



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 4514/1
File Number: 2011/006650-1
Duration of Permit: From 12 October 2013 to 12 October 2023

PERMIT HOLDER

Murray John Bell
Lesley Vida Bell

LAND ON WHICH CLEARING IS TO BE DONE

Lot 1986 on Deposited Plan 203009 (RUABON 6280)

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 77 native trees within the area hatched yellow on attached Plan 4514/1.

CONDITIONS

1. Fauna management

In relation to the areas hatched red on attached Plan 4514/1 the Permit Holder must implement and adhere to the Western Ringtail Possum Management Plan, Lot 1986 Ludlow-Hithergreen Road, Ruabon, 29 August 2013, attached as Appendix A to this permit.

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*:

- (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (ii) shall only move soils in *dry conditions*;
- (iii) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (iv) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

3. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

- (a) retain the topsoil removed by clearing authorised under this Permit and stockpile the topsoil in an area that has already been cleared.
- (b) within 3 months following completion of extractive activities, *revegetate* and *rehabilitate* the areas cross-hatched yellow on attached Plan 4514/1 by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
 - (ii) laying the topsoil retained under condition 3(a) on the cleared areas; and

- (iii) deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area; and
 - (iv) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (c) within 24 months of undertaking *revegetation* and *rehabilitation* in accordance with condition 3(b) of this Permit:
- (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
 - (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 3(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the Permit Holder must undertake additional *planting* or *direct seeding* of native vegetation in accordance with the requirements of condition 3(b)(iii) and (iv) of this Permit.

Definitions

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

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

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

dry conditions means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;

environmental specialist: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist.

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

local provenance means native vegetation seeds and propagating material from natural sources within 10 kilometres and and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.

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

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

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

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

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 the former Department of Environment and Conservation Regional Weed Assessments, regardless of ranking; or
- (c) not indigenous to the area concerned.



M Warnock
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

12 September 2013



**PROPOSED EXTRACTIVE INDUSTRY (SAND) –
LOT 1986 LUDLOW-HITHERGREEN ROAD, RUABON.
CITY REF: DA12/0357.**

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN.

1.0 Introduction.

Piggott Sand Supplies Pty Ltd propose to carry out the extraction of a quantity of sand from the abovementioned property owned by MJ & LV Bell. A conditional approval for the intended use was issued by the City of Busselton on 14th November 2012. The Department's Native Vegetation Conservation Branch requested that a Western Ringtail Possum Management Plan be prepared and assessed by the Southwest Region Office before they would make a final decision in respect to a clearing application for this property

The proposed extraction areas are two distinct cells which contain sparse, poor quality remnant vegetation which may best be described as 'parkland cleared'. The property has been used for grazing and pastoral production for many years. Many of the remnant trees are aged WA Peppermints (*Ag. Flexuosa*) and an extremely low number of Western Ringtail Possums (WRPs) have been identified on site by Botanist Greg Harewood. Mr Harewood's WRP counts are attached as Appendices to the WRP Management Plan.

Actual management for the proposed, staged clearing event is considered to be straight forward, as described below.

2.0 WRP Numbers.

WRP Surveys have been undertaken by Mr G. Harewood in October 2011 and December 2012, (attached as appendix 3 and appendix 4). Most recently, just 3 WRPs were identified in 'Area C', together with a few common Brushtail Possums. The locality has a known, large fox population and foxes were observed within the subject land when nocturnal observations were carried out.

Please refer to the Harewood reports attached as appendix 2. Please also note that the actual clearing footprints of the two extraction areas have been reduced from those shown on the Harewood survey plans.

3.0 Clearing Protocols.

The two areas proposed for extraction will be cleared during separate events, spaced at least three (3) months apart. Clearing will be carried out under the control and direction of a suitably qualified and experienced WRP spotter/handler who will locate and move animals out of the clearing areas into adjoining remnant vegetation to be retained.

DEC Standard WRP Clearing Protocol are to be applied with the following refinements;

- Within 24 hours prior to the clearing event a search is to be conducted across the clearing area to locate all occupied dreys and diurnal refuges. The WRP Spotter/handler to remove all dreys and where the opportunity arises attempt to capture all possums, move and release them into suitable retained habitat outside the clearing area.



- Reporting – within 24 hrs of the completion of the clearing provide an interim report to DEC (email, fax) stating the number of dreys removed and number of animals by species: displaced (moved on), captured, injured (including care given/rehabilitation) or dead during the operation.

4.0 Re-vegetation.

There are three re-vegetation buffer areas identified on the approved extraction plan attached as appendix 5. These are to be planted out and maintained to the satisfaction of the City of Busselton. The extractive industry approval runs for five (5) years, during which time the re-vegetation is required to be suitably established and advanced, to the satisfaction of the City of Busselton.

This buffer areas will provide a suitable WRP fauna corridor from the Ruabon reserve leading northwards to other stands of remnant vegetation around Downs Road.

The majority of plantings will be WA Peppermint (*Ag. Flexuosa*) seedlings and will far exceed the number of trees proposed for removal.

Please see the complete details of the re-vegetation plan attached as appendix 1.

5.0 Conclusion.

Actual management of the proposed clearing event will be reported by the WRP spotter/handler while the implementation of re-vegetation which will ultimately form a corridor function will be enforced by the City of Busselton in strict accordance with their development consent issued under the City's Extractive Industry Policy.



Revegetation Management Plan
Lot 1986 on DP 203009,
Ludlow – Hithergreen Road RUABON

DOCUMENT SUMMARY

1. INTRODUCTION

2. THE LANDSCAPE MANAGEMENT PLAN

- 2.1 Area requiring re-vegetation buffer comprised of:
 - 2.1.1 20 metre corridor adjacent to Ludlow Hithergreen Road
 - 2.1.2 40 metre corridor adjacent to the northern boundary of the reserve
 - 2.1.3 Additional area west of item 2.1.2 as shown on appendix 5
- 2.2 Pre-planting site preparation
- 2.3 Planting species & target structure
- 2.4 Planting density
- 2.5 Planting schedule, watering and post planting care (inc weed & pest management)
- 2.6 Implementation
- 2.7 Monitoring & mortality management
- 2.8 Proposed timeline for implementation of re-vegetation management plan

1 INTRODUCTION

BSO Development Consultants, acting on behalf of Piggott Sand Supplies and MJ & LV Bell submit these additional re-vegetation plan details as requested by DER for the implementation and management of the re-vegetation buffer.

Our mutual client intends to complete as follows including, but not limited to:

- 1.1 the provision of a re-vegetation buffer as per the plan adjacent to Ludlow – Hithergreen Road on lot 1986 to provide linkage with the northern native trees and the main southern reserve;
- 1.2 the provision of the re-vegetation buffer adjacent to the north boundary of the reserve as shown on the clearing application plan in this document;
- 1.3 the provision of the re-vegetation buffer adjacent to the south boundary of area "C" designated for sand extraction as shown on the clearing application plan in this document;
- 1.4 remnant vegetation areas to be protected;
- 1.5 development and implementation of on-going weed management strategies with respect to the re-vegetation buffer;
- 1.6 annual monitoring of the re-vegetation buffer for mortality, weed's and pest's;
- 1.7 infill planting, weed and pest control on an as required basis for the five year period;
- 1.8 with regard to fire management fuel loads to be maintained at less than 8 tonnes per ha and



grasses <10cm within the re-vegetation buffer. Also a continuous firebreak in accordance with The City of Busselton (BCC) specifications is required to be maintained as shown on the re-vegetation plan.

2 THE LANDSCAPE MANAGEMENT PLAN FOR REVEGETATION OF BUFFER

2.1 The Buffer Area's

The three areas are clearly shown on appendix 5.

