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WESTERN RINGTAIL POSSUM *(Pseudocheirus occidentalis)* MANAGEMENT PLAN PROVENCE ESTATE, BUSSELL HIGHWAY, BUSSELTON

Prepared for:

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Report Date: 24 February 2009
Project Ref: ED2009-06, V1

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ENVIDUNS00526AA_Interim Provence WRPMP_001_gy_V1

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1	ENVIDUNS00526AA_Interim Provence WRPMP_001_gy_V1 (2).doc	V1	24 February 2009	Satterley Property Group	MS
2	ENVIDUNS00526AA_Interim Provence WRPMP_001_gy_V1 (2).doc	V1	24 February 2009	Coffey Environments Pty Ltd	MS

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ABBREVIATIONS

AHD	Australian Height Datum
CALM	Department of Conservation and Land Management – now Department of Environment and Conservation(Western Australia)
DEC	Department of Environment and Conservation (Western Australia)
DEH	Department of Environment and Heritage – now Department of the Environment, Heritage, Water and the Arts (Commonwealth)
DEHWA	Department of the Environment, Heritage, Water and the Arts
DOE	Department of Environment – now Department of Environment and Conservation (Western Australia)
EPP	Environmental Protection Policy
EPA	Environmental Protection Authority (Western Australia)
POS	Public Open Space
WRP	Western Ringtail Possum

1 INTRODUCTION

Satterley Property Group (the proponent) is proposing to subdivide their landholding in Yalyalup (East Busselton) for urban development. The landholding, formerly known as East Busselton Estate, has been renamed Provence Estate and includes the following lots (or portions thereof):

- Lot 2;
- Lot 202; and
- Lot 9003.

The Provence Estate is located approximately 5km south-east of Busselton and situated on the southern side of Bussell Highway, to the east of the Vasse Highway/residential area and north of the proposed Outer Bypass Highway, Yalyalup. To the east is privately owned agricultural land (Figure 1).

1.1 State Government Approvals

The proposed residential estate forms part of an extensive parcel of land that was referred to the Shire of Busselton as part of a proposed Revised Busselton Airport Structure Plan and Draft Scheme Amendment No. 83 to the Shire's District Town Planning Scheme No. 20. The revision of the Busselton Airport Structure Plan (Figure 5) required the Shire of Busselton to rezone the land to "Special Purpose (Yalyalup Development)" zone and "Special Purpose (Yalyalup Deferred Development)" zone and include the whole of the area in the "Special Provisions Area" (Schedule 7) of the District Town Planning Scheme No.20. The existing lots that are the subject of the Draft Scheme Amendment include Lots 2, 501, 9003, 202, 6 and 32 Bussell and Vasse Highways, Yalyalup. Of these lots, the Provence Estate comprises Lots 2, 9003 and 202. The proposed zoning will enable the future subdivision and development of the Provence Estate to be controlled by a Development Guide Plan (see Figure 2).

Council considered the matter at its meeting held on 22 September 2004 and adopted the draft Structure Plan for the purposes of referring the document to the Environmental Protection Authority (EPA) as required by Section 7A1 of the *Town Planning and Development Act 1928* (as amended).

On 1 August 2005, the EPA advised the Shire of Busselton that the level of assessment set for the scheme amendment was 'Scheme not assessed, advice given'. It was the EPA's opinion that while the scheme raises environmental issues, the potential environmental impacts that may result from the scheme do not warrant detailed environmental assessment by the EPA.

The provisions to be incorporated into the Scheme provide for the preparation and endorsement of Detailed Local Area Plans (DAPs), which will accurately depict the lot configuration, public open space provision, local road network, carriageway treatments, landscaping, uniform fencing and other initiatives requiring Council and Western Australian Planning Commission consideration.

1.2 Federal Government Approvals

The East Busselton Estate was referred to the Commonwealth Department of Environment and Heritage (DEH) on 22 November 2004 for a decision as to whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act* (*EPBC Act*) *1999*.

It was determined by the DEH and confirmed to the proponent in correspondence dated 21 December 2004 (Appendix A) that the action was a controlled action within the meaning of the *EPBC Act,* pursuant to three controlling provisions:

- Section 16 and 17B: Wetlands of international importance (RAMSAR wetlands);
- Sections 18 and 18A: Listed threatened species and communities (Western Ringtail Possums); and
- Section 20 and 20A: Listed migratory species (migratory birds).

The assessment approach for the action was determined that assessment on preliminary documentation must be prepared. The Preliminary Information document provided by the proponent to the DEH is included in Appendix B. On 28 March 2006 the DEH issued a set of Draft Conditions for the approval of the Estate subdivision under the *EPBC Act*. The Draft Conditions are included in Appendix C.

1.3 Purpose and Scope

Condition 3 of the Draft Conditions under the EBPC Act required the proponent to prepare and implement a Western Ringtail Possum (*Pseudocheirus occidentalis*) Management Plan.

This Western Ringtail Possum (WRP) Management Plan has been prepared to meet that condition. It provides a long-term strategy to enable WRP habitat protection within remnant habitat isolates and corridors to link the on-site WRP habitat and WRP habitat located to the east within the Reinscourt subdivision and the Willow Grove subdivision to the west.

A draft of this WRP Management Plan [ATA Environmental Report 2006-100 Version 6(1)] was provided to Department of Conservation and Land Management (now the Department of Environment and Conservation (DEC)) by Satterley Property Group on the 28 June 2006 for comment

CALM advised on 29 June 2006 that they were satisfied that the ATA Environmental Report 2006-100 Version 6(1) adequately addressed the matters of concern raised by CALM regarding previous versions of the document.

Due to a communication error, an earlier version of the report [ATA Environmental Report 2006-100 Version 6], which did not include the sections that addressed issued raised by CALM, was also provided to the Department of Conservation and Land Management during July 2006.

