banksia sessilis*) and chenille honey myrtle (*Melaleuca huegelii*) (Brown, Thomson-Dans & Marchant, 1998);
- ***Hibbertia leptotheca* (P3) –** very little information available, grows in association with limestone;
- ***Lasiopetalum membranaceum* (P3) –** Sand over limestone, often growing in association with Tuart woodland (Western Australian Herbarium, 1998-);
- ***Leucopogon maritimus* (P1) –** Restricted to near-coastal Quindalup dunes. Sandy coastal dunes, sand over limestone (Western Australian Herbarium, 1998-). Found in deep, calcareous sands, on the mid to upper slopes of dunes or in shallow sand over limestone, but avoiding the thicker vegetation of the swales. It grows in low heathland communities often dominated by *Melaleuca systena*, *Acanthocarpus preissii, Acacia lasiocarpa* and *Olearia axillaris,* sometimes in close proximity to the common coastal epacrids *Leucopogon parviflorus* and *L. insularis*;
- ***Leucopogon sp. Yanchep* (M. Hislop 1986) (P3) –** Light grey-yellow sand, brown loam, limestone, laterite, granite. Coastal plain, breakaways, valley slopes, low hills (Western Australian Herbarium, 1998-);
- ***Melaleuca sp. Wanneroo (G.J. Keighery 16705)* (T) –** known to co-occur often as a dominant, in dense patches with other *Melaleuca* species, predominantly *M. systena*, when growing on very shallow soils over limestone 'caprock' on ridges (TSCC, 2019). Occurs in association with many of the species described in the vegetation communities e.g. *Banksia sessilis* var. *cygnorum*, *Calothamnus quadrifidus* and *Conostylis pauciflora* subsp. *Euryrhipis*;
- ***Pimelea calcicola* (P3) –** Swan Coastal Plain from Moore River to Yalgorup National Park south of Mandurah. Mainly near limestone heath (Barrett & Heath, 2016); and
- ***Stylidium maritimum* (P3) –** Sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open *Banksia* woodland (Western Australian Herbarium, 1998-).

Previous surveys identified three Priority species as likely to occur in the wider sub-division area, including (ENV Australia, 2008):

- *Conostylis pauciflora* subsp. ?*euryhipis/pauciflora* (P4)
- *Stylidium maritimum* (P3)
- *Hibbertia spicata* subsp. *Leptotheca* (P3)

As described in section 2, the vegetation within the application area was surveyed by PGV Environmental with six vegetation units recorded. A total of 80 flora taxa were recorded during the survey, of which 61 (76%) were native and 19 (24%) were introduced species. The plant Families with the highest representation of species were the Proteaceae (Banksia family – 12 species, all native), Fabaceae (Pea and Wattle family – 10 species all native), Asteraceae (Daisy family – 6 species, 3 native and 3 introduced) and Cyperaceae (Sedge Family – 6 species, all native) (PGV Environmental, 2020).

As discussed under principle (c), no Threatened or Priority flora taxa were recorded at the site during the survey (PGV Environmental, 2020). The survey report also indicated that none of the targeted species listed above are known as annual or ephemeral species, and therefore the survey would not need to be undertaken during the spring flowering season in order to identify these species (PGV Environmental, 2020). The Delegated Officer considers that, despite the timing of the survey, the results indicate a low likelihood that these priority species are present within the application area.

A review of the available databases indicated there are no mapped Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) within the application area, as listed under the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the state *Biodiversity Conservation Act 2016.*

The survey (PGV Environmental, 2020) identified the vegetation and species composition in the quadrats as representative of the Floristic Community Type (FCT) 24 'Northern Spearwood Shrublands and Woodlands'. FCT 24 is a Priority 3 (i) Ecological Community (PEC) at the Western Australian State level, described as 'Heaths with scattered *Eucalyptus gomphocephala* occurring on deeper soils north from Woodman Point. Most sites occur on the Cottesloe unit of the Spearwood system. The heathlands in this group typically include *Dryandra sessilis*, *Calothamnus quadrifidus*, and *Schoenus grandiflorus'* (Species and Communities Program, 2020). Priority 3 (i) Ecological Communities are defined as "those that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation" (DBCA, 2020). FCT 24 is represented in several Conservation Reserves and Bush Forever sites within 10 km of the application area including Yanchep National Park, Neerabup National Park, Ningana Bushland Yanchep/Eglinton, Link between Neerabup and Yanchep National Parks, and the Coastal Strip from Wilbinga to Mindarie. Given the relatively small scale of clearing and nearby representation in the DBCA secured tenure, the proposed clearing is unlikely to lead to a significant risk to FCT 24, or the overall status of the PEC.