2.2 Pre-planting Site Preparation

- 2.2.1 Any wet areas which are dominated by perennial grasses are to be treated with a knockdown herbicide such as Roundup Power Max® (high-dose glyphosate) twice during spring, with approximately four weeks between the two treatments.
- 2.2.2 All other areas are to be shallow scalped using a grader blade to remove the top 10cm or less of soil which contains the existing site weed burden and the bulk of the soil seed bank. Some top soil will remain after scalping. The depth of the scalping will be similar to the grading that is evident on the existing firebreaks within the property.
- 2.2.3 Following knockdown herbicide application or scalping, all areas will be ripped across the contour to relieve compaction resulting from long-term livestock grazing. Ripping will be carried out across the contour to avoid gully erosion. It is important to retain the natural landform post-ripping. Ripping will occur during summer to ensure maximum shatter of the hardpan. If the ground is too wet at the time of ripping it will be ineffective. Ripping will occur to a depth of around 40 – 45cm.
- 2.2.4 If there has been any germination or re-growth of weed species in the rehabilitation areas, one to two weeks prior to planting or seeding, the areas will need to be treated with a knockdown herbicide such as such as Roundup Power Max® (high-dose glyphosate).

2.3 Planting Species (to ensure target structure is achieved)

The species suitable for planting in the re-vegetation buffer are those listed below. Whilst not all of the species will be available at the time of planting, the actual species used will need to be a selection of species suited to Ab1, Ab, Aw and Abba complex soil types as indicated by the Tille & Lantzke land assessment. There will be a prevalence of *Agonis flexuosa* to promote the re-vegetation as WRP habitat.

OVER STOREY

- *Agonis flexuosa* (Peppermint)
- *Corymbia calophylla* (Marri)
- *Melaleuca viminea*
- *Eucalyptus rudis* (Flooded Gum)
- *Eucalyptus raphiopylla* (Paperbark)
- *Eucalyptus marginata* (Jarrah)
- *Corymbia haematoxylon* (Mountain Marri)
- *Banksia attenuate*
- *Banksia grandis*
- *Xylomelum occidentale*
- *Melaleuca preissiana*
- *Nuytsia floribunda*



MID STOREY

- Ardenanthos meisneri
- Grevillea manglesioides
- Stirlingia latifolia
- Acacia saligna
- Acaica extensa
- Macrozamia riedlei
- Acacia pulchella
- Regelia ciliate
- Jacksonia furcellata
- Jacksonia horrida
- Kunzea glabrescens
- Melaleuca thymoides
- Brachysema praemorsum
- Bossiaea eriocarpa

UNDER STOREY

- Tetraria capillaris
- Patersonia umbrosa ssp. xanthina
- Phyllanthus calycinus
- Conostylis aculeata

2.4 Planting Density

- 2.4.1 The re-vegetation buffer will be planted at a density as follows:
- Over storey - 3000 plants per ha using a mix of the species denoted in item 2.3 Over storey with the final selection subject to available species and a minimum of 40% *Agonis flexuosa*.
 - Mid storey - 3,000 plants per ha using a mix of the species denoted in item 2.3 Mid storey with the final selection subject to available species.
 - Under storey - 1,000 plants per ha using a mix of the species denoted in item 2.3 Under storey with the final selection subject to available species.
- 2.4.2 Where possible the species to be used within the site are to be from stock or seed derived from as close to the site as possible (i.e. local provenance).
- 2.4.3 To prevent livestock, kangaroo and rabbit damage to the plantings it is recommended that fencing be installed around the perimeter of the plantings as shown on appendix 5. The fencing is required to be a minimum height of 1.6 metres comprised of 1.2 metre ringlock and 0.9 metre rabbit netting. The rabbit netting should be installed such that 0.3 metres is layed flat on the ground on the outside of the fence to prevent pests digging under the fences. Gates will be required to be installed to allow access to the buffer area probably best positioned from the main access track as shown on appendix 5. As a further deterrent use of blood and bone fertilizers have been used in the Augusta Margaret River & Busselton Shires however there is no anecdotal evidence to support this use. If necessary and as a last resort kangaroo control should be considered. Any kangaroo control program will need approval from DEC before it is carried out.



2.5 Planting schedule, watering and post planting care

2.5.1 The numbers of plants required is as follows:

Over storey 2115 @ one per 3.3m² and the total total revegetation area being 7050m².

Mid storey 2115 @ one per 3.3m² and the total total revegetation area being 7050m².

Under storey 705 @ one per 10m² and the total total revegetation area being 7050m².

2.5.2 Hand watering to ensure that there is adequate moisture is important to assist seedlings to establish during the first and sometimes second summer, even though all species to be used within the site are drought tolerant and should not require ongoing watering once established (usually after the second summer). Therefore, moisture within the site will need to be monitored, and hand-watering will occur as required (i.e. monthly deep watering during the driest parts of summer). Infrequent, but deep watering is more beneficial than frequent but shallow watering.

2.5.3 Post-planting weed control using selective herbicides can be sprayed, using a boom spray, directly over native vegetation without causing harm to the native seedlings providing that the application rate does not exceed rate specified below. Therefore, it is paramount that the following mix is applied using carefully calibrated equipment to ensure that the application rate (amount per area) is not exceeded. Fusilade™ 2L/ha and Lontrel 800mL/ha plus an appropriate wetting agent This selective herbicide mix will need to be applied directly over the revegetation buffer area six weeks post-planting, when the majority of the weeds are at the two leaf stage.

The re-vegetation area is to be monitored, and if there is further germination of weeds, which may occur with species that have staggered germination, a second application is required to be applied approximately six weeks following the initial application. This mix is to be used again at six-weeks following the break-of-season rains when the revegetation areas are one year old, providing there is sufficient room for a boom spray to travel over the areas without brushing the herbicide directly onto individual plant. If the revegetation is too tall, spot-spraying with a knockdown herbicide such as such as Roundup Power Max® (high-dose glyphosate) is recommended. Summer weeds will need to be monitored, particularly Deadly Nightshade and melon species. If these appear, it will be necessary to spot-spray with a knockdown herbicide such as such as Roundup Power Max® (high-dose glyphosate). Weed control is required to be applied as needed for two years following planting (i.e. up to and including winter 2016).

2.5.4 Weed management strategies will be required where weed species are invading the buffer re-vegetation. Annual weeds can be treated by hand spraying the selective herbicide mix prescribed above (in section 2.5.3) six-weeks following the break-of-season rains when the majority of weeds are at the two-leaf stage. Caution must be used however as it is much more difficult to calibrate the application rate when hand-spraying the selective mixture over native vegetation. Alternately, weeds within remnant vegetation can be spot-sprayed with a knockdown herbicide such as such as Roundup® (glyphosate) however this herbicide will kill all native vegetation which it contacts so care must be again be exercised. In areas where weeds are more extensive or perennial species such as Kikuyu Grass are present, it will be necessary to spot-spray with a knockdown herbicide such as such as Roundup® (glyphosate). Weed control is required to be carried out within these lots twice yearly (spring and autumn), as needed.



2.5.5 General pest management, (grasshoppers and beetles) can be achieved using cislin at a rate of 600ml per 60 litres at an application rate of 250 litres per ha. This will contain debilitating pests such as grasshoppers and beetles as it is a residual pesticide. Planting tubes need to be used in conjunction with the preventative application of residual sprays.

2.6 Implementation

Implementation of this plan will commence immediately following approval of the re-vegetation plan by DEC. All earthworks (scalping and ripping) will occur during early 2014. Pre-planting weed control and implementation of the planting schedule will occur during winter 2014 (starting immediately following the break-of-season rains). Maintenance weed control activities and re-application of blood and bone will occur twice yearly for two years following planting (spring 2014, autumn 2015, spring 2015, autumn 2016 and spring 2016), as needed. A timeline for implementation is shown in table three.

