

**Western Ringtail Possum
&
Black Cockatoo
Assessment
of
Lot 1
South Western Highway
Boyanup**

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Version 2

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SUMMARY

This report details the results of a western ringtail possum (WRP) and black cockatoo assessment of Lot 1 South Western Highway, Boyanup. The site is located about 15 kms south east of the Bunbury and has a total area of approximately 26.4 hectares (ha) (Figure 1).

It is understood that the landowner (Shane Joynson) is proposing to extract sand from a ~10.7 ha section of the site. The progressive removal of some native vegetation will be required and issues relating to WRPs and black cockatoos need to be identified and managed.

Two vegetation types were identified and mapped within the proposed extraction area by Ekologica (Ekologica Pty Ltd 2012) (Figure 2). These being a:

- Woodland of *Banksia* (with occasional emergent jarrah (*Eucalyptus marginata*) and *Nuytsia floribunda*) over a low scrub dominated by *Kunzea glabrescens*; and
- Tall shrubland of *Kunzea glabrescens*

The table below summarises the area of each vegetation unit within the proposed pit area and its potential value as habitat for WRPs and black cockatoos based on plant species composition and structure.

Summary of vegetation types, areas and habitat value within proposed extraction area

Vegetation Type	Area (ha)	% of total area	WRP Habitat Value	Black Cockatoo Habitat Value
Banksia Woodland	7.5	70.1	Poor	Moderate
Kunzea Tall Shrubland	2.0	18.7	Very Poor	Nil/Very Poor
Disturbed	1.2	11.3	Nil	Nil
Total	10.7	100		

It should be noted that the best quality western ringtail possum and black cockatoo habitat is located the south west corner of the site, outside of the proposed extraction area and largely comprised of a woodland of peppermint (*Agonis flexuosa*) with marri (*Corymbia calophylla*).

Based on mapping from the South West Biodiversity Project it is estimated that about 10,460 ha (~33%) of remnant native vegetation remains within 10km of the study area. The proposed sand extraction operation will require the removal of about 9.5 ha of existing native vegetation or about 0.091% of the area of vegetation remaining within 10km of the site.

The WRP survey confirmed that vegetation within the Lot is being used by WRPs as habitat, though the overall level of utilisation appears to be low with only one individual being observed during the night time survey. The quality of WRP habitat within the proposed extraction area appears to be very low compared to other areas of the site that are to be retained. This is a consequence of the extraction area consisting mainly of highly degraded banksia woodland that lacks canopy connectivity and the favoured foraging species for western ringtail possums.

The proposed extraction area also contains black cockatoo foraging and potential nesting habitat. Foraging habitat is mainly represented by the banksia woodland which also contains scattered jarrah trees. Evidence of both these resources being utilised by black cockatoos was observed during the field survey. Some of the jarrah trees, by definition, represent potential breeding habitat though no evidence of any being used for this purpose was seen. The probability of any one jarrah tree ever being used for nesting by black cockatoos can be considered to be low given previous survey work in other areas indicating they are rarely used for this purpose.

The results of this survey would suggest that criteria relating to fauna used by the Department of Conservation and Environment (DEC) when assessing clearing permits are not likely to be compromised by the required vegetation removal given the degraded nature of the site and the presence of extensive areas of potential habitat in adjoining areas.

Clearing for the proposal will compromise some of the Federal Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) criteria for what they would considered to be “likely significant impact” for both western ringtail possums and black cockatoos and it is therefore recommended that dialogue with the DSEWPaC regarding this project should be commenced to determine the need for a referral so as to ensure compliance with the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

A series of other recommendations are provided for guidance during ongoing planning and for the formulation of management plans that maybe required as part of the ongoing approval process.

1. INTRODUCTION

This report details the results of a western ringtail possum (WRP) and black cockatoo assessment of Lot 1 South Western Highway, Boyanup. The site is located about 15 kms south east of the Bunbury central business district in south west Western Australia and is centred at approximately 33.443706°S and 115.716518°E (Figure 1). Lot 1 has a total area of approximately 26.4 hectares (ha).

It is understood that the landowner (Shane Joynson) is proposing to extract sand from a ~10.7 ha section of the site. The progressive removal of some native vegetation will be required and issues relating to WRPs and black cockatoos need to be identified and managed. It is anticipated that information gain as part of this assessment will be utilised by regulatory authorities during the approval process and will also allow the proponent to formulate management plans aimed at minimising impacts as required.

2. SCOPE OF WORKS & METHODS

The main scope of the survey work reported on here was obtain data on the distribution and abundance of WRPs across the site, in addition to providing information on the value of the area as habitat for black cockatoos.

Note: For the purposes of this report the term black cockatoo is in reference to Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*. All three species have the potential to frequent the general area at times to varying degrees.

2.1 VEGETATION ASSESSMENT

Mapping of vegetation communities within Lot 1 has been carried out by Russell Smith of Ekologica in 2012 (Ekologica Pty Ltd 2012) and this data has been used to provide a description of vegetation units with the proposed extraction area. The vegetation within the project area was also examined by the Author on the 27 and 28 February 2013 during the course of other survey work.



2.2 WESTERN RINGTAIL POSSUM ASSESSMENT

The WRP survey has included:

- Daytime survey of the site searching for dreys, obvious tree hollows (and other potential daytime refuge habitat), scats and individual WRPs;
- One night time survey to locate and record the distribution and abundance of WRPs with the boundary of Lot 1; and

The daytime survey of the site was carried out on the 27 February 2013. The nocturnal count was carried out on the 28 February 2013.

2.3 BLACK COCKATOO ASSESSMENT

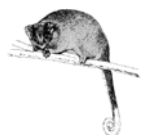
The black cockatoo assessment has included a:

- Habitat tree survey: This involved the identification of all suitable trees species within the study area that have a Diameter at Breast Height (DBH) of over 50cm (irrespective of the presence/absence of suitable hollows – Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC 2012) criteria). The location of each tree identified was recorded with a GPS.

Target tree species included marri and jarrah or any other suitable *Corymbia/Eucalyptus* species of a suitable size that may be present. Peppermints, banksia, sheoak and melaleuca tree species (for example) were not assessed as they typically do not develop hollows that are used by black cockatoos.