Satterley Property Group requested Coffey Environments provide DEC with a copy of the ATA Environmental Report 2006-100 Version 6(1). However as ATA Environmental became part of Coffey Environments in late 2006 and to clarify the issue of two different versions of version 6 of ATA report 2006-100, this document [Coffey Report ED2009-06V1] has been prepared to replace ATA Environmental Report 2006-100 Version 6(1) dated 27 June 2006 and all other ATA Environmental Report 2006-100 Version 6 documents.

The contents of this document are to all intents and purposes the same as ATA Environmental Report 2006-100 Version 6(1), with the only changes being in the format of the document, the correction of minor editorial errors and amendment of the introduction. No other changes have been made.

The Commonwealth Department of Environment and Heritage (now DEHWA) approved ATA Environmental Report 2006-100 Version 7, which also does not include the CALM matters of concern included in Version 6(1).

It is intended that subsequent to DEC approval of this Western Ringtail Possum Management Plan [Coffey Report ED2009-06 V1] the State and Commonwealth approved management plans will be combined into a single management plan and resubmitted to DEC and DEHWA for approval.

2 PHYSICAL DESCRIPTION OF THE SITE

2.1 Landforms and Soils

The site is relatively flat with an elevation ranging from 4mAHD in the north through to 8mAHD along the southern margins.

According to Tille and Lantzke (1990) the soil landscape system of the area belongs to the Ludlow Plain land system. The Ludlow Plain covers an area of 105km^2 and occurs as a narrow strip, 1-4km wide running parallel to, and approximately 2km inland from the coast of Geographe Bay. The Ludlow Plain land system separates the Quindalup Coast land system from the Abba Plain land system. The Ludlow Plain is a level to gently undulating plain formed on aeolianite and calcarite of the Tamala limestone (Tille and Lantzke, 1990).

The soil units that occur within the site include:

- Ludlow Flats (**L**): characterised by flats and very low dunes and comprising deep yellow brown siliceous Spearwood sands over limestone;
- Ludlow Wet Flats (**Lw**): characterised by flats with poor subsoil drainage during winter and comprising deep yellow brown siliceous Spearwood sands over limestone;
- Ludlow Wet Clayey Flats (**Lwg**): characterised by low lying poorly drained flats with heavy clayey (Cokelup) soils. Some areas are saline in summer; and
- Ludlow Wet Vales (**Lvw**): characterised by the small, narrow swampy small depression located in the northern portion of the site. Typically consists of sandy Spearwood soils.

2.2 Geology

Belford (1987) identifies the geology of the site as comprising units LS_7, S_{pc1}, S_7, S_8 and M_{s2} on the Busselton 1:50,000 Environmental Geology Series map. These map units occur as consecutive bands across the site commencing with LS_7 along the northern boundary and finishing with M_{s2} along the southern boundary. The following map unit descriptions have been adapted from Belford with the equivalent unit on geological maps being placed in brackets immediately following Belford's map unit (Belford, 1987).

- **LS_7** (Qtl - Tamala Limestone) is described light yellowish brown, fine to coarse-grained, sub-angular to well rounded quartz, with shell and corals common, crinoids are less common, and of marine (reefal) origin. It is often overlain by S_7 material.
- **S_{pc1}** (Qhw - swamp deposits) is described as clayey peaty sand that is predominantly grey to black quartz sand with variable organic content, minor clays and is of lacustrine (lake) origin.
- **S_7** (Qts - sand derived from Tamala Limestone) is pale and olive-yellow in colour, medium to coarse-grained, sub-angular quartz, moderately sorted, or residual origin modified by marine inundation.
- **S_8** (Qpb – Bassendean Sand) is very light grey at the surface, yellow at depth, fine to medium grained sub-rounded quartz, local concentrations of heavy minerals, local development of coffee rock, moderately well sorted and of aeolian origin.

- located in the northern portion of the site. Typically consists of sandy Spearwood soils. **M_{s2}** (Qpa – Guildford Formation) sandy silts, strong brown to mid-grey in colour, mottled, blocky, disseminated fine sand, hard when dry, of alluvial origin.

Inspections of the site by ATA Environmental and JDA Consultant Hydrologists (JDA) personnel undertaking hydrological, contaminated site and acid sulfate soils investigations, confirm the presence of sands comparable to those described in Belford (1987).

2.3 Wetlands and Surface Water

On the basis of surveyed contours and Department of Environment (DoE) floodplain mapping, JDA's on-site investigation determined that the project area could be partly draining towards the Lower Vasse River subcatchment and partly to the Sabina River subcatchment of the Vasse-Wonnerup Estuary (JDA, 2004). Department of Environment floodplain mapping shows the study area to be located outside of the 1 in 100 year floodplain of the Vasse-Wonnerup Estuary.

There are six wetlands (or portions thereof) in the project area mapped by Hill *et al*. (1996). According to the DoE GIS mapping, all six of these wetlands are damplands that are classified as Multiple Use wetlands (i.e. WINs 9D, 13D, 22D, 18D, 49D and 10D 1930 I SE).

A portion of one of the damplands in the project area (i.e. WIN 22D 1930 I SE) has also been identified as an EPP wetland. As a general guide, the EPA recommends that the environmental values of an EPP wetland be protected by the provision and maintenance of a dryland buffer around the periphery of the wetland. Adequate buffering has been allowed for in the draft Structure Plan.

2.4 Vegetation

A significant portion of the project area has been cleared for grazing and mineral sands mining that has taken place over the last 50 years. Strip mining occurred to a depth of 6–7m prior to the site's rehabilitation. Two significant remnants of native vegetation remain within the project area. These are:

- Along the north-eastern boundary of Lot 9003, adjacent to the Georgina Molloy Anglican primary school site and to the south of Bussell Highway, is an area of approximately 4.5ha remnant Peppermint (*Agonis flexuosa*) Low Closed Forest with scattered Marri (*Corymbia calophylla*) over Arum Lily (*Zantedeschia aethiopica*) dominated understorey.
- In the centre of Lot 202 is a 2ha remnant Tuart (*Eucalyptus gomphocephala*) and Peppermint (*A. flexuosa*) Tall Woodland. Due to a lack of fencing, the understorey has been heavily grazed by kangaroos and cattle.