2.7 Monitoring and Mortality Management

Site monitoring for mortalities as a result of water stress, disease, weeds, animal and insect pests should be carried out monthly and the appropriate actions taken as follows:

- 2.7.1 Watering - hand watering will be required to be increased if there are any significant signs of water stress in any of the plantings during the periods without rainfall. This is not restricted to the summer period.
- 2.7.2 Weed Control – additional spraying will be required in the event that the weeds still germinate in the buffer areas. The application of Fusilade™ 2L/ha and Lontrel 800mL/ha plus an appropriate wetting agent is required using carefully calibrated equipment to ensure that the application rate (amount per area) is not exceeded.
- 2.7.3 Weed Management – this relates to specifically the fire breaks as these can be a source of wind borne weed seed drift. It is imperative that the firebreaks are installed when there is sufficient moisture in the ground as to avoid airborne weed seed drift.
- 2.7.4 Insect Pest Intrusion – a competent person will be required to inspect the site for pest damage in order to target any additional specific chemical applications that may be required. General pest damage from Grass hoppers and south African beetles will require a re-application of Cislin at a rate of 600ml per 60 litres at an application rate of 250 litres per ha. All planting tubes will need to be secured in place on all plantings and maintained in that position at all times.
- 2.7.5 Animal Pest Intrusion – This will require the monitoring of the fences on a monthly basis until it can be seen that there are no stock or native animals entering the area. In the event that there is stock or native animal intrusion it is required that the fences be repaired where the breach has occurred or to upgrade the fence in either height or mesh size depending upon what was the cause of the breach.
- 2.7.6 Disease Monitoring & Management – There are a variety of diseases that can affect natives that need to be monitored during the juvenile growth period. In the event that disease is identified by a competent person then a suitable spray or remedial action is required to be carried out, (as advised by the competent person completing the inspection), as soon as possible to avoid mortalities.
- 2.7.7 Specific assessment of mortality – This is required to be carried out in Autumn, (so that plant orders can be placed for re-planting), with re-planting to be completed in the first winter rains. Assessment should be carried out on a 100% sample method. Due to the size of the area involved it is a reasonable expectation that the complete planting will be measured. Any losses should be flagged with pink survey ribbon and recorded.



This will need to be completed by a competent person who is able to identify juvenile growth stages of all the species planted. Records should be kept of areas where there is large number of mortalities where there is no apparent explanation as these areas may require soil testing for abnormalities. In the event that there are areas such as these then soil testing will be carried out and subject to advice received from a suitably competent agronomist action will need to be taken to rectify any soil abnormalities such that normal growth can occur. Despite the very light sandy soils at this site, in the event that it is determined that the plant density will decrease the mortalities at the site then additional plantings will be made to bring the over storey plantings to 4000 plants per hectare. This would reflect a total planting of over storey of 2820. This would represent additional plantings of 705 over storey plants. Consideration should be given to the species that have the least mortalities. In the event that Agonis Flexuosa is a thriving variety then this should be used as the predominant re-planting variety.

The acceptable mortality rates are as follows:

LOT 1986 DP203009 - 7050 sq metres		7050		10000		
CATEGORY	Target Density	Tree Qty's	25% Maximum Allowable Losses	Tree Qty's Losses	Minimum Allowable Density After Losses	Tree Qty's Minimum
Over storey	3000	2115	25%	529	75%	1586
Agonis Flexuosa (40% of Trees)	1200	846	25%	212	75%	635
Mid storey	3000	2115	25%	529	75%	1586
Under storey	1000	705	25%	176	75%	529
Total Plants per hectare	6000	4230		1058		3173

It is an expectation that replanting of the losses will be completed for a period of five years.

2.8 Proposed Timeline for Implementation of the Re-vegetation Plan.

ACTION	2014				2015		2016		2017		2018	
	SUM	AUT	WIN	SPR	AUT	SPR	AUT	SPR	AUT	SPR	AUT	SPR
Scalping and ripping												
Pre-planting weed control												
Planting												
Blood and bone application												
Post-planting weed, disease, pest, water stress, soil balance and plant density control												



Greg Harewood
Zoologist
PO Box 755
BUNBURY WA 6231
21 October 2011

Peter Harding
Managing Director - Manager of Planning
BSO Development Consultants
PO Box 414
BUSSELTON WA 6280

Dear Peter

**Western Ringtail Possum Survey/Black Cockatoo Habitat Assessment – Lot 1986
Ludlow Hithergreen Road – Ruabon - Proposed Clearing Areas**

This letter report details the results of a western ringtail possum (WRP) survey and black cockatoo habitat assessment over areas of land within Lot 1986 Ludlow Hithergreen Road, Ruabon that are subject to a vegetation clearing application.

Scope

- One daytime western ringtail possum survey of proposed clearing areas recording evidence of use such as scats, dreys (and potential daytime refuge sites such as tree hollows) and individuals. Recording of observations on the extent and quality of western ringtail possum habitat within proposed clearing areas.
- One night time survey of proposed clearing areas searching for western ringtail possum individuals.
- Recording of observations on the extent and quality of black cockatoo habitat (nesting, foraging and roosting habitat) within proposed clearing areas.

Methods

Both the daytime (9th October, 2011) and night time (11th October, 2011) surveys were carried out on foot. During the daytime survey each tree within the proposed clearing areas were examined for scats and dreys. Trees observed to contain hollows possibly suitable for fauna to utilise were also noted. The night time survey involved a series of close spaced traverses through each area using a head torch to locate individuals by eye shine.

The daytime survey was confined to the proposed clearing areas and some adjoining vegetation just outside the boundaries of these areas. The night time survey covered these same areas but was also extended into the vegetation that adjoins Area "C" on its north west corner.

Observations were recorded on a handheld GPS.

Results – Western Ringtail Possum Survey

Observations relating to western ringtail possums made during the daytime and night time surveys are shown in the attached Figures 1 and 2.

The daytime survey identified two WRP dreys with the proposed clearing areas (one in Area "B" and one in Area "C"). WRP scats were observed at six locations (two within Area "B" and four within Area "C"). Seven trees containing hollows that could possibly be used for daytime refuge by WRPs were also observed though no evidence of actual use (by WRPs) was seen. A number of raven and magpie nest were also seen in Area "C". Abandoned or out of use nests of this type are sometimes used by WRPs. but no evidence of this being the case in this instance was seen.

The night time survey located four WRPs within the proposed clearing areas (two within Area "B" and two within Area "C"). Four WRPs were found within the vegetation that adjoins area "C" on its north west corner and an additional five WRPs were seen vegetation contained within the Ruabon Road reserve.

Thirteen common brushtail possums were also observed, four within Area "B", two within Area "C" and seven in nearby vegetation.

Most of the trees remaining within the proposed clearing areas are peppermint (*Agonis flexuosa*). Other tree species that occur in much lower numbers include jarrah (*Eucalyptus marginata*), marri (*Corymbia calophylla*), christmas tree (*Nuytsia floribunda*) and moonah (paperbark) (*Melaleuca preissiana*). Peppermint represents the primary habitat for WRPs in this area though they will also use the other tree species present for foraging, daytime refuge and dispersal to different degrees depending on tree age, habit (size, shape) and position relative to other vegetation.

Canopy connectivity is relatively poor in both proposed clearing areas and for WRPs to utilise the habitat present, individuals would need to come to ground on occasions. Vegetation within Area "B" represents a halo of relatively poor quality vegetation located near far better quality vegetation within the Ruabon Road reserve and the Ruabon Nature Reserve. The vegetation in area "B" does not provide a link or corridor for movement to any other areas of vegetation. Vegetation in Area "C" exhibits slightly better canopy connectivity than Area "B" with some slightly larger groves of trees and vegetation present in some sections of the proposed clearing area has some value as a linkage/corridor. In particular trees in the extreme north of Area "B" provide a link between vegetation that borders the Ludlow - Hithergreen Road and the WRP habitat located north/west of the proposed clearing area.

Both areas ("B" and "C") are located within paddocks that have been open to livestock grazing for many years and as a consequence there is no associated native understorey, with groundcover being dominated by introduced pasture grasses. A significant proportion of the peppermint trees in both areas are in "poor" condition (severe flagging or death of branches in canopy or lower down) or at best "fair" (moderate flagging or death of branches in canopy or lower down – GeoCatch condition ratings) and are showing other evidence of decline such as fungal growth on trunk and branches and abnormal death of larger limbs and

branches. Some trees have collapsed (trunks have split and fallen apart) and consequently died due to extreme internal fungal growth.

The decline in many trees can be attributed to extreme old age (as evidenced by very large trunk sizes) though other stresses (e.g. climate change, disease) may be playing a part on younger individuals. As the areas in question are open to livestock grazing there is no opportunity for recruitment and it can be expected that over time, as trees continue die and not be replaced, that the density of vegetation will continue to diminish without some sort of human intervention.