- Black cockatoo foraging assessment: The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey was recorded.
- Roosting habitat survey: Direct and indirect evidence of black cockatoos roosting within trees on site was noted if observed (e.g. branch clippings, droppings or moulted feathers).

The daytime survey of the site was carried out on concurrent with the WRP daytime survey on the 27 February 2013.



3. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should be recognised that site conditions can change with time.

The number of WRPs observed during the nocturnal survey represents the minimum number present within the area surveyed at the time of the survey. Due to various survey limitations it is unlikely that every WRP present within the area was observed though the area was found to be easy to survey as the vegetation units present are generally sparse. It is therefore believed that the survey was conducted to a standard that provides adequate information on the use of the site by WRPs to allow for impacts on this species to be determined.

The location of habitat trees was recorded using a handheld GPS. The accuracy of the coordinates obtained cannot be guaranteed below a level of about 5 to 10 metres, though it in some circumstance the accuracy can be worse or better than this.

4. RESULTS

4.1 VEGETATION ASSESSMENT

Two vegetation types were identified and mapped within the proposed extraction area by Ekologica (Ekologica Pty Ltd 2012). The extent of each unit is shown in Figure 2. A description of the vegetation types, using the structural method of Muir (1977), is given below:

Banksia Woodland

Woodland of *Banksia attenuata* and *B. ilicifolia* (with occasional emergent *Eucalyptus marginata* and *Nuytsia floribunda*) over *Kunzea glabrescens* (\pm *Podocarpus drouynianus*) Low Scrub A over *Melaleuca thymoides*, *Stirlingia latifolia*, *Hypocalymma robustum*, *Calytrix fraseri*, *Macrozamia riedlei*, *Acacia pulchella* and *Jacksonia horrida* Heath B over *Adenanthos meisneri*, *Hemiandra pungens*, *Dasypogon bromeliifolius*, *Hibbertia racemosa* Dwarf Scrub C over *Patersonia occidentalis*, *Hypolaena exsulca* and *Lyginia barbata* Open Low Sedges. (Note: in places the shrub *P. drouynianus* dominates the understorey) (Plate 1).



Western Ringtail Possum Habitat Value: The vast majority of this area has poor value as WRP habitat and it would, in the Author's opinion, be unable to support a population of the species though it at times may harbour a small number of transient individuals. Its main value is therefore seen as dispersal habitat.

This conclusion is based on the areas generally poor canopy connectivity and low density of WRPs favoured foraging plant species. The area contains some known food sources (i.e. jarrah (*E. marginata*) and *Nuytsia floribunda*) but these species are sparsely distributed across this vegetation unit. The area contains no peppermint (*Agonis flexuosa*) which is a major component of WRPs diet in most coastal plain sites. The Author has noted WRP foraging upon *Kunzea* in small quantities at some other locations but it does not seem to be utilised consistently which suggests specific conditions must prevail for it to be suitable to feed upon. At Lot 1 *Kunzea* does not appear to represent a significant food source.

A fox den showing recent activity was also found in this area which also lessens the likelihood of this area supporting WRPs.

Black Cockatoo Habitat Value: The banksia woodland represents moderate foraging habitat for black cockatoos given the presence of several species of banksia in addition to some jarrah trees, all of which are utilised by at least one of the three species of black cockatoo as a food source. Evidence of foraging was found to be relatively common during the field reconnaissance survey with numerous examples of banksii cones being utilised though most evidence appeared to be at least a few months old. The only fresh evidence observed were several sites where jarrah fruits had been foraged upon.

Some jarrah trees in this area represent "potential breeding habitat" based on criteria published by DSEWPaC (see section 4.3) though no evidence of actual breeding was observed. Jarrah trees rarely produce hollows suitable for black cockatoos to use for nesting based on the results of surveys in other areas (Kirkby 2009), so the probability of breeding ever taking place can be considered to be low.

The value of this area of vegetation to cockatoos is declining given the ongoing effects of dieback on banksia and jarrah trees (see Ekologica 2012 for details on the dieback status of the property).



Kunzea Tall Shrubland

Low Woodland B to Scrub of *Kunzea glabrescens* (with occasional *B. attenuata*, *B. ilicifolia* or *N. floribunda*) over Low Scrub B of *Calytrix fraseri*, *Hypocalymma robustum*, *Melaleuca thymoides*, *Adenanthos meisneri* and *Stirlingia latifolia* over *Patersonia occidentalis*, *Hypolaena exsulca* and *Lyginia barbata* Open Low Sedges and **Ehrharta calycina* Open Tall Grass (Plate 2).

Western Ringtail Possum Habitat Value: This section of the proposed extraction area has very poor value as WRP habitat given the low, sparse nature of most of the vegetation and almost complete lack of main foraging species. Individuals may utilise the area as dispersal habitat on rare occasions but they would be unlikely to reside for any length of time.

Black Cockatoo Habitat Value: This vegetation unit has almost no value as habitat for black cockatoos apart for occasional *B. attenuata* and *B. ilicifolia* specimens.

Disturbed

The remainder of the proposed extraction area is mapped as “Disturbed” and is comprised of a former sandpit, cleared tracks, temporary building and other partially cleared areas. Vegetation is limited to scattered shrubs, mainly *K. glabrescens* and annual weeds (Plate 3).

Western Ringtail Possum Habitat Value: This area has no value as habitat for WRPs as it is dominated by bare sand with only small scattered plants in early stages of regrowth. At best it represents very poor dispersal habitat.

Black Cockatoo Habitat Value: This area has no value as habitat for black cockatoos as it is dominated by bare sand with only small scattered plants in early stages of regrowth.

Table 1 summarises the area of each vegetation unit within the proposed pit area and its potential value as habitat for WRPs and black cockatoos based on plant species composition and structure.

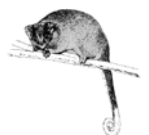


Table 1: Summary of vegetation types, areas and habitat value within proposed extraction area

Vegetation Type	Area (ha)	% of total area	WRP Habitat Value	Black Cockatoo Habitat Value
Banksia Woodland	7.5	70.1	Poor	Moderate
Kunzea Tall Shrubland	2.0	18.7	Very Poor	Nil/Very Poor
Disturbed	1.2	11.3	Nil	Nil
Total	10.7	100		

It should be noted that the best quality western ringtail possum and black cockatoo habitat is located the south west corner of the site, outside of the proposed extraction area.