The majority of the remainder of the project area has been cleared, with scattered Marri, Peppermint and Tuart trees remaining. The EPP wetland, located in the north-eastern corner of Lot 2, is associated with scattered Paperbark (*Melaleuca rhaphiophylla*) over a lupin and rye grass understorey.

No Declared Rare and Priority Flora or Threatened Ecological Communities were recorded during the botanical survey undertaken within the project area (ATA Environmental, 2004a).

3 THE WESTERN RINGTAIL POSSUM

3.1 General Biology

The WRP is an arboreal mammal, feeding, resting and socializing in the canopy and is rarely seen on the ground. Western Ringtail Possums have an average body weight between 820-1020g for both sexes. Their pelage is variable in colour however the most commonly observed pattern is dark brown to rufous on the head, back and limbs and first half of the tail, paler ventral surface varying from light brown to almost white and the last half of the tail is usually cream to white. The tail is prehensile and is often used as a fifth limb and for carrying nest materials.

The WRP is easily distinguished from the Common Brushtail Possum (*Trichosurus vulpecula*) by its smaller size, shorter and darker fur, smaller rounded ears and absence of a brush tail.

3.2 Distribution and Habitat

The distribution of WRP has contracted from what appears to have been a patchy distribution covering the south west of Western Australia from south-east of Geraldton to the Nullarbor with the most inland recording from the Tuatanning Nature Reserve (de Tores *et al*., 1995).

The distribution encompassed a variety of vegetation types including coastal Peppermint, and Peppermint/Tuart associations, Eucalypt and Casuarina (*Allocasuarina huegeliana*) woodlands, and mallee heath from the Hampton Tableland (Baynes, 1987).

Presently it is almost exclusively restricted to the coastal Peppermint woodland and coastal Peppermint/Tuart associations from the Australind-Eaton area to Two Peoples Bay. The only known extant inland populations are in the lower Collie River Valley, Perup Nature Reserve and surrounding forest block near Manjimup. Western Ringtail Possums are thought to be extinct at all other former inland locations.

3.3 Ecology

In coastal Peppermint habitat the WRP builds dreys as nesting or resting sites and uses trees hollows of Tuarts and Marri where available. Where protection from predators is provided, the range of nesting sites utilised includes shrub thickets (*Spyridium golbulosum*, *Acacia saligna* and *A. rostellifera*) and sedges and rushes (*Lepidosperma gladiatum*). In the absence of predator control and where Peppermints are absent, tree hollows and hollow logs are used almost exclusively.

The diet of the WRP is variable, but where available Peppermint forms the majority of the diet. In the absence of Peppermint trees, dominant myrtaceous species are preferred. In urban areas, WRPs are also known to feed on a variety of garden species including rose bushes, flowers and fruit.

3.4 Causes of Decline

The WRP falls within what is known as the critical weight range suite of fauna. Critical weight range is used to describe non-flying mammals with mean adult body masses between 35g and 5.5kg. It is this suite of fauna that have shown the most dramatic decline in range and number (Burbidge and McKenzie, 1989). The pattern of decline in WRPs is consistent with that recorded from

other critical weight range fauna. Factors thought to have contributed to this decline are habitat loss or modification, changing fire regimes and predation by introduced predators.

3.5 Conservation Status

The WRP is a listed species under the following international List and State and Federal Acts:

- 2000 IUCN Red List of Threatened Species – Vulnerable;
- Western Australian *Wildlife Conservation Act 1950* – Threatened, Schedule 1; and
- *Environment Protection and Biodiversity Conservation Act 1999* – Threatened (Vulnerable).

3.6 Current Management of Western Ringtail Possums in Western Australia

The current strategies for the recovery of the WRP in Western Australia include:

- Conserving existing populations within public lands managed by the CALM;
- Improving the species conservation status, through habitat management (including fox control) and translocations to increase numbers;
- Minimising the impact of land developments through *in-situ* conservation and translocations; and
- Ensuring that derelict (injured, orphaned or nuisance) animals are rehabilitated where possible and released into the wild where chances of survival are maximized.

3.7 Distribution of Western Ringtail Possums within the Project Area

As a result of historical land uses the project area retains limited remnant vegetation except in a couple of isolated pockets. These include a pocket of vegetation in the north of Lot 9003 (a 4.5ha remnant Peppermint (*A. flexuosa*) Low Closed Forest) and in the centre of Lot 202 (2ha Tuart (*E. gomphocephala*) and Peppermint (*A. flexuosa*) Tall Woodland). Surveying of the project area in February 2004 and October 2005, indicated that these habitat isolates are considered WRP habitat and WRPs were present in both areas (ATA Environmental 2004b; 2006). The locations of the WRP dreys recorded during the October 2005 survey are shown in Figure 3.

As a result, the proponent is committed to retaining both of these habitat isolates as Public Open Space (POS) within the proposed development (see Figure 4). In addition, the proponent is committed to providing a vegetated buffer along the northern boundary of the proposed development bordering Bussell Highway and along the multiple use wetland to the south of the Hawker subdivision. In the long-term this will act as a wildlife corridor link between on-site habitat and WRP habitat located in both the Reinscourt (rural-residential) and Willow Grove (low density) subdivisions. The proponent is also committed to retaining the significant trees containing possum dreys across the project area where practicable. The proponent is also committed to providing a southern vegetated corridor that would abut the proposed Outer Bypass Road and form the southern extent of the residential estate. However the location of this corridor is contingent upon the final alignment of the proposed Outer Bypass Road that has still not been determined by Main Roads Western Australia. This corridor is located in what the Shire has determined is a ‘Future Development Zone’.

4 MANAGEMENT OBJECTIVES AND MEASURES

4.1 Management Objectives

The proponent is committed to preparing and implementing a Western Ringtail Possum Management Plan to the satisfaction of the DEH. The primary aim is the long-term preservation of the Western Ringtail Possum and connectivity of its habitat within the project area.