Results – Black Cockatoo Habitat Assessment

Tree hollows observed during the daytime survey are shown in Figure 1. With the exception of one hollow (north west corner of area "C") none of the hollows appeared to have entrances of a size that would allow entry of a black cockatoo into a suitable sized branch/trunk. It is uncertain if the single hollow identified in area "C" is in fact suitable as the assessment is based solely on entrance size + branch/trunk size and the internal dimensions of the hollow could not be determined.

No evidence of black cockatoos foraging onsite was seen during the survey period. Potential black cockatoo foraging habitat present with the proposed clearing areas is relatively limited and represented by only a small number of individuals (primarily marri and to a lesser extent jarrah) Most of the trees remaining within the proposed clearing areas are peppermint, a species which, while sometimes foraged upon by some species of black cockatoos for boring beetle larvae is not normally regarded as significant foraging habitat.

The highest concentration of marri trees is located just inside the north east corner of Area "B" with others being present outside its eastern boundary. In other areas marri and jarrah are only present as scattered individuals in low numbers.

No evidence of black cockatoos roosting within trees inside proposed clearing areas was seen.

Conclusion

The results show that vegetation within the proposed clearing areas is being used by WRPs as habitat. The degree of utilisation in these areas is relatively low, most likely a consequence of the discontinuous canopy connectivity and generally poor condition of the peppermint trees present. The vegetation within the proposed clearing areas is in obvious decline and as the area is open to livestock grazing there is no recruitment. Based on these observations it can be expected that the density and quality of vegetation will continue to decline in the long term.

The extent of black cockatoo habitat with the proposed clearing areas is small and limited to a few potential foraging opportunities and one possible tree hollow.

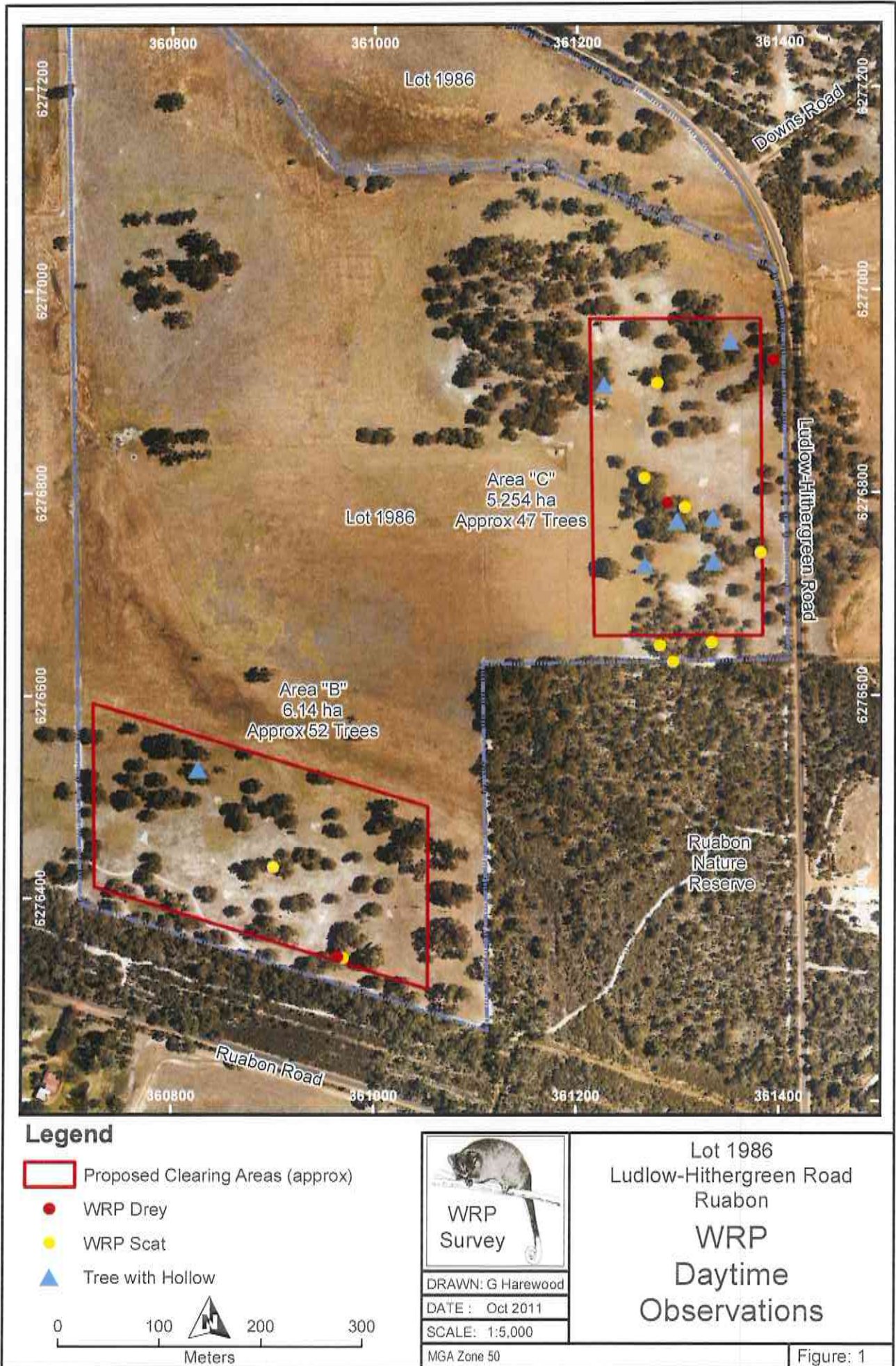
The proposed clearing and the requirement to offset the vegetation removed provides an opportunity to negate any impact the clearing may have on fauna that utilised the area and

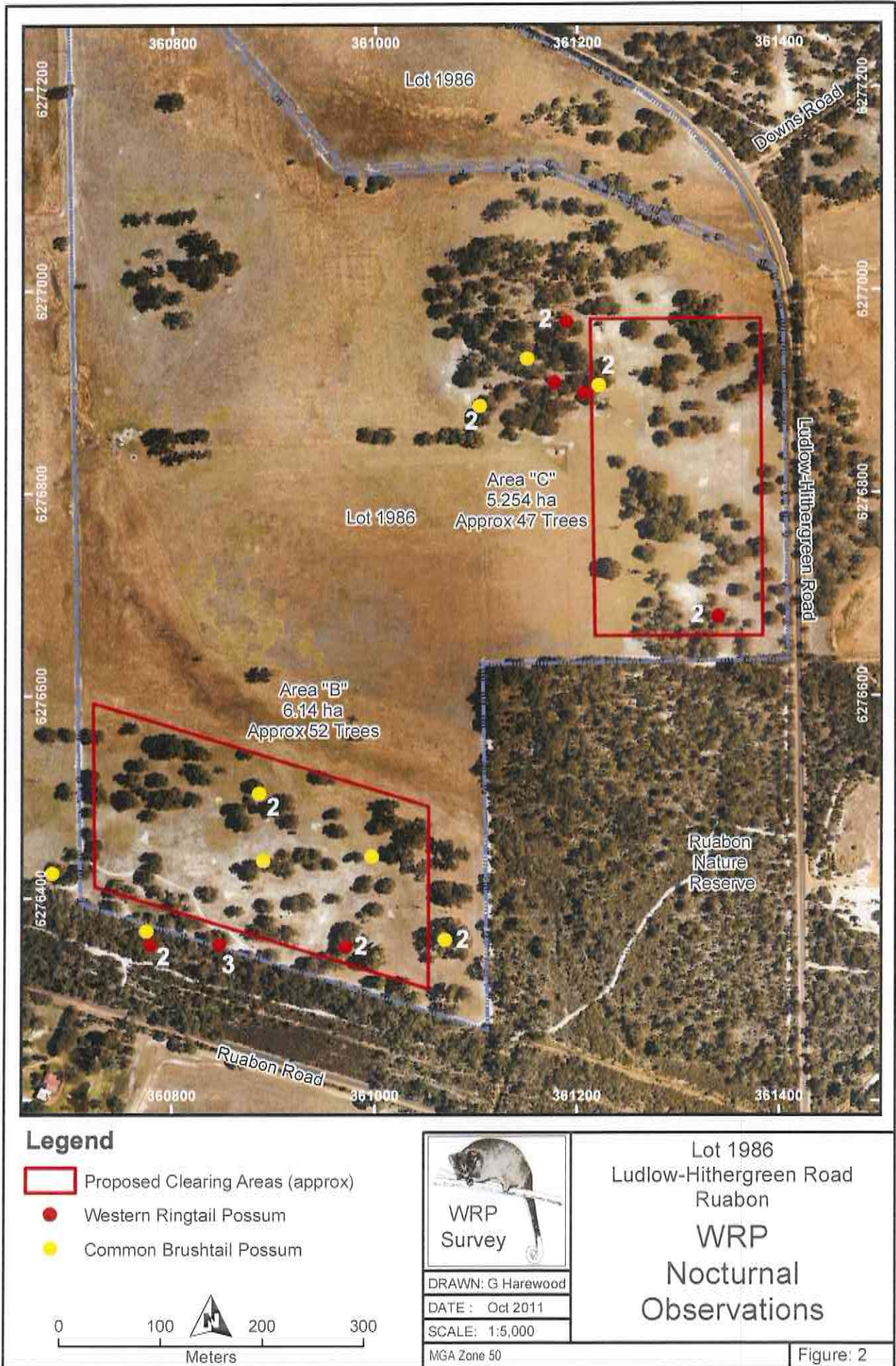
will also alleviate the ongoing loss of habitat that is already occurring due to the ongoing death of trees.

