



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2224/1

Permit type: Area Permit

### 1.2. Proponent details

Proponent's name: Chieng Hock Kock

### 1.3. Property details

Property: LOT 58 ON DIAGRAM 59825 (Lot No. 58 CAVES KEALY 6280)

LOT 58 ON DIAGRAM 59825 (Lot No. 58 CAVES KEALY 6280)

Local Government Area: Shire Of Busselton

Colloquial name:

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
6.54		Mechanical Removal	Horticulture

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Beard:</p> <ul style="list-style-type: none"> <li>- Unit 990 Low forest: peppermint (<i>Agonis flexuosa</i>)</li> <li>- Unit 973 (Spearwood): Low forest; paperbark (<i>Melaleuca raphiophylla</i>); (Hopkins et al., 2001; Shepherd, 2006).</li> </ul>	<p>The proposal involves clearing approximately 6.54 hectares for the purpose of planting fruit trees.</p>	<p>Degraded; Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>A site visit commenced on 28 March 2008. The site is mainly degraded with small areas in good condition (Keighery 1994). <i>Agonis flexuosa</i> is the dominate species.</p>

Mattiske:

- Quindalup dry (QD): no description available;
- Quindalup wet (Qw): Tall shrubland of *Acacia saligna* - *Agonis flexuosa* and open heath on depressions amongst recent dunes in the sub-humid zone (Havel & Mattiske Consulting, 1998).

## 3. Assessment of application against clearing principles

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

Comments

#### Proposal is at variance to this Principle

The proposal is for the clearing of approximately 6.54 hectares for the purpose of planting fruit trees. According to the site visit (DEC 2008), the vegetation under application appears to be degraded in most areas but in small pockets the area is in good condition (Keighery, 1994).

The area under application is located within an area recognised as the last extensive patch of remnant peppermint forest along the coast of Geographe Bay, and the last substantial Western Ringtail Possum population (*Pseudocheirus occidentalis*; Threatened) left on the Swan Coastal Plain (Jones, et al. 2007).

The area under application comprises the Quindalup vegetation complex (Mattiske Consulting, 1998), which retains less than 30% of the pre-European extent (Naturaliste Environmental Services, 2002), (28% remaining, Mattiske Consulting 1998).

The vegetation under application is representative of floristic community 30b "Quindalup Eucalyptus gomphocephala and / or Agonis flexuosa woodlands" (DEC, Blackwood District, 2008). This FCT is currently recognised as a Priority 3 ecological community (PEC); the area under application is therefore necessary for and part of the maintenance of a significant ecological community.

There is a small portion of vegetation (0.0052ha) within the south western corner of the area under application that is a Conservation Category Wetland (CCW). The vegetation under application is required for this within the 50m buffer.

Given the value of the vegetation under application as a significant remnant within an extensively cleared landscape; its significance as an ecological community; habitat value and maintenance of fauna connectivity; the area under application is likely to hold a high level of biological diversity and is therefore at variance to this Principle.

**Methodology** Keighery (1994);  
Jones, Henry & Francesconi (2007);  
Mattiske & Havel (1998);  
Naturaliste Environmental Services (2002);  
DEC, Blackwood District (2008);

GIS Databases:

- CALM Managed Lands and Waters - CALM 1/6/04;
- Environmentally Sensitive Areas - DoE 30/5/05;
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain;
- Busselton 50cm ORTHOMOSAIC - DLI04

**(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 indigenous to Western Australia.**

**Comments Proposal is at variance to this Principle**

The area under application is located within an area recognised as the last large remnant of the original Busselton peppermint strip, an area known to be occupied by a substantial resident ringtail population (Jones, et al. 2007). The Western Ringtail Possum habitat appears to be the presence of *Agonis flexuosa* either as the dominant tree or as an understorey component of Eucalypt forest or woodland (Jones et al. 1994a).

The Western Ringtail Possum is listed as Vulnerable under the Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth) and as Threatened under the Wildlife Conservation Act 1950 (Western Australia).

A recent study undertaken by Jones, et al. (2007), which focussed on assessing the level of ringtail activity within this area, identified scats, dreys and physical sightings of the species within the area under application. Approximately 58% of scat plots registered positive results, with an estimated 8 ringtails per hectare of canopy cover, within the area under application. The vegetation under application is part of a 4km stretch of Western Ringtail Possum suitable habitat. Clearing of the vegetation under application would sever this east west linkage, preventing the moving of Western Ringtail Possums to the remaining vegetation.