The plan will focus on maintaining the natural attributes and values that the area currently supports. In this regard, the provision of landscaping enhancement is considered appropriate to enable passive use and appreciation of the area within the overall context of the site.

To achieve the primary aim, the objectives of the proposed management plan will be to:

- Retain the main pockets of remnant habitat as POS with the POS adjacent the Joseph Drive being retained as a conservation area and education resource for the use and enjoyment of the local and wider community;
- Promote limited access within the POS areas for passive recreational use;
- Provide a long-term strategy for the management of existing vegetation within the POS areas and implementation of rehabilitation strategies; and
- Increase public awareness and understanding of the value of the habitat and its role in conserving the existing population of WRP and the issues associated with their management.

4.2 Management Measures

To ensure that these objectives are achieved, a number of management measures are proposed and these will be addressed in the management plan. These measures include:

- Identification of Suitable WRP habitat;
- Preservation of existing habitat in POS and significant trees where practicable;
- Conservation Management Issues;
    - Rehabilitation;
    - Habitat Protection;
    - Predator Management; and
    - Fire Management;
- Planting of additional habitat for WRP;
- Protection of WRP and WRP habitat during construction works;
- Interpretation and Education; and
- Monitoring and Review of the Plan.

4.2.1 Identification and Protection of Suitable Western Ringtail Possum Habitat

Suitable habitat areas for the WRP have been identified in surveys completed in February 2004 and October 2005. These include a 4.5ha remnant Peppermint (*A. flexuosa*) Low Closed Forest in the north of Lot 9003 and a 2ha Tuart (*E. gomphocephala*) and Peppermint (*A. flexuosa*) Tall Woodland in the centre of Lot 202. These areas of WRP habitat identified within the proposed development will be preserved in areas of POS (see Figure 2). Where practicable, all trees containing possum dreys will be retained. Figure 3 shows the trees with possum dreys identified with a number.

Other areas of vegetation such as that to the east of the Joseph Drive POS and the lake POS will be protected via planning mechanisms such as R5 zoning coupled with the use of building envelopes and other restrictions on clearing. Review of the boundaries of public open space in these areas will also be undertaken at the detailed area planning stage to consider whether additional areas of vegetation can be located in POS through adjustment of these boundaries.

The following trees containing the numbered dreys will be retained within the development, possibly retained depending upon bulk earthworks and drainage requirements, or will be removed.

TABLE 1: TREES CONTAINING POSSUM DREYS TO BE RETAINED OR REMOVED

Retention/Removal	Drey numbers
Will be retained	1, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 59, 60, 61, 62, 63
Possibly retained	2, 3, 4, 5, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52
Will be removed	6, 49, 53, 54, 55, 56, 57, 58

It is proposed that the possum habitat POS areas previously mentioned (Figure 2) will be placed under a conservation covenant to ensure that the *A. flexuosa* Woodland is protected and maintained as long-term foraging and breeding habitat for the Western Ringtail Possum. This will be negotiated either through CALM or National Trust.

Abutting the north-western portion of Lot 9003 is a 16 lot subdivision (known as the Hawker subdivision). Although historically parkland cleared, this tract of land contains a number of mature Peppermints. During the subdivision approvals process, CALM determined which of these were significant and on each of the lots a defined development/building envelope area has been designed to maximize retention of significant trees. These trees will form part of a linkage corridor connecting the proposed POS area with the neighbouring Willow Grove Estate located to the west of the project area.

Management Strategy

M1 Identify existing WRP habitat and proposed additional habitat and incorporate into POS and other defined areas to preserve the WRP habitat and its connectivity.

M2 Seek to have a conservation covenant placed on the POS areas that are to be retained within the development.

M3 The proponent will be required to maintain such habitat in accordance with any relevant provisions of this management plan for the three year period. After the initial three year period the Shire of Busselton will be responsible for maintaining the POS areas. Felling or modification of natural vegetation and/or trees will not be permitted unless the removal, clearing or pruning is approved by the Shire of Busselton, or any other governmental or statutory authority for fire break or fire prevention.

M4 Where practicable, retain all significant trees identified as containing possum dreys. Table 1 details the trees with possum dreys that will be retained.

M5 Encourage residents to retain and plant mature Peppermints and Eucalyptus trees within their lots. Street and POS plantings of Peppermint and Eucalyptus trees will also be undertaken by the proponent.

4.2.2 Creation of Additional Western Ringtail Possum Habitat and Linkages

The proposed development will retain the two remnant habitat isolates (4.5ha Peppermint Low Closed Forest in the north of Lot 9003 and 2ha Tuart and Peppermint Tall Woodland in the centre of Lot 202). Vegetated habitat corridors comprising appropriate species of local provenance will be planted to link the old growth stand in Lot 9003 with WRP habitat located to the west in Lot 501 and east with Reinscourt (Figure 2). The native Peppermint tree (*A. flexuosa*) will be the predominant species planted in POS areas and along streets.

Northern and Southern Boundary Corridors

As part of the Shire's requirements to reduce noise impacts from the traffic travelling along Bussell Highway, the proponent will plant a 60m wide vegetated buffer located between the road reserve and the commencement of development. The road reserve bordering the proposed development currently retains a mix of Marri (*Corymbia calophylla*) and Peppermints with a diverse understorey. It is the proponent's intention that the vegetated buffer will contain a similar diversity of plant species currently located on the site. A similar 40m landscape buffer will be established along the southern boundary of the project area for the proposed Outer Bypass alignment when final planning approvals are in place. These two landscape protection buffers will be vested in the Shire of Busselton. The location of the southern buffer of the project area has not yet been approved under the Draft Scheme Amendment. The Structure Plan (Figure 5) shows the location and extent of the landscape buffers along the northern and southern boundaries. Scheme provisions will ensure that there is a requirement to design the landscape buffers into DAPs for future stages of development and hence the landscape buffers will meet at the eastern junction shown in Figures 4 and 5.