Maintenance and/or enhancement of the link between vegetation outside of the property (e.g. along Ludlow - Hithergreen Road) with the more coherent block of vegetation near the centre of Lot 1896 should be a priority. Any other modification to the boundaries of the proposed clearing areas that provides an opportunity to retain and if possible protect (e.g. fence off from stock) existing vegetation could also be investigated.

A handwritten signature in black ink, reading "G Harewood". The signature is written in a cursive style with a large, sweeping initial 'G'.

Greg Harewood
Zoologist





Legend

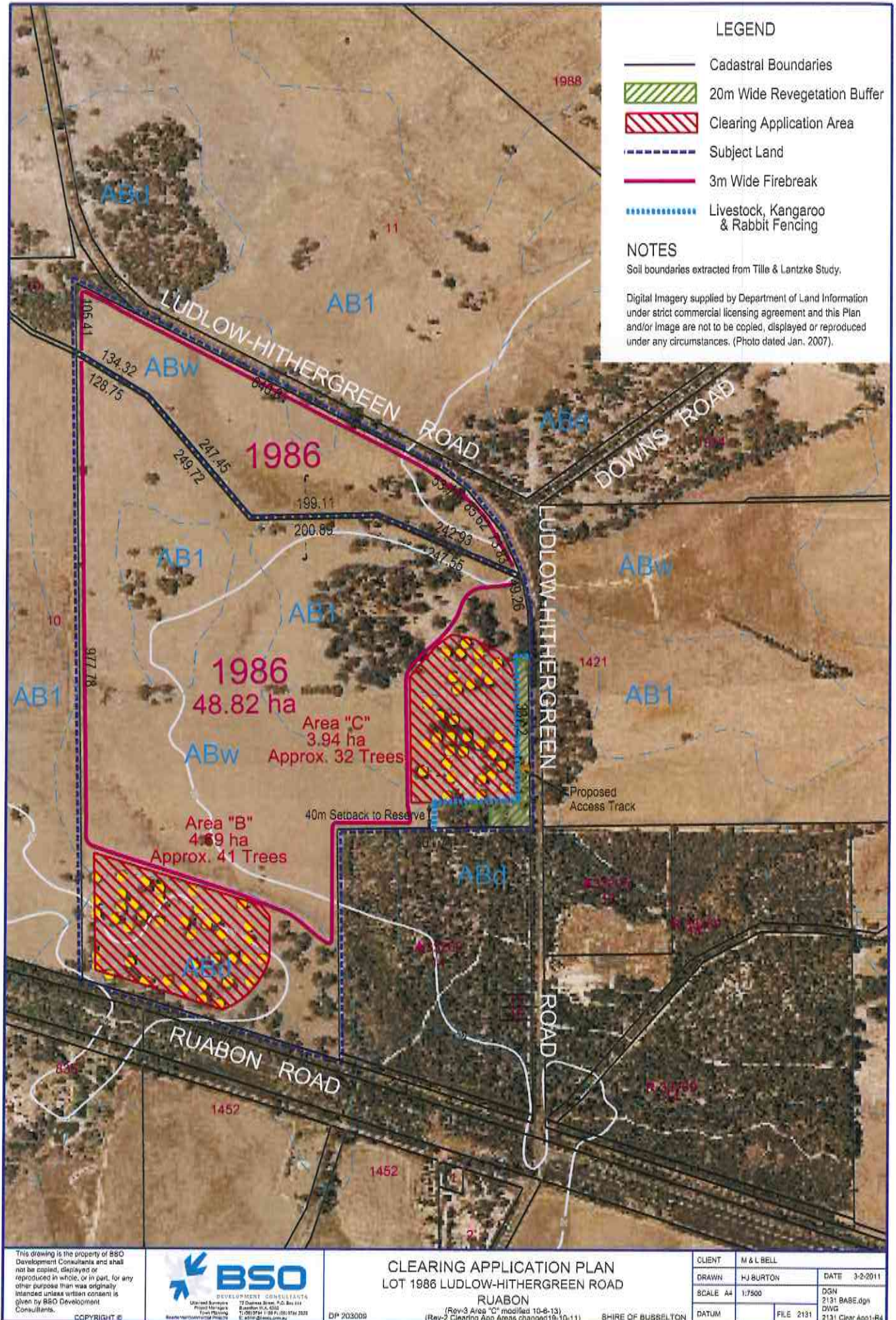
- Proposed Clearing Areas (approx)
- Western Ringtail Possum
- Common Brushtail Possum



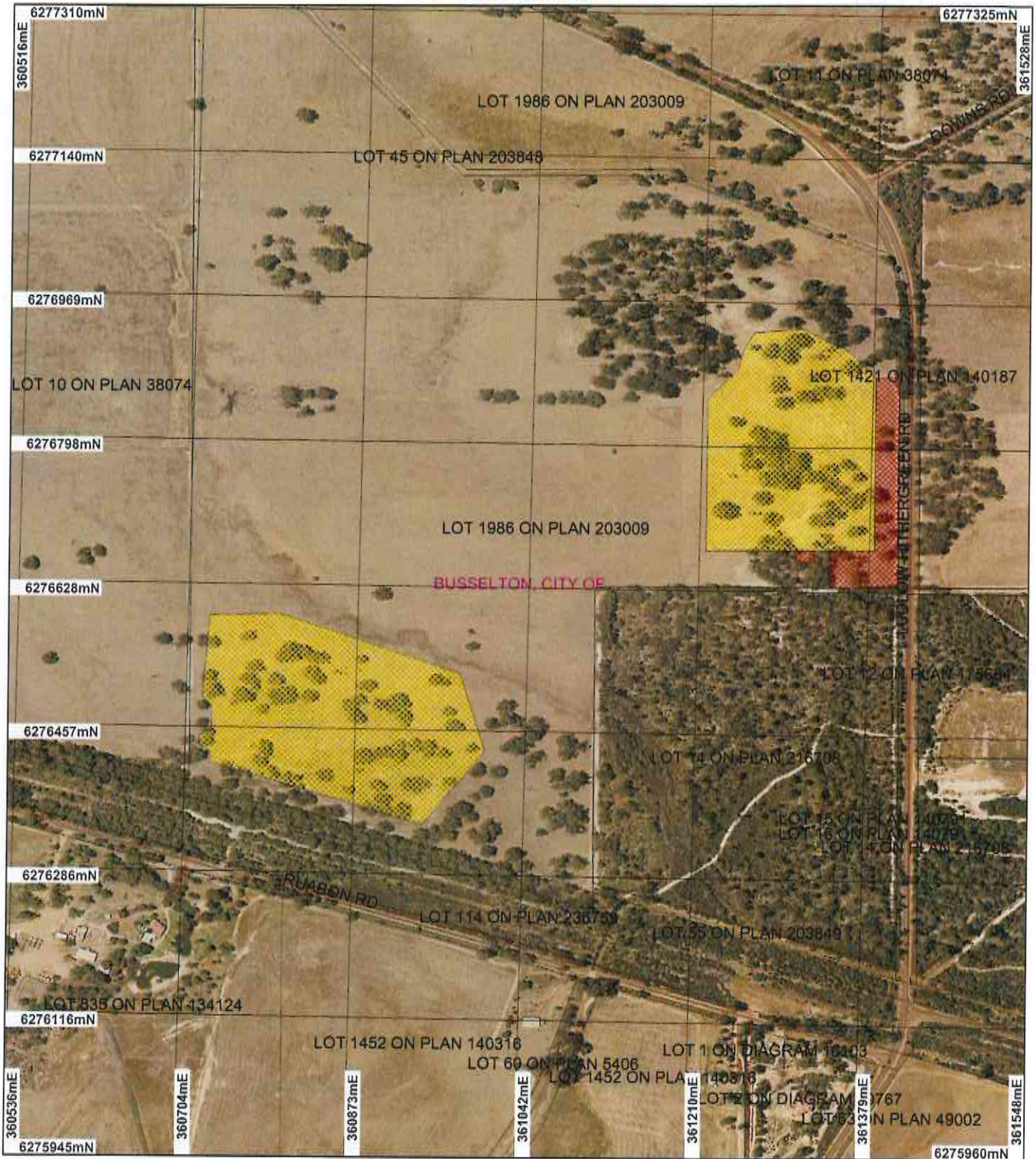
DRAWN: G Harewood
 DATE: Oct 2011
 SCALE: 1:5,000
 MGA Zone 50