This vegetation is quiet dense and is largely comprised of a woodland of peppermint (*Agonis flexuosa*) with marri (*Corymbia calophylla*) over sparse understorey of bracken fern (*Pteridium esculentum*) (Ekologica 2012) (Plate 4). Some areas also contain flooded gum (*E. rudis*), *Melaleuca preissiana* and *M. raphiophylla* in various densities.

The extent of native vegetation remaining in the vicinity of the study area is to a certain extent illustrated within Figure 1. Based on mapping from the South West Biodiversity Project it is estimated that about 10,460 ha (~33%) of remnant native vegetation remains within 10km of the study area. The proposed sand extraction operation will require the removal of about 9.5 ha of existing native vegetation or about 0.091% of the area of vegetation remaining within 10km of the site.

It is understood that subsequent to sand extraction that rehabilitation of sections of the site will be undertaken using primarily peppermint and marri as both these species are resistant to dieback and both represent suitable habitat for western rental possums and black cockatoos respectively.

4.2 WESTERN RINGTAIL POSSUM ASSESSMENT

4.2.1 DAYTIME SURVEY

Eleven western ringtail possum dreys were located within Lot 1 during the daytime site assessment, four of which were located within the proposed extraction area (Figure 3). No evidence of the dreys being occupied at the time of the survey was found and some appeared to be in poor/deteriorating



condition suggesting no recent maintenance, though this does not always indicate no recent use.

It should also be noted that WRPs often construct several dreys within their current home range and they can, if well-constructed and in a relatively secure location, persist for several years after construction so it is not possible to use the number of dreys observed to estimate the current distribution and abundance of WRPs at the site. The information only provides a guide to areas that WRPs have used (either permanently or temporarily).

No WRP scats were observed. In most other areas dense groundcover made searching for scats difficult and time consuming and therefore this method for determining WRP presence was abandoned at these locations. It is understood that the DEC located a small number of WRP scats under a peppermint tree in the southern section of Lot 1 (outside of the proposed extraction area) during a daytime inspection of the site (A. Gorman pers. comms.).

4.2.2 NOCTURNAL COUNT

A single WRP was observed during the night survey in vegetation in the southern section of Lot 1, outside of the proposed extraction area. A single common brushtail possum (*Trichosurus vulpecular*) was also observed (Figure 3).

4.3 BLACK COCKATOO ASSESSMENT

4.3.1 HABITAT TREES

The tree assessment identified a total of 51 specimens within Lot 1 that fit DSEWPac's criteria for black cockatoo breeding habitat (i.e. suitable tree species with a diameter at breast height (DBH) of >50cms(DSEWPac 2012)) (Figure 4). Twenty one of these trees fall within the proposed extraction area and were all jarrah. Thirty of the identified habitat trees are outside the proposed extraction area and were comprised of a combination of jarrah, marri and flooded gum.

No evidence of any tree within the proposed extraction area being used by black cockatoos for nesting purposes was observed and as previously mentioned, jarrah trees rarely produce hollows suitable for black cockatoos to use for nesting based on the results of surveys in other areas (Kirkby 2009), so despite the presence of this "potential breeding habitat" the probability of breeding ever taking place can be considered to be low. Bees were observed in small hollows within two trees which reduced the likelihood they would be used by native fauna for any purpose.



Additional details on the habitat trees observed can be found in Appendix A.

4.3.2 FORAGING HABITAT

Evidence of foraging was found to be relatively common during the field reconnaissance survey with numerous examples of banksii cones being utilised though most evidence appeared to be at least a few months old. The only fresh evidence observed were several sites where jarrah fruits had been foraged upon.

Evidence of foraging on marri was also observed outside of the proposed extraction area in the south west corner of the Lot and was the most extensive and recent activity noted. Marri is the favoured foraging plant species in this area of all three black cockatoo species in this area of their range. There is no marri within the proposed extraction area and therefore this resource will remain unaffected by the proposal. Marri has been chosen as one of the main plant species for the proposed revegetation plan given it is resistant to dieback and high value as foraging habitat.

4.3.3 ROOSTING HABITAT

No existing roosting trees (trees used at night by black cockatoos to rest) were observed during the survey period. Black cockatoos have been reported roosting about 5 km north west of the study area in vegetation bordering Lillydale Road and in Gelorup, 8 km west of the study area (CEM 2009).

5. LEGISLATIVE OBLIGATIONS

5.1 ENVIRONMENTAL PROTECTION ACT 1986

The purpose of the Environmental Protection Act (1986) (*EP Act*) is “...to provide for an Environmental Protection Authority, for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection enhancement and management of the environment and for matters incidental to or connected with the foregoing”.

The powers of the Environmental Protection Act 1986 are administered by the DEC, which in relevant cases advises to the Environmental Protection Authority (EPA).

Legislation proclaimed on 8 July 2004 protects all native vegetation in Western Australia. Under the law, clearing native vegetation is prohibited, unless a



clearing permit is granted by the DEC, or the clearing is for an exempt purpose. These exemptions ensure that low impact day to day activities involving clearing can be undertaken. People that wish to clear are required to submit an application if an exemption does not apply.

Clearing applications are assessed against ten defined clearing principles related to native vegetation in the EP Act. These principles provide a guide for when native vegetation should not be cleared. The DEC must consider these principles in making a decision on whether or not to issue a clearing permit. The DEC has set out the minimum requirements and standards for addressing each of the ten principles in detail in its assessment methodology.

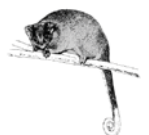
Any future clearing at the site, not covered by an exemption, will require a clearing permit, approval of which includes an assessment against the ten clearing principles related to native vegetation in the *EP Act*. These principles provide a guide for when native vegetation should not be cleared.

In assessing a clearing application, DEC assessors are to give consideration to each clearing principle and any planning instrument or other matter and note the extent to which they have been addressed. This includes the methodologies used, the limitations that apply to the assessment, and the relevance of the principle to the current application. The results of the assessment are documented in a decision report, which is published on DEC's website at https://secure.dec.wa.gov.au/cps_reports .