East-West Wetland Corridor

Directly to the south of the Hawker subdivision and south of the thicket of Peppermints (proposed POS) on Lot 9003 is a multiple use management category wetland that meanders in a southwest-northeast direction through the proposed development from its western boundary towards the EPP wetland located in Lot 2. This wetland is currently degraded with only a few remnant Paperbark (*M. rhaphiophylla*) specimens remaining in its easterly extent. The rehabilitation will involve 100% native plantings of both riparian vegetation and dryland species, including understorey shrub species. In the long-term, it is anticipated this ribbon of riparian and dryland vegetation will function as a wildlife linkage corridor for the movement of WRPs. The width of the habitat will be maximized where possible, with plantings in the non-wetland areas of the EPP wetland POS. The rehabilitation works of the EPP

wetland POS will be determined and detailed in a Wetland Management Plan to be approved by the Western Australian Department of Environment (DoE).

North-South Corridor

A north-south corridor linking the EPP Wetland POS area, the Remnant Bushland POS area in the centre of Lot 202 and the Lake POS area will be created through a combination of street plantings, road and verge treatments, lot design and landscaping on future lots, using predominantly native Peppermint tree (*Agonis flexuosa*). Where possible, the establishment of a corridor of width of 30-40m will be pursed. A range of mechanisms will be adopted to meet this objective, including potential review of lot sizes, densities and setbacks, along with use of building envelope and other protective mechanisms as part of the details are planning for the areas within this corridor.

Remnant Bushland POS Areas

The two areas of remnant bushland will be retained and protected. These POS areas will have 100% native plantings. Understorey rehabilitation will be undertaken with control of exotic weeds and planting of native dryland species.

Lake POS Area

The existing waterbody and vegetation will be retained and enhanced. Native plants will be planted over 70% of the area, non-indigenous plants over 10% and 20% will be turf play space. This area will be planted to create a discrete habitat patch in this POS area rather than scattered tree plantings.

Feature Park POS Area

This Feature POS will contain a feature lake that will be utilized to attenuate stormwater flows. Native plants will be planted over 80% of the area and non-native plants will be planted over 20% of the area.

Pocket Park POS Areas

Two areas of Pocket Park POS are located within Provence Estate; one adjacent to the Village Centre and the other towards the eastern boundary of the Estate. The Pocket Park POS areas are to cater for both a “kickabout” area and passive recreation reserve. Accordingly, a mix of predominantly turf and exotic trees with some native trees will be planted in these areas.

Active POS Area

This area will be a formal manicured POS with 25% of the area planted with native species and 75% of the area to become turf play space.

Facilitating Connectivity

In order to facilitate connectivity between existing and proposed WRP habitats, aerial connections for arboreal fauna will be installed at two key locations. These aerial connections or “highways” will be comprised of an upright telegraph pole with two cables attached at the top that link with another pole located either within the median strip or on the opposite site of the road. Two poles will be located at both locations. Where possible the poles and attached wire connectors will be located amongst existing canopy. The final design and materials that will be used for the aerial connectors will be decided in cooperation and advice from the DoE.

The proposed locations of the aerial connectors are from the wetland POS (located to the south of Hawker Approach) to the wetland/remnant vegetation area to the west in the Blum landholding. This location will see also include creating a vegetated splitter island between the two traffic lanes.

The other location is from the southwestern corner of the Joseph Drive remnant vegetation POS to the northeastern corner of the wetland POS.

The final location and construction details of the aerial connectors will be decided in consultation with the relevant authorities.

Plantings

Street tree plantings will be progressively installed by the proponent's subcontractor as the land is developed using a staged approach. It is intended to use the Western Australian Peppermint tree indigenous to the Busselton region as predominant street trees in the Estate with specimen exotics used in locations such as the Town Centre that define the Estate's theme. Street and POS plantings have been identified on a Landscape Strategy that has been developed in consultation with the Shire of Busselton and CALM (Figure 4). The intensive plantings and rehabilitation of streets and POS areas will be coincidental with the stage development as follows:

- Stages 1-6 in 2006/07;
- Stages 8-12 in 2007/08; and
- Stages 14-18 in 2008/09.

These timings are based upon current market rates of sales.

A vegetation monitoring program will be implemented to determine the effectiveness of the revegetation works. Trees will be assessed for overall health, size, canopy connectivity, and overall quality of habitat for foraging and breeding by the WRP. The vegetation monitoring program is detailed in Section 4.2.6.

Management Strategy

M6 Creation of an east–west corridor of POS through the multiple use wetland swale and treed corridors along the northern and southern boundaries of the project area to link remnant habitat isolates and create an environment that allows the movement of possums through the Estate. This will include 100% native plantings of both riparian vegetation and dryland species, including understorey species to create adequate undergrowth. The rehabilitation success will be measured using performance indicators outlined in Section 4.2.6.

M7 The treed corridors will be planted with Native Peppermint and additional species indigenous to the Busselton region, except for locations identified on the Landscape Strategy. The tree plantings will be progressively installed coincidental with the staged development as outlined above. These plantings will be monitored through a vegetation monitoring program (see M33).

4.2.3 Conservation Management Issues

Rehabilitation

The native vegetation within the existing habitat isolates will be protected during construction by fencing and no vegetation within these areas will be cleared. The vegetation within the remnant habitat isolates are generally in good condition, however revegetation will be undertaken in areas that are degraded and within the treed corridors proposed as POS. The Geographe Bay Remnant Vegetation Strategy (ECU, 2000) identifies vegetation health ratings for the Geographe Bay catchment ranging from Very Good - Good - Fair and Poor. According to this scale, the two remnant habitat isolates (Joseph Drive POS - 4.5ha Peppermint Low Closed Forest in the north of Lot 9003 and 2ha Tuart and

Peppermint Tall Woodland in the centre of Lot 202) are considered to be 'Fair' with the remainder of the site (i.e. cleared pasture with scattered trees) considered to be in 'Poor' health (ECU, 2000).

Currently the understorey of the Joseph Drive POS comprises predominantly weed species and a weed eradication program is currently being undertaken. Following weed eradication it is proposed to rehabilitate the understorey using species endemic to the area.