Lot 1986
 Ludlow-Hithergreen Road
 Ruabon
WRP
 Nocturnal
 Observations

Figure: 2



Plan 4514/1

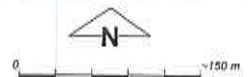


LEGEND

- Clearing instruments**
- Areas Applied to Clear
 - Areas Subject to Conditions
 - Areas Approved to Clear
 - Road Centrelines

- Cadastre
- Cadastre for labelling
- Local Government Authorities

Busseilton 50cm Orthomosaic - Landgate 2007



Scale 1:6000

(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

M Warnock Date 12/9/13

M Warnock

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

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Government of Western Australia
Department of Environment Regulation

WA Crown Copyright 2002



Clearing Permit Decision Report

Government of Western Australia
Department of Environment Regulation

1. Application details

1.1. Permit application details

Permit application No.: 4514/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Murray John and Lesley Vida Bell

1.3. Property details

Property: LOT 1986 ON PLAN 203009 (RUABON 6280)
Local Government Area: City of Busselton

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
	77	Mechanical Removal	Extractive Industry

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 12 September 2013

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>Three Beard vegetation associations have been mapped within the application area:</p> <ul style="list-style-type: none"> - 1136: Medium woodland; marri with some jarrah, wandoo, river gum and casuarina (only in eastern area, approximately 75 per cent) - 990: Low forest; peppermint (<i>Agonis flexuosa</i>) (approximately 20 per cent in eastern area and 10 per cent in western area) - 973: Low forest; paperbark (<i>Melaleuca raphiophylla</i>) (approximately 5 per cent in eastern area and 90 per cent in western area) (Shepherd, et al 2001). <p>Heddle vegetation complex (eastern area only):</p> <ul style="list-style-type: none"> - Abba Complex: A mixture of open forest of <i>Corymbia calophylla</i> (Marri) - <i>Eucalyptus marginata</i> (Jarrah) - <i>Banksia</i> species and woodland of <i>Corymbia calophylla</i> (Marri) with minor occurrences of <i>Corymbia haematoxylon</i> 	<p>The application is to clear approximately 77 trees within Lot 1986 on Deposited Plan 203009, Ruabon, for the purpose of sand extraction, in the City of Busselton.</p>	<p>Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)</p>	<p>The area under application has been amended from 99 trees to approximately 77 trees (<i>Agonis flexuosa</i> and <i>Corymbia calophylla</i>) over grassy weeds within a reduced footprint area from 12.5 hectares to approximately 9.8 hectares for the purpose of sand extraction.</p> <p>The vegetation under application consists of an eastern area of 4.3ha and a western area of 5.5ha in a completely degraded (Keighery, 1994) condition.</p> <p>The western and eastern areas under application consist of <i>Agonis flexuosa</i> trees and some <i>Corymbia calophylla</i> trees over pasture and weeds. In the eastern area, there is also a <i>Nuytsia floribunda</i> (Christmas) tree.</p> <p>The vegetation condition is considered completely degraded (Keighery, 1994) due to the lack of understorey and the groundcover consisting of thick grass and weed species including daisies and scattered arum lily. The <i>Agonis flexuosa</i> trees appear to be very large and old with good crown health and juvenile trees were observed to be growing well despite disturbance by cattle (DEC, 2011).</p> <p>The description and condition of the vegetation was determined from a DEC site visit (DEC, 2011) and aerial imagery (Busselton 50cm Orthomosaic - Landgate 2007).</p>

(Mountain Marri).
Woodland of *Eucalyptus rudis* (Flooded Gum) -
Melaleuca species along
creeks and on flood plains
(Heddie et al, 1980).

Mattiske vegetation
complexes (western area
only):

- Aw: Mosaic of tall
shrubland of *Melaleuca*
viminea and woodland of
Eucalyptus rudis-
Melaleuca raphiophylla
with occasional *Corymbia*
calophylla on broad depr
(Mattiske and Havel,
1998).

- Ab: Woodland and open
forest of *Corymbia*
calophylla on flats and low
rises in the humid zone
(Mattiske and Havel,
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 not likely to be at variance to this Principle**

The area under application consists of approximately 77 scattered *Agonis flexuosa* (Peppermint) and *Corymbia calophylla* (Marri) trees over grassy weeds within a footprint area of 9.8 hectares (an eastern area of 4.3ha and a western area of 5.5ha) in a completely degraded (Keighery, 1994) condition.

The areas under application occur within 'supporting habitat' for the Western Ringtail Possum, as outlined in the Environment Protection and Biodiversity Conservation Act (EPBC Act) Policy Statement 3.10 (DEWHA, 2008).

A Western Ringtail Possum (*Pseudocheirus occidentalis*) survey and black cockatoo habitat assessment was conducted to determine the significance of the vegetation under application as fauna habitat for species of conservation significance. The survey confirmed the proposed clearing area is being utilised by Western Ringtail Possums (Harewood, 2011). The survey report concluded that the degree of utilisation in the application areas is relatively low and the vegetation condition is in decline as the area is open to livestock grazing (Harewood, 2011). The black cockatoo habitat assessment concluded that the extent of habitat is small and limited to a few foraging opportunities and one possible tree hollow (Harewood, 2011).

Department of Environment and Conservation (DEC) site inspections confirmed Western Ringtail Possums (WRP) are foraging and living within both the western and eastern applied areas with numerous scats and two dreys observed during the site inspection (DEC, 2011). Common brushtail possum scats were also found in both application areas indicating that the numbers of possums occupying the habitat is potentially significant (DEC, 2011).

Approximately 500 metres to the south of the vegetation under application there are two records of the Southern *Banksia attenuata* woodland priority ecological community (priority 3). However, due to the completely degraded (Keighery, 1994) condition of the vegetation under application it is unlikely to impact upon, or contain vegetation representative of these priority ecological communities.

While the areas under application support known habitat and linkages for Western Ringtail Possums, the vegetation is in a completely degraded (Keighery, 1994) condition and is not likely to comprise a high level of biological diversity.

Therefore, the application is not likely to be at variance to this principle.