The study concluded the remnant peppermint habitat within the study area (Siesta - Kealy locality) constitutes a unique habitat resource for ringtails, high ringtail conservation value and is a critical asset in south western Australian biota. It also recognises the importance of protecting these habitat values from development, as the surrounding landscape has been significantly altered by previous land clearing, and as a result, has become highly fragmented. The area under application constitutes 4% of the Siesta-Kealy Locality.

The Shire of Busselton (2008) advises it is currently investigating mechanisms for the protection and enhancement of ringtail habitat to support protection of this species.

Given the significance of the area under application as habitat for the Western Ringtail Possum and the impacts of further fragmentation on the larger Busselton peppermint forest, the proposed clearing is significant for the maintenance of fauna indigenous to Western Australia and is therefore at variance to this Principle.

**Methodology** Jones, et al. (2007);  
DEWR (2007), Western Ringtail Possum, *Pseudocheirus occidentalis* fact sheet, Sited 30/04/08  
GIS Databases:  
- Mattiske Consulting (1998)  
- Threatened Fauna, SAC Bio Dataset - 22/8/07  
- Busselton 50cm ORTHOMOSAIC - DLI04

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

**Comments Proposal is not likely to be at variance to this Principle**

The area under application is representative of the Quindalup vegetation complex (Naturaliste Environmental Services, 2002), which is described as tall shrubland of *Acacia saligna*-*Agonis flexuosa* and open heath on depressions amongst recent dunes in the subhumid zone (Mattiske Consulting 1998). There has been no declared rare (DRF) or Priority listed taxa recorded or are known to occur in association with this landform (DEC, Blackwood District, 2008).

The closest known record of a listed species is *Caladenia procera* (DRF). This species is a tuberous, perennial herb that flowers in September to October (DEC, Flora Base, 2008) and grows on the Spearwood landform, in significantly different soils to the area under application (DEC, Blackwood District, 2008).

Given the soil types in the local area and habitat characteristics of local rare flora, the proposed clearing is unlikely to be necessary for the continued existence of rare flora and is therefore not likely to be at variance to this Principle.

**Methodology** Blackwood District (2008);  
DEC, Flora Base (2008);

GIS Databases:  
- DEFL, SAC Bio Dataset - 22/8/07

**(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.**

**Comments Proposal is not likely to be at variance to this Principle**

There are four records of Threatened Ecological Communities (TECs) within a 10 km radius of the area under application, however the area is unlikely to comprise or provide maintenance to these communities as they are within different soils and vegetation complexes and are not connected or in close proximity.

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

**Methodology** GIS Databases:  
- TEC Database, SAC Bio Dataset - 22/8/07;

**(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.**

**Comments Proposal is at variance to this Principle**

Pre-European	Current	Remaining %	
Swan Coastal Plain	1,501,211	579,227	38.6*
Shire of Busselton	145,239	61,780	42.5*
Vegetation type:			
Beard:			
Unit 973 (Spearwood)	5,003	1,786	35.7*
Unit 990 (Peppermint)	18,691	13,863	74.2*
Mattiske:			
Quindalup (QD)	2,397	674	28.0**
Quindalup (Qw)	4,447	1,227	28.0**

\* (Shepherd, 2006)

\*\* (Connell et al., 2000)

The area under application is located in the Shire of Busselton on the Swan Coastal Plain, which retain approximately 42.5% and 38.6% (Shepherd, 2006), respectively of the pre-European extent.

The Mattiske vegetation representation is made up of Quindalup Dry and Quindalup Wet. Quindalup Dry does not have a description under Mattiske Consulting 1998. Quindalup Wet is described as tall shrubland of *Acacia saligna*-*Agonis flexuosa* and open heath on depressions amongst recent dunes in the subhumid zone (Mattiske Consulting 1998). The vegetation on the proposed site is degraded (Keighery 1994) comprising of *Agonis flexuosa* individuals with little to no understorey. It may be considered to be representative of the above mentioned vegetation types.

The area forms part of a key corridor identified by Connell et al. (2000) under the remnant vegetation strategy for the Geographe Bay Catchment. This strategy recognises linkages of remnants in the local area that produce important avenues for movement of individuals and populations of both flora and fauna.

The Shire of Busselton (2008) does not support the proposal, and encourages the retention of remnant vegetation (on private property) through its Biodiversity Incentives Strategy (BIS), especially areas of poorly represented and endangered vegetation complexes.

Given the vegetation under application is poorly represented, is recognised within a regionally significant ecological linkage, the proposed clearing is considered to be a significant remnant of vegetation within the Greater Busselton area, and is therefore at variance to this Principle.