A number of informal tracks (created by both human and cattle intrusions into the woodland) have been created. It is proposed that the majority of these tracks will be closed and rehabilitated and that access to within the bush land will be managed in a manner that is consistent with the protection of the habitat values of the POS for possum conservation. Some limited formal pathways will be created, however these will be located and designed to minimise disturbance of habitat and avoid fragmentation. Lighting within reserve will be avoided unless absolutely necessary from a security perspective, in which case, it would be designed in a manner which avoids impacts on fauna

Wherever possible, indigenous species of local provenance will be used in the revegetation works. Species selection will be based on the existing vegetation associations that occur within the area. Street tree plantings will be carried out by the developer progressively as land is developed (see Section 4.2.2). It is intended to use the Western Australian Peppermint tree indigenous to the Busselton region as street trees in the Estate with specimen exotics used in locations identified on the Landscape Strategy (Figure 4).

An agreed Revegetation and Rehabilitation Management Plan to be approved by the Shire of Busselton and a Wetland Management Plan to be approved by the DoE will be prepared and implemented for the Provence Estate. The Revegetation and Rehabilitation Management Plan will be prepared as part of the subdivision approval process and will be implemented progressively for each stage of development. The Wetland Management Plan will be prepared before the commencement of that stage of development (i.e. 2007/08). These management plans will detail the requirements for watering and fertilising of the replanted areas by the proponent for the initial three year period. After this period, the Shire of Busselton will be responsible for the on-going maintenance of the replanted areas. Any elements within these management plans relating to or impacting on WRP management will be approved by the DEH. In addition, a vegetation monitoring program undertaken specifically to determine the effectiveness of replanting works to provide WRP habitat will be implemented. This program is outlined in Section 4.2.6.

Management Strategy

M8 Revegetation works will be implemented using indigenous species of local provenance, including the Native Peppermint tree. Revegetation will begin coincidental with the stage development and will begin with Stages 1 to 6 which is anticipated to start in 2006 and continue through 2007. Further details of timing are outlined in Section 4.2.2

M9 The potential to collect local native seed stock from the surrounding bushland for use in rehabilitation activities within the POS areas will be investigated in collaboration with CALM and qualified native seed collectors.

M10 A vegetation monitoring program with measurable performance indicators will be established to determine the effectiveness of replanting works for providing WRP habitat.

M11 An agreed Revegetation and Rehabilitation Management Plan to be approved by the Shire of Busselton and a Wetland Management Plan to be approved by the DoE will be prepared and

implemented. Any elements within these management plans relating to or impacting on WRP management will be approved by the DEH.

Weed Control

The first stage of a successful bushland rehabilitation program should be weed control and in this management plan weed control is considered part of an integrated management process.

The surrounding land uses (parkland cleared grazing land and urban interface) ensure that weeds such as grasses and small herbs will always pose a problem to management. It is anticipated that localised management of these weeds, conducted prior to any revegetation works, will improve the success of the revegetation program. On-going weed control will be undertaken during the duration of the three-year maintenance period.

Management Strategy

M12 Implement appropriate weed control methods for those species present which include Castor Oil Plants, Apple of Sodom, Arum lily, Bracken, Lupin, Rye Grass and Wild Oats.

M13 Prevent the dumping of garden rubbish as part of the education programme.

M14 Preference will be given to manual removal of weeds or spot herbicide applications in association with:

- Concentrating on small infestations of aggressive weeds to prevent significant infestations;
- Controlling the source of invasion where practical; and
- Removing weeds before seed set.

Habitat Protection

There is no proposal to clear any native vegetation within the 4.5ha of Peppermint Low Closed Forest and 2ha of Tuart and Peppermint Tall Woodland. As a consequence, the existing vegetation that has been identified as habitat suitable for WRPs will be protected. Additionally any fauna habitat material such as fallen logs and dead trees will not be removed from the POS areas as these items may provide nesting or roosting sites for different species of vertebrate and invertebrate fauna.

Management Strategy

M15 Dead trees and fallen logs will not be removed from the POS areas.

M16 The proponent will undertake street and POS plantings of Peppermint and other indigenous species to create additional fauna habitat that will commence with the development of Stages 1-6 in 2006 and continue in a staged approach to development (see Section 4.2.2).

Predator Management

Several introduced mammal species may be expected to occur in the general area and may therefore have significant impact on the WRP population. These include dogs, foxes and cats.

Community involvement and awareness promoting control of pets such as cats and dogs is an important aspect of managing predation by introduced species. This community awareness will involve the distribution of literature or signage encouraging dog owners to keep dogs on leads and owners of cats to keep them in at night.

The proponent will construct dog-proof gated fences to define the protected covenanted area with a view to avoiding access to the POS conservation areas by dogs and limiting access by people. The ongoing maintenance of these fences will be the responsibility of the proponent for three years with long-term maintenance being undertaken by the Shire.

Management Strategy

M17 Construct dog-proof gated fencing to define the covenanted area. The proponent will be responsible for maintaining the fences during the first three years after construction.

M18 Raise community awareness of the potential impacts that pets such as dogs and cats may have on the WRP population during the marketing of the development through distribution of literature and installation of relevant signage. This community awareness will involve the distribution of literature or signage encouraging dog owners to keep dogs on leads and owners of cats to keep them in at night.

Fire Management

The proponent will ensure that the Fire and Emergency Services Authority (FESA) is made aware of the environmental significance of the habitat isolates and corridor linkages. The dog-proof fencing will contain gates to provide access to the linkage corridor for fire fighting purposes.

Access to a water supply for fire suppression purposes will be from fire hydrants located within the road reserves that are provided to the relevant standard and agency requirements.

Management Strategy

M19 Designated gates will provide access to the POS areas in the event of a wild fire.

M20 Fire hydrants will be installed within the road reserve adjacent to the POS areas.