The Threatened Ecological Community 26a, which has been recorded in close proximity to the site does not occur on the site due to the complete absence of the dominant species of that unit, *Melaleuca huegelii,* and other species typically found in FCT 26a (PGV Environmental, 2020).

The small area of Banksia woodland, as described in section 2, has potential to be the EPBC listed Banksia Woodlands of the Swan Coastal Plain TEC, however for an area containing *Banksia attenuata* and *B. menziesii* in Excellent condition to qualify as the Banksia Woodland TEC, it needs to be at least 0.5 ha in size (TSSC, 2016). The size of the Banksia woodland on the site is around 0.1-0.2ha which is below the minimum requirement for the Banksia Woodland TEC (PGV Environmental, 2020).

A review of available databases indicates twenty six conservation significant fauna as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and/or the state *Biodiversity Conservation Act 2016* have been recorded in the local area. Eight fauna listed in the Western Australian context as Priority or other specially protected species were also recorded in the local area. Of these, eight are listed as vulnerable, six Endangered, two critically endangered, one conservation dependent, nine under international agreement, one Priority 2, two Priority 3, five Priority 4, and two other specially protected species. Twelve species were marine or strictly coastal species and were removed from the list for the purposes of this assessment.

As discussed under Principle (b), the Delegated Officer determined that eight of the above species were considered likely to occur in the application area, or possibly occurring based on their distribution and preferred habitat. These species included:

- McMillan's biting midge (*Austroconops mcmillani*) – P2
- Carnaby's cockatoo (*Calyptorhynchus latirostris*) – EN
- Southern Brown Bandicoot/Quenda (*Isoodon fusciventer*) - P4
- Black-Striped Burrowing Snake (*Neelaps calonotos*) – P3
- Osprey (*Pandion cristatus*) – IA
- Graceful Sunmoth (*Synemon gratiosa*) – P4
- Fork-Tailed Swift (Apus pacificus) – IA
- Peregrine Falcon (*Falco peregrinus*) – OS

The vegetation survey of the application area identified *Banksia attenuata, Banksia menziesii, Banksia sessilis, Hakea lissocarpha* and *Hakea prostrata*, all known foraging species for the Carnaby's (PGV Environmental, 2020). The application area is also within a 12 km radius of ten confirmed Carnaby's Cockatoo roost sites, and within 6 km of five of these roost sites. Therefore, the application area contains foraging habitat for Carnaby's black cockatoo. The supporting document provided by Terrestrial Ecosystems (2020b) indicated that Carnaby's black cockatoo may infrequently forage on the application area, however the removal of this would not have a significant impact on the species as the application area is relatively small, provides only low quality foraging habitat and and abundance of remnant vegetation with high quality foraging habitat present in the adjacent bushland to the south of the application area. Any residual impacts to black cockatoo foraging caused by clearing for the originial subdivision in 2008 were offset under the EPBC Approval (EPBC 2008/4638).

None of the other conservation siginificant fauna species determined as being likely to occur in the application area would be significantly affected by the proposed clearing due to over half of the project area being classified as previously cleared and of a completely degraded (Keighery, 1994) condition, According to the aerial imagery, large areas of the same or similar vegetation occurring immediately adjacent to the south (< 50 metres) of the application area.

The application area is within the mapped Gnangara Mound Ecological Linkage. This linkage was proposed in 2009 and identified areas of > 60 % remaining native vegetation cover, potential linkages across the landscape with < 60 % native vegetation cover or on core landscapes that is predominantly privately owned, ecological linkages throughout the 23,000 hectares of state forest previously or currently planted to commercial pine plantation and linkage sites within reserves identified by Bush Forever or those already listed statutory planning documents (Brown *et al.*, 2009). Information on the landscape requirements of sensitive avifauna species on the Swan Coastal Plain (Davis et al. 2008) identified a threshold of 61% total vegetation cover within a 2km area for the most sensitive species. This indicates the application area is included in the summation of the remnant vegetation in the surrounding vicinity and may provide habitat for fauna species on the Swan Coastal Plain. The original surveys by ENV in 2008 identified several sensitive avi-fauna including *Falco cenchroides* (Australian Kestrel), *Chrysococcyx basalis* (Horsfield Bronze Cuckoo), *Grallina cyanoleuca* (Magpie-lark) and *Coracina novaehollandiae* (Black-faced Cuckoo-Shrike). However, all these species are listed as Marine under the EPBC Act, indicating the application area would not offer significant habitat for these species.