The DEC must consider the following principles in making a decision on whether or not to issue a clearing permit.

Native vegetation should not be cleared if:

- (a) it comprises a high level of biological diversity;
- (b) it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia;
- (c) it includes, or is necessary for the continued existence of, rare flora;
- (d) it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community;
- (e) it is significant as a remnant of native vegetation in an area that has been extensively cleared;



- (f) it is growing in, or in association with, an environment associated with a watercourse or wetland;
- (g) the clearing of the vegetation is likely to cause appreciable land degradation;
- (h) the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area;
- (i) the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water; or
- (j) clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

One purpose of the assessment reported on here is to provide some information relevant to principle (a) & (b).

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

This principle aims to protect areas of high biodiversity. This principle protects intact natural systems with naturally occurring high levels of species diversity, ecosystem diversity or genetic diversity and natural systems that may be degraded but contain high levels of diversity compared with the remaining native vegetation of that ecological community.

With respect to fauna alone the site probably does not qualify as having a high level of biodiversity. While no assessment to determine the full fauna biodiversity of the site has been carried out it is clear from information gathered during the site surveys that the proposed extraction area is very unlikely to support a high degree of fauna diversity. This conclusion is largely based on the highly degraded state of most of the vegetation within the proposed extraction area, the areas small size (10.7 ha), the lack of habitat diversity (only two main natural habitats present) and the presence of feral predators (Fox den observed).

It is therefore considered unlikely that the proposal would be seen as being in variance to this principle by the DEC, though the assessment of this criterion also needs to take into account plant community and flora diversity which are beyond the scope of this report.



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

This principle aims to maintain indigenous fauna species and assemblages of species in their local natural habitat. This principle protects habitat for threatened fauna and significant habitat for meta-populations of fauna.

The study area contains habitat that is used or is potentially used for some purpose by all three species of black cockatoo and to a lesser extent the western ringtail possum. These factors suggest that clearing of the site may be in variance to this principle though it should be noted that the proposed clearing will only result in the loss of 0.091% of the area of native vegetation remaining within 10km of the site. While no assessment on the suitability of all this vegetation to the species in question has been made, it can be assumed that a significant proportion represents habitat at least comparable in value to that present within the proposed extraction area and that the loss of this vegetation is unlikely to have any measurable affect the status of any of the species in question.

The results of the assessment reported on here suggest that criteria relating to fauna used by the DEC when assessing clearing permits are not likely to be compromised by the required vegetation removal given the degraded nature of the site, the anticipated low fauna biodiversity, the areas small size, the lack of habitat variation and the presence of extensive areas of potential habitat in nearby areas. The value of vegetation within the proposed extraction area is also in serious decline, a consequence of the effects of dieback on the dominant plant species. The proposed revegetation of the site using dieback resistant species that are favoured refuge and foraging species for black cockatoos and western ringtails should therefore also be taken into consideration.

5.2 COMMONWEALTH ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT (1999)

All three species of black cockatoo and the western ringtail possum are listed as threatened under the Federal *Environment Protection and Biodiversity Conservation Act (1999)* (*EPBC Act*). The objective of the *EPBC Act* is to provide for the protection of the environment, especially those aspects that are of national significance, promote ecologically sustainable development, the conservation of biodiversity and a cooperative approach to the protection and management of the environment.



If an action (i.e. clearing of native vegetation from parts of the site) is deemed to have a potential “significant impact” on listed species a referral to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) is required to ensure compliance with the *EPBC Act*. Currently, for the species in question, “significant impact” is defined within one or more of the following four documents, these being:

- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008). Background Paper to the *EPBC Act* Policy Statement 3.10 – Nationally Threatened Species and Ecological Communities. “Significant Impact Guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the southern Swan Coastal Plain, Western Australia”.
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2009a). *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Policy Statement 3.10 “Significant Impact Guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the southern Swan Coastal Plain, Western Australia; and
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2009b). Matters of National Environmental Significance. Significant Impact Guidelines 1.1, *EPBC Act 1999*.
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (vulnerable) *Calyptorhynchus banksii naso*.

An assessment of significant impact on federally listed threatened fauna species and the possible need to refer the project to DSEWPaC using criteria within the abovementioned documents are provided below.

5.2.1 WESTERN RINGTAIL POSSUMS

The DSEWPaC document titled “Significant Impact Guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the southern Swan Coastal Plain, Western Australia (DEWHA 2009a) summarises what scale of actions would be considered likely to have a significant impact on



WRPs in the southern swan coastal plain. This policy statement should be read in conjunction with Significant Impact Guidelines (DEWHA 2009b).

Within the policy statement an action is deemed likely to have a significant impact on the WRP in the southern Swan Coastal Plain Region if it:

- reduces the ability of the region to support the persistence of the western ringtail possum; or
- modifies, destroys, removes or isolates important remnant habitat patches, or decreases the availability or quality of remnant habitat patches; or
- adversely affects connections between important areas; or
- interferes substantially with the ability of the area to effectively contribute to the recovery of the species.

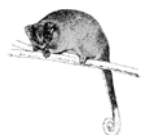
More specifically the guidelines have categorised certain areas between Bunbury and Dunsborough as “Core Habitat”, “Primary Corridors” or “Supporting Habitat”. The study area falls within the “Supporting Habitat” area (also referred to as Area 3).

Within areas of supporting habitat “significant impact” on WRPs is deemed as “likely” if there is a real chance or possibility that an action will result in:

- any clearing of a remnant habitat patch that is greater than 0.5 hectares in size;
- the clearing of more than 50% of a remnant habitat patch that is between 0.2 and 0.5 hectares in size;
- the fragmentation of any existing habitat linkages.

While utilisation of the proposed extraction area by WRPs appears to be low given the apparent poor quality of the habitat to be impacted upon, clearing at the site at any scale is likely to be seen as compromising the first criteria and will therefore be seen by DSEWPac as being “likely to have a significant impact” on WRPs.