**Methodology** Shepherd (2006);  
Shire of Busselton (2008);

GIS databases:

- Interim Biogeographic Regionalisation of Australia - EM 18/10/00;
- Mattiske Vegetation - CALM 24/3/98;
- Pre-European Vegetation - DA 01/01;
- Local Government Authorities - DLI 8/7/04

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

**Comments Proposal is at variance to this Principle**

The area under application is contiguous with a Conservation Category Wetland (CCW). CCWs are wetlands with high ecological values and are the highest priority wetlands for protection. They require a minimum buffer of 50 metres from all forms of development for protection and to maintain ecological processes and functions within the wetland (WRC, 2001).

The vegetation under application is not directly associated with this wetland, however, it is within the buffer requirements and is therefore at variance to principle.

**Methodology** WRC (2001);

GIS Databases:

- Hydrography, Linear - DoE 1/2/04;
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
- Busselton 50cm ORTHOMOSAIC - DLI04

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

**Comments Proposal is at variance to this Principle**

The soils of the area under application are described as Coastal dune formations backed by the low-lying deposits of inlets and estuaries, chief soils are calcareous sands on the dunes. Associated are various acid peat soils in the swale behind the coastal dunes. (Northcote 1960-68).

The area under application is located 300 metres off the coastline and has been mapped as having sandy soil. As a result of clearing the soil will be subject to high wind exposure therefore comprises a high risk of wind erosion.

The area under application is also contiguous with a CCW; therefore there is a moderate risk of Acid Sulphate Soils (ASS) occurring within 3 metres of the natural soil surface. This depth is unlikely to be disturbed by the proposed clearing.

The site is low lying, with clearing 6.54ha of vegetation this may increase surface water expression leading to an incremental increase in water logging.

Given the location of the proposed clearing, without adequate management there is a high risk of wind erosion, therefore the proposed clearing is therefore at variance to this principle.

**Methodology** Northcote (1960-68).

GIS Databases:

- Acid Sulphate Soils Risk Map, Swan Coastal Plain - DEC

**(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.**

**Comments Proposal may be at variance to this Principle**

The south east corner of the property adjoins Locke Nature Reserve. A protected area recognised and managed at an international level (IUCN Category 1a). Category 1a reserves are strict nature reserves that possess outstanding or representative ecosystems and are managed mainly for scientific research or environmental monitoring (DEWH, 2008).

The area under application is located within an area recognised as the last large remnant of the original Busselton peppermint strip, an area known to be occupied by a substantial resident ringtail population (Jones, et al. 2007). The Western Ringtail Possum habitat appears to be the presence of *Agonis flexuosa* either as the dominant tree or as an understorey component of Eucalypt forest or woodland (Jones et al. 1994a).

The area under application is considered to be connecting this Nature Reserve to other vegetated areas along the coast; the proposed clearing will further fragment this connection; therefore the proposal may impact on the environmental values of an area managed for conservation and may be at variance to this Principle.

**Methodology** DEWH (2008);  
Jones, et al. (2007);  
DEWR (2007), Western Ringtail Possum, *Pseudocheirus occidentalis* fact sheet, Sited 30/04/08  
GIS Databases:  
- Register of National Estate - EA 28/01/03;  
- CALM Managed Lands and Waters - CALM 1/07/05

**(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.**

**Comments Proposal may be at variance to this Principle**

The soils of the area under application are described as Coastal dune formations backed by the low-lying deposits of inlets and estuaries, chief soils are calcareous sands on the dunes. Associated are various acid peat soils in the swale behind the coastal dunes. (Northcote 1960-68).

The proposed clearing lies within the Coastal Catchment area. The groundwater salinity is 3000 to 7000mg/L, which is described as saline soils. This indicates that salinity in the local groundwater areas is considered a high risk. The hydrogeology consists of sedimentary rocks with extensive and deep aquifers. The mean annual rainfall is 900mm per annum and the evapotranspiration rate is 800mm. The area under application is not within a Public Drinking Water Source Area.

The topography of the site is between 0 to 5m AHD (Australian Height Datum).

The proposed clearing of 6.54ha may incrementally increase salinity, eutrophical and turbidity within the nearby CCW.

Given the above, the proposed clearing may cause deterioration in the quality of surface or underground water and therefore may be at variance to this Principle.