Summary

The application area contains suitable habitat for conservation significant flora species with historical records in the local area. No Threatened or Priority flora species were recorded in the application area during the flora survey (PGV Environmental, 2020).

The vegetation within the application area is representative of FCT 24, which is a Priority 3 Ecological Communitiy at the State level. The proposed clearing is unlikely to lead to a significant risk to FCT 24, or the overall status of the PEC given the representation in nearby (< 10 km) DBCA Tenure and Conservation Reserves. No other state or commonwealth TEC's or PEC's were mapped in the application area.

Flora species known to support Carnaby's black cockatoo foraging have been historically recorded in the vegetation units within the application area, and the application area is within 12 km of ten confirmed black cockatoo roosting sites, and within 6 km of

five of these roosting sites. However, the foraging habitat within the application area is not considered to be significant due to the scale of the vegetation, the low quality of the foraging suitability resource and the presence of high quality foraging habitat in the bushland immediately south of the application area. No other conservation significant fauna species, or related habitat will be impacted by the proposed clearing.

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

A review of available databases indicates twenty six conservation significant fauna as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and/or the state *Biodiversity Conservation Act 2016* have been recorded in the local area. Eight fauna listed in the Western Australian context as Priority of other specially protected species were also recorded in the local area. Of these, eight were listed as vulnerable, six Endangered, two critically endangered, one conservation dependent, nine under international agreement, one Priority 2, two Priority 3, five Priority 4, and two other specially protected species. Twelve species were marine or strictly coastal species and were removed from the list for the purposes of this assessment. One species recorded in the local area in the DBCA databases; *Bettongia lesueur graii* (Boodie or burrowing bettong) is extinct and was not included in the list of species.

The Delegated Officer determined that eight species were considered likely to occur in the application area, or had possibility to occur given their distribution and preferred habitat. These species included:

- **McMillan's biting midge (*Austroconops mcmillani*) – P2:** status unknown, very limited information, 9 total recordings, 7 in the local area, mostly collected from 2001/2002. Referenced in several consultant reports submitted to DWER for previous Clearing Permit Applications, however, often unassessed due to lack of information available.
- **Carnaby's cockatoo (*Calyptorhynchus latirostris*) – EN:** foraging habitat contained within the application area;
- **Southern Brown Bandicoot/Quenda (*Isoodon fusciventer*) - P4:** Quenda prefer dense scrub (up to one metre high), with swampy vegetation but are found in a variety of other habitats. They will often feed in adjacent forest and woodland that is open grassland, pasture and crop land lying close to dense cover. Possibly present in very low densities in areas that provide suitable habitat (Terrestrial Ecosystem, 2020);
- **Black-Striped Burrowing Snake (*Neelaps calonotos*) – P3:** This species occurs on dunes and sandplains vegetated with heaths and eucalypt/banksia woodlands. The sand substrate is generally very shallow over limestone outcropping, so this fossorial snake may not have a preference for the substrate in the project area (Terrestrial Ecosystems, 2020a);
- **Osprey (*Pandion cristatus*) – IA:** The Osprey is a large raptor that is mostly found in coastal areas, offshore islands and the lower sections of rivers (Terrestrial Ecosystems, 2020a). Due to the lack of trees, tall structures, rock outcrops, this species is unlikely to be present in the application area;
- **Graceful Sunmoth (*Synemon gratiosa*) – P4:** known from two general vegetation types: open areas of herbland, heathland and shrubland on secondary Quindalup dunes containing *Lomandra maritima, and* banksia woodland with *L. hermaphrodita* (TSS, 2013).
- **Fork-Tailed Swift (*Apus pacificus*) – IA:** almost exclusively aerial species, foraging and sleeping on the wing. It rarely comes to ground, usually only for breeding. It is common in the Kimberley, uncommon to moderately common near northwest, west and southeast coasts and rare to scarce elsewhere (Terrestrial Ecosystem, 2020); and
- **Peregrine Falcon (*Falco peregrinus*) – OS:** favours hilly or mountainous country and open woodlands and may be an occasional visitor to the project area. Nesting sites include ledges along cliffs, granite outcrops and quarries, hollow trees near wetlands and old nests of other large bird species (Terrestrial Ecosystem, 2020), May be on occasional visitor to the area but unlikely to use the area for habitat.