In reality this impact can be argued as unlikely to be significant given the results of the assessment provided here, however it is nonetheless recommended that dialogue with DSEWPac regarding this project be initiated to assess the need



for a referral with respect to potential impacts on WRPs.

5.2.2 BLACK COCKATOOS

The recently released DSEWPaC document titled “EPBC Act referral guidelines for three threatened black cockatoo species” (DSEWPaC 2012) summarises what scale of actions would be considered likely to have a significant impact on listed endangered and vulnerable fauna species.

The following points provide general guidance on what, in DSEWPaC’s view, may be at high and low risk of requiring a referral to ensure compliance with the *EPBC Act* as well as providing some guidance on uncertainty.

Actions that have a high risk of significant impacts

- Clearing of any known nesting tree.
- Clearing or degradation of any part of a vegetation community known to contain breeding habitat.
- Clearing of more than 1 ha of quality foraging habitat.
- Clearing or degradation (including pruning the top canopy) of a known night roosting site.
- Creating a gap of greater than 4 km between patches of black cockatoo habitat (breeding, foraging or roosting).

Actions that have and uncertain risk of significant impacts

- Degradation (such as through altered hydrology or fire regimes) of more than 1 ha of foraging habitat. Significance will depend on the level and extent of degradation and the quality of the habitat.
- Clearing or disturbance in areas surrounding black cockatoo habitat that has the potential to degrade habitat through introduction of invasive species, edge effects, hydrological changes, increased human visitation or fire.
- Actions that do not directly affect the listed species but that have the potential for indirect impacts such as increasing competitors for nest hollows.



- Actions with the potential to introduce known plant diseases such as *Phytophthora* spp. to an area where the pathogen was not previously known.

Actions that have a low risk of significant impacts

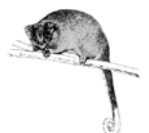
- Actions that do not affect black cockatoo habitat or individuals.
- Actions whose impacts occur outside the modelled distribution of the three black cockatoos

As detailed in *Section 4.3.1*, 21 trees with a DBH of greater than 50cm were identified within the proposed extraction area. All these trees, by DSEWPaC's definition of the term, are potential black cockatoo breeding habitat (i.e. DBH >50cm). The "clearing or degradation of any part of a vegetation community known to contain breeding habitat" has the potential to be deemed by DSEWPaC as having a "high risk of significant impacts". The study area also contains black cockatoo foraging habitat. The removal or degradation of more than 1.0ha of this vegetation will also be seen by DSEWPaC as having "high risk of significant impacts".

It is therefore recommended that dialogue with DSEWPaC regarding this project be initiated to assess the need for a referral with particular reference to black cockatoo habitat loss that may occur as a result as a consequence of the project proceeding.

It is difficult to predict if the project will be considered a controlled action as a range of factors besides the above-mentioned criteria are taken into consideration when assessing a developments likely impact. For example, the referral guidelines (DSEWPaC 2012) also state that: "In determining the potential significance of your action, the department will consider the particular circumstances of your case. This may include factors such as the suitability of the habitat, its connectivity, and the amount of habitat remaining in the region".

It has been demonstrated during other studies that jarrah trees have a low probability of being used by black cockatoos as breeding habitat (Kirkby 2009) and therefore the significance of these trees may be regarded as relatively low. Also, as mentioned within *Section 4.1*, there are over 10,000 ha of remnant native vegetation within a 10km radius of the study area, a significant proportion of which would also represent potential breeding and foraging habitat for black cockatoos. The existence of this vegetation within close proximity to the study area will reduce substantially any possible impacts the loss of some habitat (~7.5 ha) from within the study area will have on black cockatoos in the general area and this fact will need to be taken into consideration by the DSEWPaC

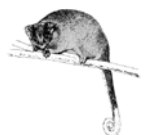


when assessing the project.

6. RECOMMENDATIONS

The following recommendations are provided for guidance during ongoing planning and for the formulation of management plans that maybe required as part of the ongoing approval process. This listing is not exhaustive and management plans and offsets (if required) will need to be finalised after liaison with relevant regulatory advisers/authorities (e.g. DEC and DSEWPaC). It is recommended that:

- Dialogue with the DSEWPaC regarding this project should be commenced to determine the need for a referral so as to ensure compliance with the *EPBC Act*;
- Planning and ongoing operation of the proposed sand extraction should aim to avoid the need to clear as much of the existing vegetation as possible;
- During site works areas requiring clearing should be clearly marked and access to other areas restricted to prevent accidental clearing of areas to be retained;
- No dead, standing or fallen timber should be removed unnecessarily. Logs (hollow or not) and other debris resulting from land clearing should be used to enhance fauna habitat in untouched and rehabilitated areas if possible;
- During clearing operations a suitably experienced “fauna spotter” should be employed to inspect trees for dreys, logs and hollow trees (where possible) before clearing to reduce likelihood of injury to fauna. If feasible any fauna encountered should be relocated to retained suitable habitat;
- Implementation of the proposed rehabilitation/revegetation plan with the aim of recreating black cockatoo and western ringtail possum habitat that is self-sustaining in the long term. It should be noted that this plan includes the installation of a vermin proof fence surrounding the property;
- All staff working on site should be made aware that native fauna is protected; and



- Native fauna injured during clearing or normal site operations should be taken to a designated veterinary clinic or a DEC nominated wildlife carer.

7. CONCLUSION

The targeted fauna assessment at Lot 1 was undertaken for the primary purpose of obtaining information on the sites utilisation by western ringtail possums and black cockatoos. This information will be utilised by environmental regulators during the ongoing assessment and approval process.

The WRP survey confirmed that vegetation within the Lot is being used by WRPs as habitat, though the overall level of utilisation appears to be low with only one individual being observed during the night time survey, outside of the proposed extraction area. The quality of WRP habitat within the proposed extraction area appears to be very low compared to other areas of the site that are to be retained. This is a consequence of the extraction area consisting mainly of degraded banksia woodland that lacks canopy connectivity and favoured foraging species for western ringtail possums.