**Methodology** GIS Databases:  
- Hydrographic Catchments, Catchments - DoW;  
- Rainfall, Mean Annual - DoW;  
- Groundwater Salinity, Statewide - DoW;  
- Geomorphic Wetlands, Augusta to Walpole - DoE 18/6/03;  
- CALM Managed Lands and Waters - CALM 1/07/05

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

**Comments Proposal is not likely to be at variance to this Principle**

The soils of the area under application are described as Coastal dune formations backed by the low-lying deposits of inlets and estuaries, chief soils are calcareous sands on the dunes. Associated are various acid peat soils in the swale behind the coastal dunes, (Northcote 1960-68). The hydrogeology consists of sedimentary rocks with extensive and deep aquifers. The mean annual rainfall is 900mm per annum and the evapotranspiration rate is 800mm. Given the scale (6.54 hectares) of the area under application, distance relative to the coastline (approximately 300 metres) and the evaporation rate is 800mm, flooding in the area under application is unlikely to occur and therefore not likely to be at variance to this clearing principle.

**Methodology** Northcote et al. (1960-68)  
GIS Databases:  
- Hydrogeology, Statewide;  
- Evapotranspiration Areal Actual;

## Planning instrument, Native Title, Previous EPA decision or other matter.

### Comments

The Shire of Busselton (2008) advises it does not support the proposal for the following reasons:

- Vegetation on the property is the Quindalup complex, which is poorly represented. The Shire's Biodiversity Incentives Strategy encourages the retention of remnant vegetation in the Shire, especially areas of poorly represented and endangered vegetation complexes;
- Vegetation in the area is identified as core habitat for the Western Ringtail Possum, which is listed as a matter National Environmental Significance under the Commonwealth EPBC Act. The Shire is currently investigating mechanisms for the protection and enhancement of WRP habitat to support protection of this species;
- Soils consist of Quindalup dunes system, which is coastal sand of low productivity. There are currently no other horticultural enterprises carried out on this land system for this reason. Accessing water is difficult, as the superficial formation is limited and brackish in places, and the Leederville formation is required for residential supplies.

**Methodology** Shire of Busselton (2008);

## 4. Assessor's comments

### Comment

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and the proposed clearing:

- is at variance to Principles (a), (b), (e), (f) and (g);
- may be at variance to Principles (h) and (i); and
- is not likely to be at variance to Principles (c), (d) and (j).

## 5. References

- Connell, S., Franke, B., Alder, J. and Jennings, A. (2000). Geographe Catchment Remnant Vegetation Strategy. Consulting report prepared for Geographe Catchment Council.
- Department of Environment and Conservation (DEC) (2008). Blackwood District Advice. District Nature Conservation Officer. Department of Environment and Conservation, Western Australia. TRIM Ref: DOC45591.
- Department of Environment and Conservation (DEC), Florabase (2008) <http://florabase.dec.wa.gov.au/browse/profile/13619>. (Retrieved 29 January 2008).
- Department of the Environment and Water Resources (DEWR), (2007), Western Ringtail Possum, *Pseudocheirus occidentalis* fact sheet, [www.environment.gov.au/biodiversity/threatened/publications/tsd07-w-ringtail-possum.html](http://www.environment.gov.au/biodiversity/threatened/publications/tsd07-w-ringtail-possum.html) Sited 30/04/08
- Department of the Environment, Water, Heritage and the Arts (DEWH) (2008). Parks and Reserves: Six IUCN Protected Areas Categories. <http://www.environment.gov.au/parks/iucn.html> (Retrieved 29 January 2008).
- Department of Water (DoW) (2008). TRIM Ref: DOC45634.
- Havel, J. and Mattiske Consulting Pty Ltd, (2002). Review of management options for poorly represented vegetation complexes. Conservation Commission.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Jones, B., Henry, J. and Francesconi, M. (2007). An important local population of the Western Ringtail Possum *Pseudocheirus occidentalis*: a 2006 survey study of the population and habitat in the Busselton localities of Siesta Park and Kealy. Unpublished report for GeoCatch, Busselton, Western Australia.
- Keighery, B.J. (1994). Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske, E.M. and Havel, J.J. (1998). Vegetation mapping in the South West of Western Australia. Department of Conservation and Land Management, Perth.
- Naturaliste Environmental Services. (2002). Biodiversity Incentive Strategy for Private Land in the Busselton Shire. Consulting report prepared for the Shire of Busselton.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- Sac Bio Datasets (22/8/07). Department of Environment and Conservation, Sac Bio Datasets, Kensington, Western Australia.
- Shepherd, D.P. (2006). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Shire of Busselton (2008). TRIM Ref: DOC45586.
- Water and Rivers Commission (WRC) (2001). Position Statement: Wetlands, Water and Rivers Commission, Perth.

## 6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)