Terrestrial Ecosystems (2020) assessed the likelihood of eight conservation significant state and commonwealth fauna species as being likely to occur in the application area. This list differed from the above as it included the Grey Wagtail (*Motacilla cinerea*) and the Chuditch (*Dasyurus geoffroii*). The Chudtich or Quoll is locally extinct and would therefore not be affected by the applied clearing. The Grey Wagtail is a small, yellow breasted bird with a grey back and head whose preferred habitat consists of banks and rocks in fast-running fresh water including rivers, streams and creeks where it feeds on insects (Terrestrial Ecosystems, 2020a). It is considered highly unlikely to be in the application area due to lack of habitat and recordings in the local area.

Black Cockatoo

Carnaby's Cockatoo are listed as Endangered under the EPBC Act. Carnaby's have the same listing categories under the Western Australian BC Act. Black cockatoos' 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 (DSEWPC, 2012). Breeding habitat or a 'habitat tree' is defined in the EPBC Act referral guidelines as 'trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow' (DSEWPC, 2012). Given the lack of suitable habitat trees in the application area, which is predominantly Proteaceae species, the application area does not support black cockatoo breeding or roosting.

A review of the available data indicated the applied clearing area is within 12 kilometres of ten mapped and confirmed roost sites, six unconfirmed roosts, and one previous roost. Of those ten, the application area is within 6 km of five confirmed roosts and three unconfirmed roosts. The application area is also within a broader mapped and confirmed breeding area of the Swan Coastal Plain. The referral guidelines indicate while breeding, black cockatoos will generally forage within a 6–12 km radius of their nesting site. Following breeding, birds assemble into flocks and move through the landscape searching for food, usually foraging within 6 km of a night roost (DSEWPC, 2012). This variable range indicates large areas of foraging habitat are required to support black cockatoo populations. Cumulative impacts of the loss of banksia woodlands on the Swan Coastal Plain restrict the availability of food sources for black cockatoos.

The referral guidelines state Carnaby's Cockatoo's will feed on 'native shrubland, kwongan heathland and woodland dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., pine plantations (*Pinus* spp.), eucalypt woodland and forest that contains foraging species. Also, foraging is not limited by the presence of individual trees and small stands of these species' (DSEWPC, 2012). This indicates that even small patches and limited foraging species are significant as habitat supporting the foraging behaviour of these species.

The loss of foraging habitat within 6-12 kilometres of known breeding or roosting sites is one of the largest threats to Black Cockatoo populations on the Swan Coastal Plain (DSEWPC, 2012). The vegetation survey of the application area identified *Banksia attenuata, Banksia menziesii, Banksia sessilis, Hakea lissocarpha* and *Hakea prostrata*, all known foraging species for the Carnaby's (PGV Environmental, 2020). The application area is also contained with a mapped foraging area on the Swan Coastal Plain. Given this, the application area contains flora species suitable for Carnaby's Cockatoo. Maintaining foraging habitat is particularly important in the Perth metropolitan area, due to the role of these feeding areas in the survival of young birds and the maintenance of the population between breeding seasons, coupled with the lack of habitat remaining in this region and its connectivity values (DSEWPC, 2012).

The Gnangara Sustainability Study investigated the food resources of Carnaby's black cockatoo species within the Gnangara Sustainability Study area and found *Banksia attenuata, Banksia menziesii, Banksia sessilis, Hakea lissocarpha* and *Hakea prostrata* were foraged upon (Brown *et al*., 2008). This study also indicated that *Banksia attenuata* makes up a large majority of Carnaby's diet (Valentine & Stock, 2008) and is the principal food source Carnaby's are observed foraging upon on the Swan Coastal Plain (Shah, 2006). Using the Department of the Environment and Energy's (DotEE) 'Quality of Foraging Habitat Assessment Tool' (DotEE, 2017), the vegetation within the application area presents an indicative score between 1 - 3, described as 'Individual foraging plants or small stand of foraging plants'. A score of between 1 – 3 indicates low quality foraging habitat for Carnaby's black cockatoo.

Given the above, the application area contains vegetation known to support Carnaby's foraging on the Swan Coastal Plain. The vegetation significance as foraging habitat is somewhat constrained, as *B.attenuata*, the most critical Banksia foraging species (Shah, 2006), was not a dominant species. The application area is relatively small and has been assessed as not significant as foraging habitat, despite the potential for Carnaby's black cockatoo's to visit the area for foraging purposes. This is due to the low quality foraging habitat it provides and the presence of abundant high quality foraging habitat in the bushland immediately adjcent, to the south of the application area.