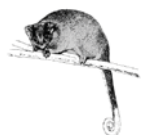
The proposed extraction area also contains black cockatoo habitat. Foraging habitat is mainly represented by the banksia woodland which also contains scattered jarrah trees. Evidence of both these resources being utilised by black cockatoos was observed during the field survey. Some of the jarrah trees, by DSEWPac's definition represent "potential breeding habitat" though no evidence of any being used for this purpose was seen. The probability of any one jarrah tree ever being used for nesting by black cockatoos can be considered to be low given previous survey work in other areas indicate they are rarely used for this purpose.

The results of this survey would suggest that criteria relating to fauna used by the Department of Conservation and Environment (DEC) when assessing clearing permits are not likely to be compromised by the required vegetation removal given the degraded nature of the site and the presence of extensive areas of potential habitat in adjoining areas.

Clearing for the proposal will however compromise some DSEWPac criteria for what they would considered to be "likely significant impact" for both western ringtail possums and black cockatoos and it is therefore recommended that dialogue with the DSEWPac regarding this project should be commenced to determine the need for a referral so as to ensure compliance with the *EPBC Act*.



A series of other recommendations are provided for guidance during ongoing planning and for the formulation of management plans that maybe required as part of the ongoing approval process.



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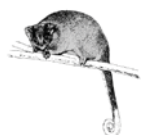
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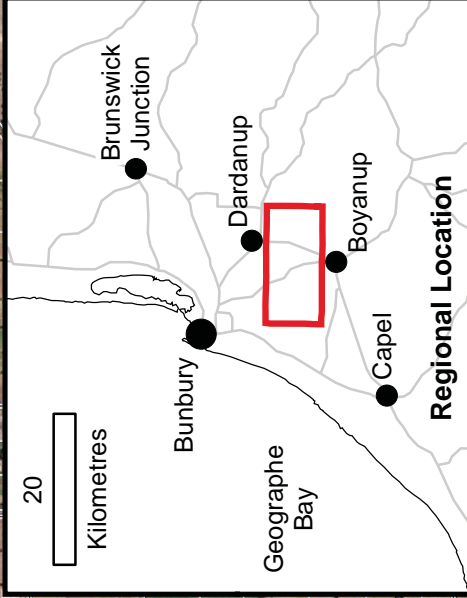
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FIGURES

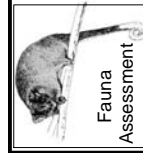




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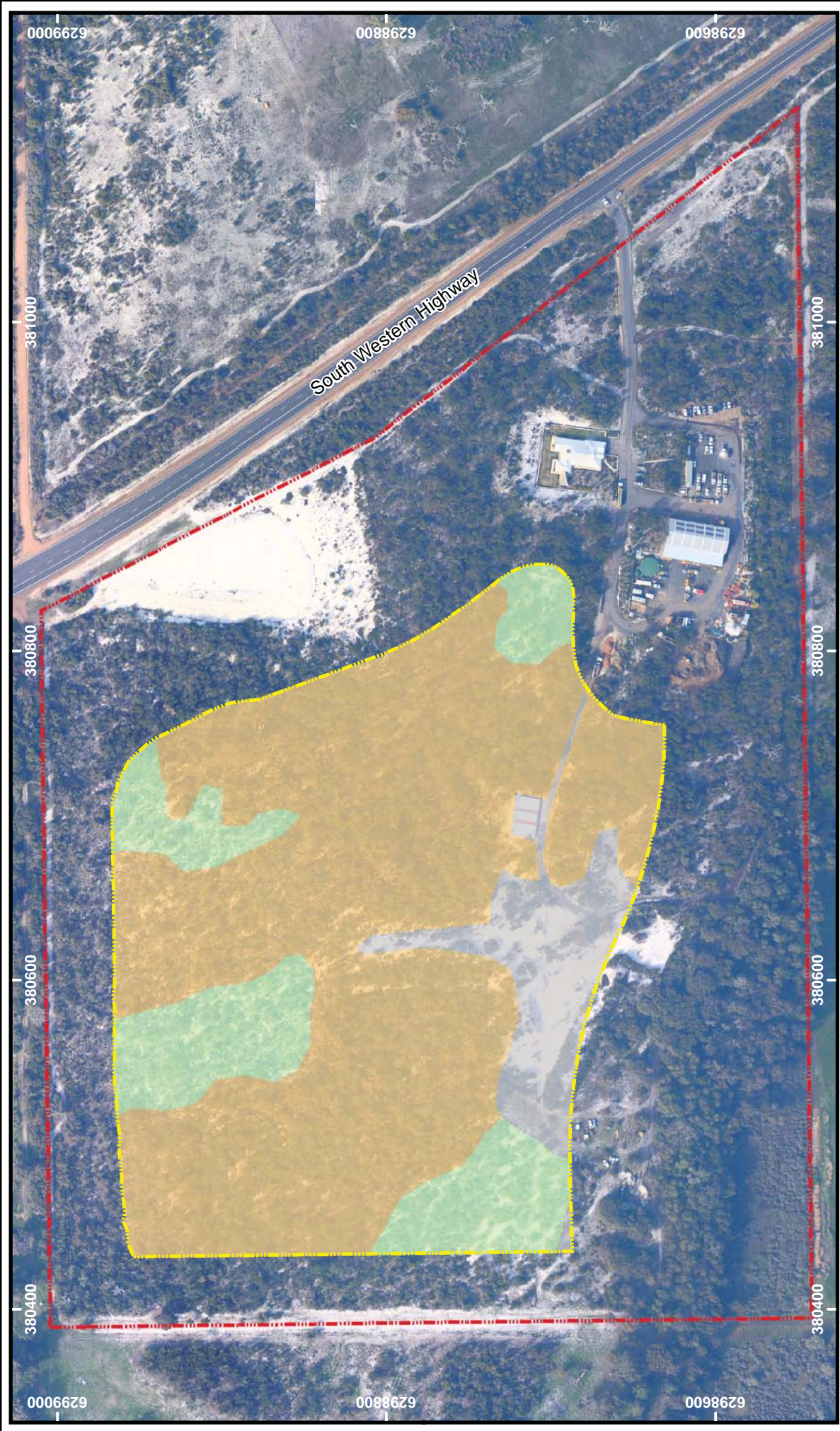