4.2.4 Protection of Western Ringtail Possums and Western Ringtail Possum Habitat during Construction

All staff on site will be required to undertake an Environmental Induction Program and will be briefed on the environmental value and significance of the WRP population and management measures to minimise the impact to the species during vegetation clearing and construction. This will include details on the location of sensitive habitat areas and significant trees to be avoided and actions to be taken if any fauna is encountered.

An experienced “fauna spotter” will be employed during the clearing process to ensure no WRP are injured or killed and to aid in their relocation to nearby trees if required. If possible, all dreys should be inspected and removed from trees to be felled the day (or if occupied, during the night when unoccupied) prior to clearing. Immediately prior to clearing, trees will again be searched for individual possums. If any native fauna, in particular WRPs, are encountered they should be allowed to make their own way from the works area. If this is not possible, the fauna spotter will be required to remove the animal to a safe area. If any injured or dead fauna are encountered the Contractor should contact CALM and notify the proponent (Satterley Property Group).

Temporary fencing will be installed around the remnant habitat isolates to protect the native vegetation and WRP habitat during construction activities. This will provide a physical barrier delineating the limits

of clearing while still allowing fauna movement. The construction zone, including the areas to be cleared and the location of temporary fencing for DAP 1 is shown in Figure 3. Similar figures will be prepared for the remaining DAPs as they are developed. The significant trees will also be marked and ring fenced to avoid damage by machinery and infilling works.

Management Strategy

M21 Education of all staff, contractors and other personnel working on the development site through an Environmental Induction Program. A record of staff attending this program will be kept to aid measurability.

M22 An experienced "fauna spotter" will be employed during the clearing process to ensure no WRP are injured or killed and to aid in their relocation to nearby trees if required. If possible, all dreys should be inspected and removed from trees to be felled the day (or if occupied, during the night when unoccupied) prior to clearing. Immediately prior to clearing, trees will again be searched for individual possums.

M23 Prior to clearing operations, a single strand fence (star picket) will be installed around remnant habitat isolates. The identified significant trees will be marked and delineated for retention. Trees will be ring fenced to a minimum of 10m in diameter where possible to avoid damage by machinery.

M24 A strategy to protect the retained trees containing dreys from impacts associated with infilling works across the site has been prepared in consultation with Arbor Logic and will be implemented. The qualifications and skills of Arbor Logic are supplied in Appendix D

M25 Construction vehicles will be retained within the footprint of the earthworks or on designated access routes. Vehicle speeds will be kept to a maximum of 50km/hr.

M26 No pets, traps or firearms will be allowed on site.

M27 The works area will be maintained in a clean and tidy manner to ensure that feral or other animals are not attracted to the site.

M28 If native fauna is encountered during construction it will be allowed to make its own way from the works area. If this is not possible a relevant specialist (e.g. zoologist) will be contacted to remove it.

M29 If any injured fauna are encountered the Contractor will contact CALM's Wild Care 24hr hotline on (08) 9474 9055. If dead fauna are encountered this will be recorded along with the species and sex if known and reported to CALM and the Satterley Property Group site project manager.

4.2.5 Interpretation and Education

Public awareness of the value of the remnant habitat isolates, treed corridors and significant trees will be promoted through the provision of information to new residents including the current issues regarding management of the WRP habitat through educational material to be provided during the marketing of the development. There are a number of forms this information can take including:

- Interpretive signage – e.g. to inform the community of the environmental value and significance of the WRP population and the role played by the vegetation habitat isolates and corridors; and
- Provision of educational pamphlets through both letter drops and at the Estate sales office.

Interpretive signs will be erected in public areas informing people about the linkage corridor. Signs encouraging traffic to slow down to avoid possum road-kills and maiming from occurring will be installed at various locations around the Estate.

The most effective way of engaging the local community is to involve it in the protection of WRPs and enhancement of their preferred habitat. The proponent will pay a local carer for one day each year for the initial three year management period to make school visits informing people about the WRPs in the area and how to conserve both the WRPs and their habitat.

The local school will also be encouraged to initiate a 'plant a Peppi day' as part of their Arbor Day activities. This would involve encouraging school children to plant Peppermint trees on residential lots. Initial discussions have also occurred with the Georgiana Molloy Anglican School regarding the 'adoption' of the large POS area on Joseph Drive.

Management Strategy

M30 Possum habitat and wildlife corridor information signage of suitable size and design will be installed as required at key locations within the Estate based on advice from CALM.

M31 Provide educational pamphlets through letter drops and at the Estate sales office.

M32 The proponent will pay a local carer for one day each year for the initial three year management period to make school visits informing people about the WRPs in the area and how to conserve both the WRPs and their habitat.

4.2.6 Monitoring and Review

A monitoring and reporting programme co-ordinated by the proponent will track the implementation of management strategies to facilitate:

- Revision of management strategies as needed;
- Identification of management issues and trends; and
- Review and update of the management plan in three years time.

This monitoring and review strategy will ensure that the aims and objectives of the management plan will be achieved through an adaptive process that allows for the consideration of circumstantial change and new management techniques and strategies. The review will evaluate the success of the management plan to protect and maintain WRP habitat and formulate any on-going plan of work if required.

Vegetation Monitoring Program

A vegetation monitoring program will be implemented to determine the effectiveness of replanting works to provide WRP habitat. The existing POS areas and vegetated landscape buffer will be assessed for vegetation condition and quality of WRP habitat with rehabilitation and infill plantings being implemented as necessary. The monitoring program will commence three months after initial planting has occurred and continue for a minimum of three years for each stage. The monitoring program will be undertaken annually, with rehabilitation and infill plantings being implemented as necessary. Trees will be assessed for:

- Health;
- Size;
- Canopy cover and connectivity;
- Survival; and
- Overall quality of habitat for foraging and breeding by the WRP.

In the case of the Bussell Highway buffer, vegetation monitoring will be extended to a 5 year period, with the monitoring program also assessing canopy cover and connectivity to ensure that the corridor is successfully created.