Other Conservation Significant fauna

As mentioned above, seven other conservation significant fauna species have historical records in the local area. The Southern Brown Bandicoot/Quenda (*Isoodon fusciventer*) is a Priority 4 species widely distributed near the south west coast from Guilderton north of Perth to east of Esperance. Quenda have a patchy distribution throughout the Jarrah and Karri forest, the Swan Coastal Plain, and inland as far as Hyden (DEC, 2012). Habitat preferences include scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover (DEC, 2012). On the Swan Coastal Plain, Quenda are often associated with wetlands. Given this association, the habitat in the application is unlikely to be significant for *Isoodon fusciventer* populations.

The Priority 4 species Graceful Sunmoth (*Synemon gratiosa*) is a medium-sized diurnal flying sun moth that is similar in appearance to a butterfly (WAISS, 1993). Known from two general vegetation types: open areas of herbland, heathland and shrubland on secondary Quindalup dunes containing *Lomandra maritima* and banksia woodland with *L. hermaphrodita* (TSS, 2013). The Graceful Sun Moth flies between mid-February and late March each year, with the majority of sightings in late February and early March. *Lomandra maritima* was found to be present in the vegetation in the application area as per the flora survey (PGV Environmental, 2020). DWER received advice from DBCA in relation to another clearing permit application (CPS 8788/1), which indicated the Graceful Sunmoth occurs in large areas protected for conservation (DBCA. 2020). Historical targeted surveys significantly increased the species known range to the north and south of the previously known range. It is now known to occur along the coastal strip from Kalbarri south to Binningup; an area approximately 630 km in length. Surveys also identified a second host plant and habitat type, *Lomandra hermaphrodita* in Banksia woodland. The species range now includes large areas of habitat within conservation reserves (DBCA, 2020). Therefore, the application area contains habitat for the Graceful Sunmoth, however the proposed clearing will not impact on the conservation status of this species given its wide distribution..

McMillan's Biting Midge (*Austroconops mcmillani*) is a Priority 2 species with very limited available information. Described by Wirth and Lee in 1959, indicated 9 total recordings in Western Australia, with 7 contained within the local area recorded in 2001 and 2002. Borkent and Craig (2004) subsequently indicated that these midges are likely to be found around wetland, swamps and lakes. This habitat is not present in or near the project area and therefore the McMillan's biting midge are unlikely to be impacted by the proposed vegetation clearing.

Based on supporting information provided with the application, the vegetation in the application area does not comprise any tree species known to support black cockatoo breeding or roosting. The application area is located with 12 km of ten confirmed roost sites and within 6 km of five of these roost sites. It contains flora species known to support Carnaby's foraging including *Banksia attenuata, Banksia menziesii, Banksia sessilis, Hakea lissocarpha and Hakea prostrata.* However, the foraging habitat is classed as low quality based on an indicative rating using the DotEE scoring tool. The bushland immediately adjacent to the south of the application area offers abundant foraging habitat that is available to Carnaby's black cockatoo populations. Residual impacts to black cockatoo foraging habitat caused by clearing for the original subdivision has been offset under the EPBC approval for the referral EPBC 2008/4638 (refer to section 4).

Therefore, the proposed clearing is not likely to be at variance with 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 with this principle

A review of available databases identified records of two threatened flora species, as listed under the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the state *Biodiversity Conservation Act 2016*, within the local area. These species are:

- ***Eucalyptus argutifolia* (T) –** found between Wanneroo and Guilderton. Grows in shallow sand on limestone ridges and slopes where it emerges from heath and thicket of parrot bush (*Banksia sessilis*) and chenille honey myrtle (Melaleuca huegelii) (Brown, Thomson-Dans & Marchant, 1998); and
- ***Melaleuca sp. Wanneroo* (G.J. Keighery 16705) (T) –** known to co-occur often as a dominant, in dense patches with other Melaleuca species, predominantly *M. systena*, when growing on very shallow soils over limestone 'caprock' on ridges (TSCC, 2019). Occurs in association with many of the species described in the vegetation communities e.g. *Banksia sessilis var. cygnorum, Calothamnus quadrifidus* and *Conostylis pauciflora* subsp. *Euryrhipis*.

Both of these are tree species with habitat preferences matching those found within the application area. A Detailed Flora and Vegetation Survey of the site was undertaken in accordance with EPA Technical Guidance *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) by PVG Environmental on 14 and 15 May 2020. The survey included a thorough walk over the site to record all species in the survey area. In addition, the species composition, height and cover abundance were recorded in six 10m x 10m non-permanent quadrats (PGV Environmental, 2020).