Lot 16580 Boundary



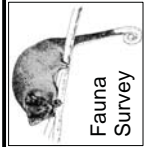
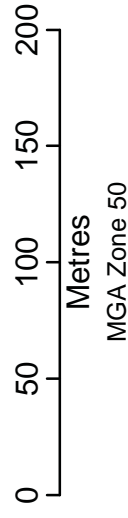
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&
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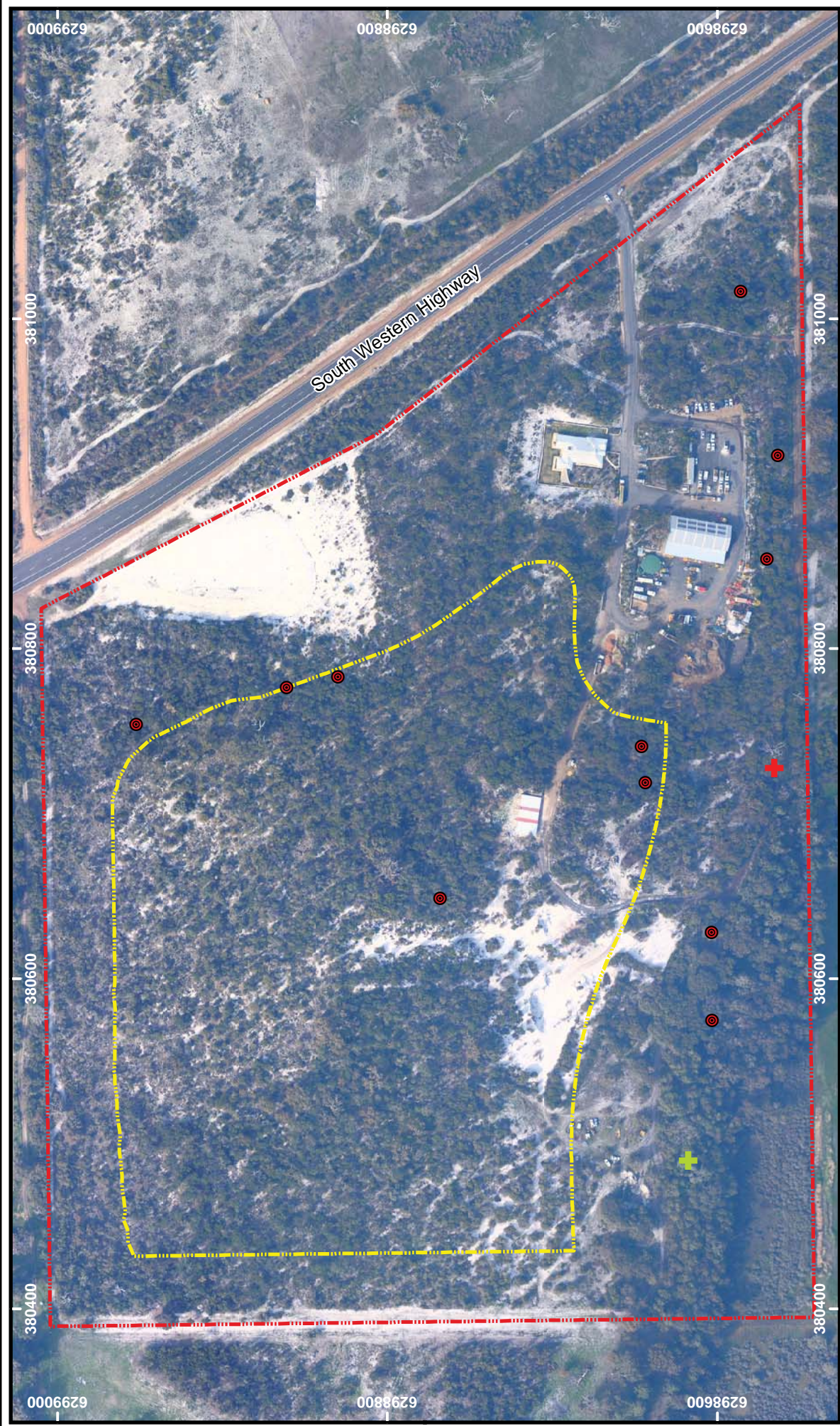
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-  Proposed Extraction Area
-  Banksia Woodland
-  Kunzea Tall Shrubland
-  Disturbed



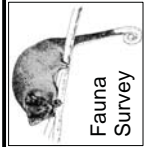
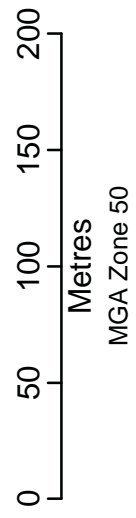
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South Western Highway
Boyannup
Vegetation Units
Modified from Ekologica (2012)