Methodology -References:
- DEWHA (2008)
- Keighery (1994)
GIS Databases
-SAC Bio Databases (Accessed 23/08/2011)

(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

Within the local area (10 kilometre radius) nine species of conservation significant fauna have been recorded including *Botaurus poiciloptilus* (Australasian bittern), *Calyptorhynchus latirostris* (Carnaby's black cockatoo), *Calyptorhynchus banksii* subsp. *Naso* (forest red-tailed black cockatoo), *Calyptorhynchus baudinii* (Baudin's cockatoo), *Morelia spilota imbricata* (carpet python), *Macrotis lagotis* (bilby), *Phascogale tapoatafa* ssp. (brush-tailed phascogale), *Falco peregrinus* (peregrine falcon) and *Pseudocheirus occidentalis* (western ringtail possum) (DEC, 2007-).

The area under application consists of approximately 77 scattered *Agonis flexuosa* and *Corymbia calophylla* trees over grassy weeds within two footprint areas totalling 9.8 hectares in a completely degraded (Keighery, 1994) condition (DEC, 2011). Based on the condition of the vegetation, site visit observations and location in the landscape it is unlikely that the vegetation contains or plays a significant role in supporting ground dwelling fauna or fauna that requires a dense understorey.

A survey of the area under application (Harewood, 2011) confirmed the presence of one tree hollow of suitable size for black cockatoo. The survey did not observe any evidence of black cockatoo foraging or roosting although a small number of potential individual (primarily marri and to a lesser extent jarrah) foraging trees were observed (Harewood, 2011). These observations were confirmed by DEC site inspections (DEC, 2011). Based on these observations it is not likely the area under application provides significant habitat for black cockatoos within the local area.

Noting the flora species within the two areas under application, known fauna species, site observations and the location within the landscape it was determined that the area under application may be significant habitat for western ringtail possums.

The western ringtail possum is listed as a schedule 1 species under the Wildlife Conservation (Specially Protected Fauna) Notice 2006. Fauna listed as schedule 1 are rare or likely to become extinct and are declared to be fauna in need of special protection. Western ringtail possums are also protected under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 and are listed as vulnerable.

Western ringtail possums occur predominantly in peppermint (*Agonis flexuosa*) forest near coastal habitats of the southern Swan Coastal Plain, which is considered important possum habitat as it contains the highest known density populations of the species and contains dense and productive peppermint tree habitat (DEWHA, 2008). The area under application is identified within 'supporting habitat' for the possum, as outlined in the Environment Protection and Biodiversity Conservation (EPBC) Act Policy Statement 3.10. 'Supporting habitat' is habitat that buffers key local populations from threats as well as providing foraging, breeding and dispersal opportunities with the main goal of this area to improve habitat quality and connectivity on the plains and to the hinterland, thus increasing opportunities for foraging, breeding and dispersal (DEWHA, 2008). This policy identifies that significant impact on the western ringtail possum will occur where clearing of more than 50 per cent of a remnant patch that is between 0.2 and 0.5 hectares in size or fragmentation of an existing habitat linkage occurs (DEWHA, 2008).

A survey of the area under application (Harewood, 2011) confirmed the presence of western ringtail possums both within the area under application, adjacent trees within the property under application and within the Ruabon Nature Reserve. The presence of the species within the area under application is considered significant as the applied area exists within a highly cleared landscape and therefore clearing of the proposed area will reduce the connectivity of their 'supporting habitat' in an area that is extensively cleared. Noting the adjacent Ruabon Nature Reserve, consideration was given to the capacity of this reserve to accommodate displaced western ringtail and common brushtail possums. It was observed that peppermint trees were sparsely scattered through the vegetation types present within the reserve and were of much smaller size and lacked continuous canopy connections than those within the applied area. Therefore it was determined that the Ruabon Nature Reserve does not provide the preferred habitat and lacks the capacity to accommodate displaced possums (DEC, 2011a).

The fauna survey undertaken by Harewood (2011) observed a total of 13 western ringtail possums, 4 within the application areas, 2 dreys and scats at six locations. The survey report concluded the degree of utilisation in the application areas is relatively low and the vegetation condition is in decline as the area is open to livestock grazing which is preventing recruitment (Harewood, 2011). DEC observed evidence of grazing, with some trees described as old and large, and also noted the crown health to be quite good in comparison to trees observed at other sites, therefore providing good quality habitat as evident by the current utilisation by both possum species. Noting Harewood's (2011) conclusion of the degree of utilisation, DEC identifies the number of possums recorded as consistent with that found in highly fragmented 'lower quality habitat' and asserts that utilisations should not be compared with animal densities occurring in 'prime' possum habitat located along the coastal Busselton strip.

A comparison of observations made in the Harewood (2011) fauna report and those made during DEC site inspections (DEC, 2011) identified a discrepancy in data noting some dreys and scats observed by DEC were not identified in the fauna survey undertaken. Therefore it is considered that the number and density of western ringtail possums utilising the area under application may have been underestimated.

It is acknowledged that the application was modified to reduce the impacted area by 22 trees and a commitment to provide a 20 metre wide revegetation buffed along the eastern boundary of the property (Ludlow-Hithergreen Rd) was made.

Given the presence of western ringtail possums within the area under application and the area's contribution to 'supporting habitat' for this species it is considered that the areas containing 77 trees under application are significant habitat and therefore the proposed clearing is at variance to this clearing principle.

To address the impacts to western ringtail possums the applicant has committed to adhere to a Western Ringtail Possum Management Plan (2013) which includes the use of a fauna spotter while conducting clearing activities and the revegetation of a corridor to assist in the movement of the western ringtail possum through the landscape.

Methodology References:
-DEC (2007)
- DEC (2011)
- DEWHA (2008)
- Shire of Busselton (2011)
- Western Ringtail Possum Management Plan (2013)
GIS Databases:
-DEC Tenure

(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**

There are 18 species of rare flora mapped within the local area (10 kilometre radius). The closest record is mapped within the south east corner of the southern proposed clearing area.

The areas under application contain scattered *Agonis flexuosa* and *Corymbia calophylla* trees over grassy weeds and are in a completely degraded (Keighery, 1994) condition (DEC, 2011). In addition, the area is being grazed by livestock (BSO, 2011).

A DEC site inspection confirmed that it is highly unlikely that rare flora will occur within the areas under application due to extensive grazing by cattle throughout the applied areas (DEC, 2011).

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

Methodology References:
- BSO (2011)
- DEC (2011)
- Keighery (1994)
GIS Databases
-SAC Bio Databases (Accessed 23/08/2011)

(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**

Four Threatened Ecological Communities (TECs) have been recorded in the local area (10km radius) including;
- Eucalyptus calophylla woodlands on heavy soils of the southern Swan Coastal Plain- Vulnerable
- Herb rich saline shrublands in clay pans- Vulnerable
- Shrublands on dry clay flats- Endangered
- Shrublands on southern Swan Coastal Plain Ironstones (Busselton area)- Critically Endangered

The closest mapped TEC is the 'herb rich saline shrublands in clay pans' located approximately 430m from the areas under application and this TEC occurs within the same Heddle and Beard vegetation types as the area under application (Heddle, 1980, Shepherd, 2009).

Due to the completely degraded condition (Keighery, 1994) of the amended areas under application and small clearing size (approximately 77 trees), the proposed clearing is not likely to be at variance to this Principle.

Methodology References:
- Heddle (1980)
- Keighery (1994)
- Shepherd (2009)
GIS Databases
-SAC Bio Databases (Accessed 23/08/2011)

(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 may be at variance to this Principle

The amended area under application is located within the Shire of Busselton, within which there is approximately 43 per cent of pre-European vegetation extent remaining and there is approximately 25 per cent of pre-European vegetation remaining in the local area (10 kilometre radius).

Five of the six vegetation types under application retain less than the 30 per cent threshold level recommended in the National Objectives Targets for Biodiversity Conservation; below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). However it is noted that due to the completely degraded condition of the vegetation under application it is not likely to be representative of these vegetation complexes.

Despite the condition of the vegetation under application it has been identified as providing significant habitat for western ringtail possums, and therefore plays a significant role as a remnant of native vegetation.

Given the values of the remnant and the extent of vegetation remaining within the local and regional context the vegetation under application may be significant as a remnant in an extensively cleared landscape.

Therefore, the application may be at variance to this principle.