No Threatened flora taxa were recorded at the site during the survey (PGV Environmental, 2020). The survey report also indicated that none of the targeted species listed above are known as annual or ephemeral species, and therefore the survey would not need to be undertaken during the spring flowering season in order to identify these species (PGV Environmental, 2020). The Delegated Officer considers that, despite the timing of the survey, the results indicate a low likelihood that these threatened flora species are present within the application area.

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

A review of the available databases did not indicate any mapped or known occurrences of any Threatened Ecological Communities (TEC's), listed under the BC Act, within the application area. The nearest TEC, mapped as *Melaleuca huegelii - Melaleuca systena shrublands on limestone ridges (FCT 26a)* is located 3.2 km to the south east of the application area.

The ENV Australia (2008) survey indicated that the Floristic Community Type (FCT) 26a (*Melaleuca huegelii – Melaleuca systena* shrublands on limestone ridges) was a state listed TEC in the Shorehaven Estate, and inferred there were two vegetation communities, DsM6 – 16 and StDsAt – 27, in the estate that fitted the FCT 26a description. The TEC is described as:

- species-rich thickets, heaths and scrubs dominated by *Melaleuca huegelii* (chenille honeymyrtle), *Melaleuca systena* (coastal honeymyrtle) and *Banksia sessilis* (parrot bush) commonly over *Grevillea preissii* (spider net grevillea) and *Acacia lasiocarpa* (pajang). A suite of herbs commonly occurs under the shrub layer (DBCA, 2005)

According to the flora survey (PGV Environmental, 2020), the Threatened Ecological Community FCT 26a, recorded in close proximity to the site, is not represented in the application area due to the complete absence of the dominant species of that unit, *Melaleuca huegelii,* and other species typically found in FCT 26a.

Given the above, the proposed clearing is not likely to be at variance with 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 with 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 contained within the Swan Coastal Plain IBRA bioregion, and subsequent Swan Coastal Plain – Perth (SWA02) sub-region, forming part of the South West Botanical Province, which has a very high degree of botanical species diversity (Mitchell, Williams & Desmond, 2002). A review of the available databases indicates the vegetation in the application area is mapped as the following vegetation associations:

52 - Cottesloe Complex – Central and South: Mosaic of woodland of *Eucalyptus gomphocephala* (Tuart) and open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri); closed heath on the Limestone outcrops (Heddle, 1980).

Beard (Shepherd et al, 2001) also mapped the state of Western Australia at a scale of 1:1,000,000 and 1:250,000. The vegetation in the application area is mapped as **949 – Guilderton:** Low woodland; banksia.

The surveyed on ground vegetation is not representative of the histrorically mapped vegetation complexes, and therefore the clearing would not impact on these vegetation complexes (ENV, 2008; PGV Environmental, 2020).

In assessing the risk of further loss and subsequent effects, consideration has been given to the extent of native vegetation remaining and the following points:

- the local area in the application was defined as a 10 km radius from the application area, which retains 50.2% of its pre-European vegetation extent, which will be reduced by 0.035% by the proposed clearing;
- the City of Wanneroo retains approximately 44.66% of its pre-European vegetation extent, 23.75% of which is under the management of DBCA;
- BVA 949 retains 57.28% of its pre-European vegetation extent of which approximately 32.31% is currently managed by DBCA;
- vegetation association 52 retains approximately 32.16% of its pre-European vegetation extent, of which 14.58% is currently managed by DBCA;

The local area, the City of Wanneroo and the mapped vegetation types all retain greater than 30% of their pre-European vegetation extent. on which basis the vegetation under application isnot considered to be within an extensively cleared landscape, or significant as a remnant of native vegetation.

Table 2: Vegetation representation statistics (Government of Western Australia, 2018)

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	38.45	14.85
SCP02 - Perth	1,117,757.03	466,142.73	41.70	39.29	16.39
Local Government Area					
City of Wanneroo	67,516.72	30,151.13	44.66	53.19	23.75
Beard vegetation association (BVA)					
949	209,983.26	120,287.93	57.28	56.40	32.31
Heddle vegetation association					
52	45,299.61	14,567.87	32.16	6,606.12	14.58
Local area					
10 km	19,735.57	9903.69	50.2	-	-

(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 with this principle

A review of the available databases indicates there are no mapped or known watercourses or wetlands in the application area. The nearest wetland is located approximately 1.8 km to the north east of the application area, mapped as Beonaddy Swamp, a resource enhancement wetland. Given the distance to this geomorphic wetland, the applied clearing is unlikely to impact on any known or mapped watercourse or wetland.