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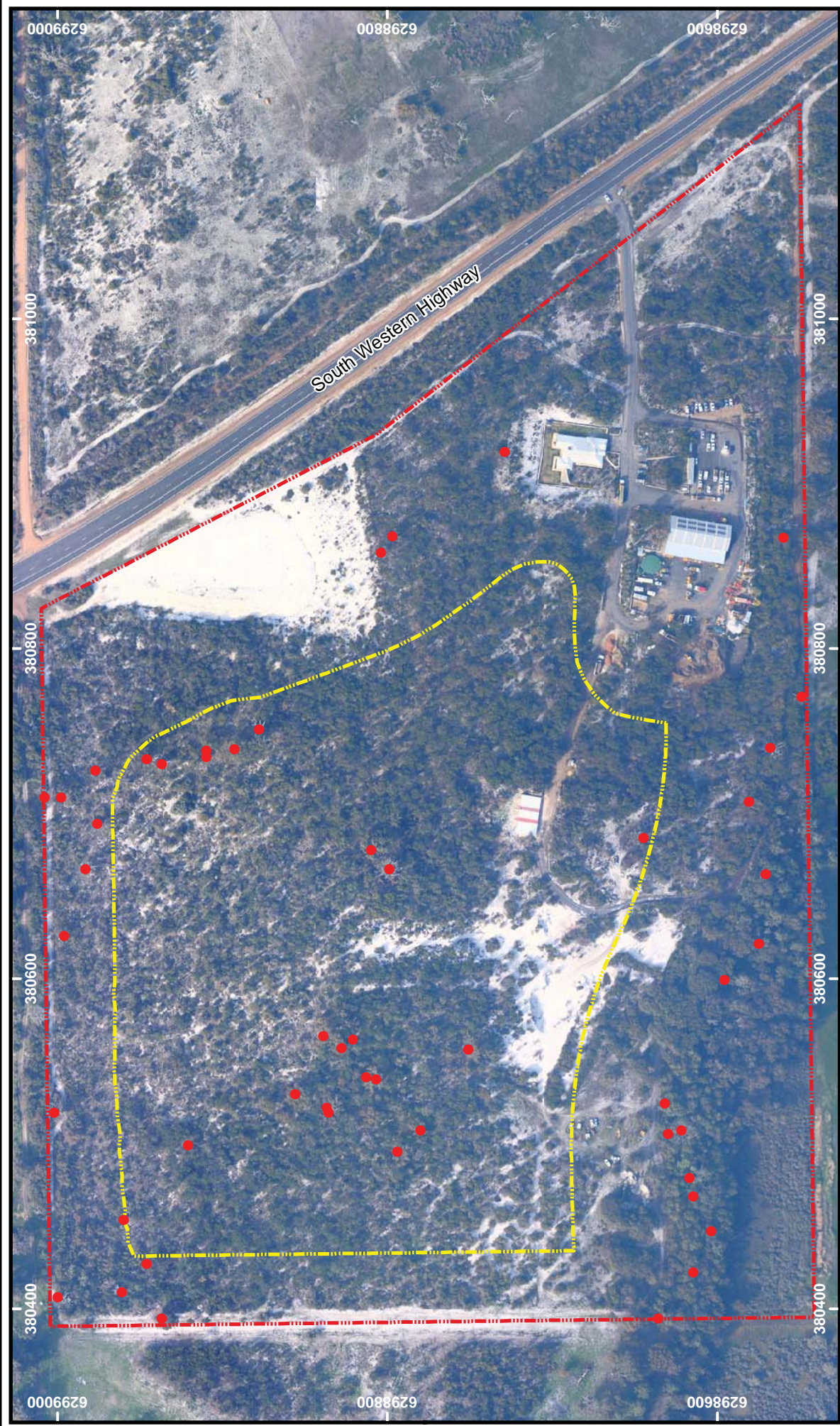
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-  Proposed Extraction Area
-  Western Ringtail Possum Drey
-  Western Ringtail Possum
-  Common Brushtail Possum



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Lot 16580
South Western Highway
Boyanup

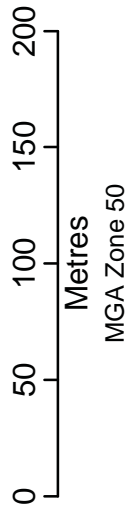
WRP Observations



Lot 16580
South Western Highway
Boyanup

**Habitat Trees
(DBH>50cm)**

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DATE: March 2013
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Legend

-  Lot 16580 Boundary
-  Proposed Extraction Area
-  Habitat Tree (DBH>50cm)

PLATES



Plate 1: Banksia Woodland



Plate 2: *Kunzea* Tall Shrubland



Plate 3: Previously Disturbed



Plate 4: Marri-Peppermint Woodland (outside proposed extraction area - to be retained)

APPENDIX A

HABITAT TREE DETAILS

Habitat Trees
Datum: GDA 94

Waypoint Number	Zone	mE	mN	Tree Species
wpt001	50H	380919	6298729	Dead Jarrah
wpt002	50H	380858	6298804	Jarrah
wpt003	50H	380868	6298797	Jarrah
wpt005	50H	380751	6298878	Jarrah
wpt006	50H	380739	6298893	Jarrah
wpt007	50H	380738	6298910	Jarrah
wpt008	50H	380734	6298910	Jarrah
wpt009	50H	380730	6298937	Jarrah
wpt010	50H	380733	6298946	Jarrah
wpt011	50H	380726	6298977	Jarrah
wpt012	50H	380710	6298998	Jarrah
wpt013	50H	380710	6299008	Jarrah
wpt014	50H	380694	6298976	Jarrah
wpt015	50H	380666	6298983	Jarrah
wpt016	50H	380626	6298996	Jarrah
wpt017	50H	380519	6299002	Jarrah
wpt018	50H	380407	6299000	Dead Unknown
wpt019	50H	380410	6298961	Dead Unknown
wpt020	50H	380427	6298946	Jarrah
wpt021	50H	380454	6298960	Jarrah
wpt022	50H	380394	6298937	Jarrah
wpt023	50H	380394	6298636	Marri
wpt024	50H	380422	6298615	Marri
wpt025	50H	380447	6298604	Marri
wpt026	50H	380468	6298615	Marri
wpt027	50H	380479	6298617	Marri
wpt028	50H	380506	6298630	Marri
wpt029	50H	380508	6298622	Marri
wpt030	50H	380524	6298632	Marri
wpt032	50H	380599	6298596	Dead Unknown
wpt034	50H	380621	6298575	Dead Flooded Gum
wpt035	50H	380663	6298571	Marri
wpt036	50H	380707	6298581	Jarrah
wpt037	50H	380740	6298568	Dead Unknown
wpt038	50H	380771	6298549	Jarrah
wpt040	50H	380867	6298560	Jarrah
wpt051	50H	380678	6298810	Jarrah
wpt052	50H	380666	6298799	Jarrah
wpt055	50H	380530	6298856	Jarrah
wpt056	50H	380522	6298837	Jarrah
wpt057	50H	380519	6298836	Jarrah
wpt058	50H	380540	6298813	Jarrah
wpt059	50H	380558	6298828	Jarrah
wpt060	50H	380539	6298807	Jarrah
wpt061	50H	380565	6298839	Jarrah
wpt062	50H	380563	6298821	Jarrah
wpt063	50H	380557	6298751	Jarrah
wpt064	50H	380508	6298780	Jarrah
wpt065	50H	380495	6298794	Jarrah
wpt066	50H	380499	6298921	Jarrah
wpt067	50H	380685	6298645	Jarrah

DISCLAIMER

This fauna assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood ("the Author"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

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