	Pre-European (ha)	Current Extent Remaining (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,221	587,708	39.1	35.0
Shire*				
Shire of Busselton	146,478	62,332	42.5	64.9
Beard Vegetation Association in Bioregion*				
1136	48,118	3,818	7.94	0.84
990	1,948	359.88	18.5	10.7
973	2,510	564.25	22.5	31.1
Hedde Vegetation Complex **				
Abba Complex	16,127	1,124	7.0%	0.4%
Mattiske Vegetation Complex **				
Abba (Aw)	9,094	478	5.3%	0.2%
Abba (Ab)	8,007	657	8.2%	0.0%

* Government of Western Australia 2012

** Shepherd, 2007

Methodology

References:

- Commonwealth of Australia (2001)
- DEC (2011)
- Government of Western Australia (2012)
- Shepherd (2007)
- GIS Databases:
- DEC managed lands
- SAC Bio Databases (Accessed 11/07/2009)
- Hedde Vegetation Complexes
- Mattiske Vegetation Complexes
- NLWRA, Current Extent of Native Vegetation

(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 not likely to be at variance to this Principle

The western area under application is mapped as a multiple use wetland however a DEC site visit confirmed the area did not have any wetland characteristics (DEC, 2011).

A minor, non-perennial watercourse runs along the northern boundary of the western application area but is outside the application area and is not associated with any riparian vegetation. No riparian vegetation was observed in the area under application (DEC, 2011). The nearest major watercourse is the Ludlow River which occurs 2.9 kilometres north of the area under application.

Given the above, the vegetation under application is not likely to be at variance to this principle.

Methodology References:
- DEC(2011)
GIS Databases:
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
- Hydrography, linear

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

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

The area under application is comprised of acid earths in association with leached sands (Northcote et al. 1960-68).

The groundwater salinity within the application area is 500-1000 milligrams per litre of total dissolved solids. This level of groundwater salinity is considered to be marginal and salinity risk is low.

The proposed amended clearing of approximately 77 scattered *Agonis flexuosa* and *Corymbia calophylla* trees over grassy weeds within a total footprint area of 9.8 hectares in a completely degraded (Keighery, 1994) condition is not likely to cause appreciable land degradation.

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

Methodology References:
- DEC (2011)
- Keighery (1994)
- Northcote et al. (1960-68)
GIS Databases
-Soils, Statewide
-Groundwater Salinity, statewide
-Salinity Risk

(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 vegetation under application is linked to the Ruabon Nature Reserve occurring 24 metres south of the eastern area and 44 metres east of the western area under application. The Nature Reserve contains known threatened ecological communities and flora (Shire of Busselton, 2011, DEC, 2011).

Given the close proximity to the Ruabon Nature Reserve the proposed clearing may impact on the environmental values of the reserve and therefore may be at variance to this principle.

Weed and dieback management would assist in mitigating potential impacts.

Methodology References:
DEC (2011)
Shire of Busselton (2011)
GIS Databases:
-DEC Managed lands
-Busselton 50cm Orthomosaic - Landgate 2007

(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 is not likely to be at variance to this Principle**

The groundwater salinity within the application area is 500-1000 milligrams per litre of total dissolved solids. This level of groundwater salinity is considered to be minimal.

The area under application is identified as being a moderate to low acid sulphate soil (ASS) risk area, therefore there is a possibility that the proposed clearing will increase acidity of groundwater (DEC, 2012).

A major drain is mapped 70 metres north and 300 metres east of the eastern area under application and a minor, non-perennial watercourse runs along the northern boundary of the western application area. The proposed clearing activities may cause sedimentation of surface water, however the impacts are likely to be temporary and minimal.

The clearing of the 77 trees under application is not likely to have a significant impact on the quality of groundwater or surface water in the local area.

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

Methodology GIS Databases:
-Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
-Hydrography, linear
-Groundwater Salinity, statewide

(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

An area subject to inundation is mapped in the north east corner of the eastern area under application.

The proposed clearing of approximately 77 scattered *Agonis flexuosa* and *Corymbia calophylla* trees over grassy weeds within a total footprint area of 9.8 hectares in a completely degraded (Keighery, 1994) condition may cause some short term water logging; however it is not expected to increase the incidence or intensity of flooding.

Therefore proposed clearing is unlikely to be at variance to this principle.

Methodology GIS Databases
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain
- Hydrography, linear

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

Comments

A letter was sent to the proponent on 2 February 2012 requesting a Western Ringtail Possum Management Plan which includes rehabilitation of fauna corridors developed in consultation with South West Region DEC and requesting a copy of their extractive industry licence. The extractive industry licence was received on the 21 November 2012. The Western Ringtail Possum Management Plan was received on 29 August 2013.

Sand extraction is the proposed land use for the area under application. Impacts upon the environmental values (threatened ecological communities and flora) of the Ruabon Nature Reserve may occur as a result of modified surface and groundwater hydrology if sand extraction is undertaken (DEC, 2011a). The proponent has advised that if a sand extraction licence is applied for and progressed, the normal conditions do not permit such an activity to interfere with groundwater hydrology. Conditions in past sand extraction licences have prevented sand extraction occurring during winter months. The property is unlikely to require any specific groundwater conditions as the areas proposed for mining are sandy rises around 2 - 3 meters above the flat valley floors within the property. Therefore sand can be removed without any change to the natural drainage corridor which comes out of the Ruabon Nature Reserve and travels in a west north-westerly direction. The extractive industry licence for the proposed clearing which was granted by the Shire of Busselton on the 14 November 2012 has a condition requesting for the development of a Drainage Management Plan prior to the commencement of excavation.

To ensure limited hydrological impact to the adjoining Ruabon Nature Reserve the proponent should provide a commitment to rehabilitate the landscape (following natural contours) in a timely manner on the completion of sand extraction activities. Surface water contours would be required to support a surface water management and rehabilitation plan. The extractive industry licence for the proposed clearing requires rehabilitation of the sand mine in stages and no more than two hectares shall be worked at any one time with previously worked areas to be rehabilitated prior to excavating the following two hectares.

The areas under application occur within the Busselton - Capel Groundwater Area, as proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act). The applicant will be advised to consult the Department of Water regarding requirements under the RIWI Act.

The area under application is zoned as General Farming under the Town Planning Scheme Zones.

Methodology No public submissions have been received.
References:
- BSO (2011)
- Shire of Busselton (2011)

GIS Databases
-Town Planning Scheme Zones

4. References

- BSO (2011) Supporting Information for CPS 4514/1 received 22/07/2011. BSO Development Consultants, Busselton, Western Australia (DEC REF: A415478).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DEC (2007 -) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed 23/08/2011.
- DEC (2011) Site Inspection Report for Clearing Permit Application CPS 4514/1 Lot 1986 Ludlow- Hithergreen Road, Ruabon. Site inspection undertaken 8/9/2011 Department of Environment and Conservation, Western Australia (DEC REF A432517).
- DEC (2011a) Regional response to 30 day letter amendment for Clearing Permit Application CPS 4514/1 Lot 1986 Ludlow- Hithergreen Road, Ruabon, received 9/11/11, Department of Environment and Conservation, Western Australia (DEC REF A448676).
- DEC (2012) Hydrology advice for Clearing Permit Application CPS 4514/1 Lot 1986 Ludlow- Hithergreen Road, Ruabon, received 13/1/12, Department of Environment and Conservation, Western Australia (DEC REF A465893).
- DEWHA (2008) Background Paper to 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.
- Environmental Protection Authority (2008) Environmental guidance for planning and development. Guidance Statement No. 33. Environmental Protection Authority, Western Australia.
- EPA (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- Government of Western Australia. (2013). 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.
- Harewood, G (2011) Western Ringtail Possum Survey/ Black Cockatoo Habitat Assessment- Lot 1986 Ludlow- Hithergreen Road- Ruabon- Proposed Clearing Areas for CPS 4514/1 received 21/10/2011, Busselton, Western Australia (DEC REF: A4434422).
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, 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 Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- 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.
- Shepherd, D.P. (2007) 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.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Shire of Busselton (2011) Advice for clearing application CPS 4514/1 received 30/08/2011. Shire of Busselton , Busselton , Western Australia (DEC REF: A427027).

5. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation (now DER)
DEP	Department of Environmental Protection
DER	Department of Environment Regulation (formerly 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