The vegetation in the application area was surveyed by PGV Environmental (2020) and the vegetation is described in section 2. A total of 80 flora taxa were recorded within the application area, none of which are known to be associated with wetlands or watercourses.

Given the above, the proposed clearing is not likely to be at variance with 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 with this principle
The cleared area is mapped within the Spearwood System and mapped as the following soil types (Schoknecht et al., 2004):

- **Karrakatta Sand Yellow Phase** - Low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. Banksia spp. woodland with scattered emergent E. gomphocephala and E. marginata and a dense shrub layer.
- **Karrakatta Shallow Soils Phase** - Low hills and ridges. Bare limestone or shallow siliceous or calcareous sand over limestone. Dense low shrub dominated by *Dryandra sessilis*, *Melaleuca huegellii* and species of *Grevillea*.

The Karrakatta Shallow soils phase covers approximately 91 % of the application area and the Karrakatta Sand Yellow Phase covers 9 %. The land degradation risks for the above soil types are listed below.

The land degradation risk categories that apply to **Karrakatta Sand Yellow Phase** are (Schoknecht et al., 2004; DAFWA,2017):
- Water Erosion: >90 % of the map unit has a nil to moderate water erosion risk.
- Wind Erosion: >70 % of the map unit has a high wind erosion risk
- Salinity: 100 % of the map unit has a nil or partial salinity risk
- Subsurface Acidification: <70% of map unit has a high subsurface acidification risk
- Flood risk: 100% of the map unit has a low flood risk
- Water logging: 100% of map unit has a low to nil waterlogging risk

The land degradation risk categories that apply to **Karrakatta Shallow Soils Phase** are (Schoknecht et al., 2004; DAFWA,2017):
- Water Erosion: >90% of map unit has a high to extreme water erosion risk.
- Wind Erosion: 55% of map unit has a high wind erosion risk
- Salinity: 100% of map unit has a nil to moderate salinity risk or is presently saline
- Subsurface Acidification: 70% of map unit has a low subsurface acidification risk
- Flood risk: 100% of the map unit has a low to high flood risk
- Water logging: 100% of map unit has a low waterlogging risk

Given the site will be developed into a school, the long term risk of wind and water erosion will be limited by the majority of the site being comprised of built structures and landscaping. As the construction of these structures will take some time, a condition has been imposed on the permit which prescribes that a staged clearing approach be applied to mitigate the risks of erosion. Based on the above, the proposed clearing is unlikely to lead to appreciable land degradation and is not likely to be at variance with 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 not likely be at variance with this principle
According to the available databases, the nearest conservation area to the application area is Yanchep National Park, located 1.6 km from the application area. There is also a Bush Forever site (ID 397) located 350 metres to the south west of the application area, covering a large portion of the coastline in the immediate area. The buffer of remnant native vegetation will act to limit the spread of invasive and non-native flora species that may spread from the application area post-clearing.

Given the proximity to the these areas, the proposed clearing is unlikely to impact on the environmental values of any nearby conservation areas, and is therefore not likely to be at variance with 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 with this principle
The groundwater in the application area is mapped at 500-1000 mg/L Total Dissolved Solids, which according to DWER is classified as marginally saline (Mayer, Ruprecht, & Barry, 2005). The proposed clearing will remove the vegetation in the application area which could have the effect of increasing the secondary salinity of the soil in the application area, however, any variation is unlikely to be significant.

Based on the above, the proposed clearing is not likely to be at variance with 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 with this principle
As discussed under Principe (f) and (g), the application area does not contain any wetlands or watercourses, or present a high risk of water logging. The application area also contains soils which are primarily sandy and would be expected to have strong infiltration capacity in the event of large rainfall events.

The final land use indicates construction of the Shorehaven School and according to the available databases, the area receives an average of 800mm of rainfall annually. As the site does not contain any watercourses or wetlands, the application area is unlikely to increase the intensity or probability of flood events. Given the above, the proposed clearing is not likely to be at variance with this principle.

Planning instruments and other relevant matters.

DWER received comments from the City of Wanneroo on 13 May 2020 in relation to the clearing proposed under this permit application (CPS 8849/1). The City indicated the Cottesloe South Central Vegetation complex, which retains close to 17.5 % of its pre-European extent, is currently protected within the City of Wanneroo. As such this complex is rated as medium priority for further pretection according to the City's Local Biodiversity Plan 2018/19 – 2023/24.

The City had recently provided comments on a Development Application for bulk earthworks (DA2020/477) for the Departent of Finance, Strategic Projects for the prupose of major civil earthworks in preparation for a new primary school in the same area covered by proposed clearing footprint under CPS 8849/1.

The City of Wanneroo indicated that it does not object to the removal of 1.72 hectares of native vegetation for the purpose of the bulk earthworks. The City understands that a supplementary Development Application for the Shorehaven Primary School is to be submitted to the City prior to the end May 2020.

The Shorehaven Estate (Lots 1005 and 1006) is zoned as Urban under the Metropolitan Planning Scheme. The rezoning from Rural to Urban, occurred after the Environmental Protection Authority (EPA) and the City of Wanneroo considered amendment 1029/33.

The EPA set out the following seven requirements for the environmental management plan (EMP) for the Shorehaven Estate:

1. A description of existing environmental values, and the identification of the environmental outcome to be achieved through the implementation of the EMP;
2. Clear delineation of boundaries or significant areas to be protected;
3. Management of construction, access and rehabilitation;
4. Vegetation mitigation strategies;
5. Allocation of responsibilities and identification of timing and duration of implementation;
6. Provision for routine monitoring and environmental values; and
7. Provision of details of contingency plans in the event that the monitoring surveys indicate that the development is having or has had an adverse impact on environmental values.

These requirements were addressed in the Shorehaven Environmental Management Plan (ENV Australia 2009). The Shorehaven Environmental Management Plan (ENV Australia 2009) noted that the eastern section of the estate included plant species of foraging value to Carnaby's Black-Cockatoo, with the consequence areas were set aside for Carnaby's Black-Cockatoo foraging within the estate.

On 22 April 2020, the Department of Planning, Lands and Heritage advised that there are active current subdivision approvals for the Shorehaven Estate, however, none include conditions which relate to the development of a primary school. The previous subdivision approval which included the ceding of Lot 608 on Deposited Plan 406083 to the Department of Education, for the purposes of building a primary school, expired on 20 February 2018 and is no longer valid. DWER advised the applicant that as the subdivision approval had expired, a clearing permit would be required under section 51(E) of the *Environmental Protection Act 1986* for the removal of native vegetation on Lot 608 on Deposited Plan 406083.

A proposed action was referred by Peet Limited to the Department of Environment, Water, Heritage and the Arts on 9 December 2008 under Section 75 of the EPBC Act (EPBC 2008/4638). The proposed action was the implementation of the Peet Alkimos Local Structure Plan ('the Structure Plan'), which was prepared to guide the subdivision and development of approximately 243 ha of land zoned urban in Alkimos, approximately 40 km north of Perth, Western Australia. On 9 January 2009, it was determined that the proposal was a controlled action and will require assessment under the EPBC Act, with the assessment approach determined to be by preliminary documentation. The project was determined to likely have a significant impact on listed 'Threatened Species Communities (Sections 18 & 18A)', namely Carnaby's black cockatoo species. Part of the proposal included the development and construction of the primary school, referred to as the final land use for Lot 608 on Deposited Plan 406083. Residual impacts to black cockatoo foraging habitat attributed to clearing for the original subdivision, which included the vegetation proposed to be cleared under this permit (CPS 8849/1), was offset under the approval for the referral EPBC 2008/4638.

'The Structure Plan' was prepared in the context of the Alkimos Eglinton District Structure Plan ('DSP'), which provides an overarching framework to guide the development of land for urban purposes in this region. The DSP was developed by the Department for Planning and Infrastructure and the City of Wanneroo in 2006 to guide future planning for the area. The DSP was approved by the City of Wanneroo, and the Western Australian Planning Commission. After the DSP was approved by the State Government, the City of Wanneroo's Town Planning Scheme was amended accordingly. The DSP establishes the infrastructure framework for an area of some 2,660 ha, with a coastline of approximately 7.5 kilometres. The district has the potential to yield around 17,000 dwellings sufficient to accommodate around 50,000 people (Western Australian Planning Commission 2003).

EPBC 2008/4683 was approved on 11 June 2009, with the decision made under (sections 130(1) and 133) of the EPBC Act, subject to conditions, with an end date of 30 June 2034.

A review of the available databases indicated no Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 29 April 2020 with a 21 day submission period. No public submissions have been received in relation to this application.

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5. GIS Datasets

- Aboriginal Heritage Places (DPLH-001)
- Black Cockatoo roost sites
- Carnaby's cockatoo: breeding, roosting, feeding
- Clearing Regulations - Environmentally Sensitive Areas
- 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)
- Flood Risk (DPIRD-007)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Remnant Vegetation
- SCP Vegetation Complex Statistics
- Soil and Landscape Mapping – Best Available
- TECs and PECs
- Threatened Fauna
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)