Rehabilitation 'success' is difficult to quantify, however various methods to assess revegetation performance can be implemented. The following performance indicators will be used as part of the Plan:

- 90% survival of seedlings three months after planting/75% survival after 12 months;
- 30-40% cover (excluding weeds) of foliage two years after implementation of rehabilitation;
- One third of the species sown and planted being evident in the local area at any time after rehabilitation;
- No Declared weeds within the rehabilitated areas two years after rehabilitation; and
- Overall success of plant establishment. This is a subjective measure based on visual assessment of species composition, plant density and plant health, e.g. an area might not meet the above criteria but has the ability to attain it. For instance an area might not contain 30-40% foliage cover but is growing well and will attain that in a few years without the need for remedial action.

Western Ringtail Possum Monitoring Surveys

Biannual monitoring surveys will also be conducted for WRPs following acceptance of the management plan by the DEH. The monitoring program will commence three months after the clearing of each development stage and continue for three years for that development stage. During the surveys, both diurnal surveys of dreys and nocturnal surveys will be conducted in order to estimate the number of possums utilizing the survey area, to establish which dreys were being used and identify the areas of highest possum activity. The monitoring surveys will follow methodologies used for the original two investigations (February 2004 and October 2005).

During daylight surveying the Peppermint canopy and lower vegetation throughout the linkage corridor will be visually searched for dreys. All possible dreys will be recorded by GPS, even those abandoned or likely to be bird's nests. The dreys will be classified into one of four types:

- Dense, well-made ball or slightly elongate form with a distinct entrance hole. In this type of drey the possum is completely enclosed.
- Dense, well-made cup-shape nest with some material overtop, but not fully enclosed.
- Dense, well-made cup-shape nest open at the top. The possum sits deep inside the cup of the drey and may not be visible from the ground.

- Platform of twigs, often in a tree or branch fork, with no more than a shallow depression where the possum rests.

Additional information will be recorded for each potential drey including:

- The vegetation species in which the drey is located;
- The height of the vegetation in which the drey is located;
- Number of other trees or shrubs to which the canopy is directly connected;
- Height of the drey above the ground;
- Comments on condition of the drey; and
- Presence of possum(s).

Spotlighting will be conducted over two or three consecutive evenings (weather dependent), by traversing the linkage corridor on foot and using head torches and hand-held torches. Locations of sightings will be recorded using a GPS and mapped. When possible, sighted WRPs will be sexed.

The following performance indicators will be used to measure the 'success' of the program to protect and maintain WRPs and their habitat:

- Success of the planting rehabilitation measured using the performance indicators listed above;
- A continuous corridor of Peppermint trees exists from north to south, and from east to west at ten years after the commencement of development;
- All trees containing WRP dreys identified to be retained have been retained within the development;
- The number of WRP in retained habitat will be surveyed biannually to identify whether numbers of existing WRPs are maintained. If monitoring reveals that numbers are declining, the WRP plan will be reviewed to determine what factors, if any, may be contributing to this decline and how it may be rectified and managed. A decline in WRP numbers may not be due to construction, but rather naturally changing dynamics of the population. This review will form part of the annual reporting for the monitoring program; and
- Commitment to survey and map possums across the project area at the five and ten year marks of the start of development to measure the success of WRP conservation post-construction.

The proponent will present the findings of all monitoring programs undertaken in the form of annual monitoring reports as well as the five and ten year mark survey reports to the DEH and CALM following acceptance of the management plan.

Management Strategy

M33 Undertake a monitoring program to commence three months after initial planting has occurred and continue for three years for each development stage and five years for the Bussell Highway corridor to determine the effectiveness of tree plantings within corridors and within POS areas. Specific performance indicators (including canopy connectivity) will determine the 'success' of the rehabilitation. The monitoring program will be undertaken annually, with rehabilitation and infill plantings being implemented as necessary.

M34 Undertake biannual surveys of the WRP population to commence three months after the clearing of each development stage and continue for three years for that development stage. Specific performance indicators will be used to measure the 'success' of the program to protect and maintain WRPs and their habitat. A review of the program's success will be undertaken as part of the annual reporting for the monitoring program.

M35 Annual reports for the WRP and vegetation monitoring programs, and the five and ten year survey reports will be presented to the DEH and CALM.

5 IMPLEMENTATION AND RESPONSIBILITIES

5.1 Prioritisation of Management Strategies

Table 2 lists the management strategies for the linkage corridor and identifies the maintenance requirements according to the management categories outlined in Section 4.

5.2 Allocation of Responsibilities

Except in those instances where responsibility is delegated to the new lot owner following purchase of designated lots, the proponent will be responsible for the initial implementation of the recommendations presented in this management plan, as well as the preservation of the WRP and connectivity of its habitat to the satisfaction of the DEH over a period of three years from commencement of site works in each stage. Thereafter, the Shire of Busselton will assume responsibility for the ongoing management and maintenance of the POS areas, buffer strips and treed corridors as WRP habitat.

5.3 Monitoring and Review

The implementation of management strategies identified in this management plan will be an on-going process for the period of proponent responsibility and are designed to be flexible in responding to changes in the natural environment and community values. As such, a program of monitoring the success of the strategies proposed in this management plan will be essential for the purposes of reviewing and updating the plan. As part of the monitoring program, annual reports will be prepared for the proponent. At the conclusion of the proponent's management period, the proponent (or their appointed subcontractor) will prepare a report to be reviewed by the DEH. This report will detail whether the aims and objectives of the management plan have been achieved and recommend any new developments in management techniques that could be implemented to ensure the ongoing maintenance of the POS areas and corridors.

TABLE 2: PRIORITISATION AND RESPONSIBILITY FOR MANAGEMENT STRATEGIES

Issue	Management of Strategy		Responsibility	Timing
Identification of Suitable WRP Linkage corridor	**M1**	Identify existing WRP habitat and proposed additional habitat and incorporate into POS and other defined areas to preserve the WRP habitat and its connectivity.	Proponent	Preconstruction
	M2	Seek to have a conservation covenant placed on the POS areas that are to be retained within the development.	Proponent	Ongoing
	M3	The proponent will be required to maintain such habitat in accordance with any relevant provisions of this management plan for the three year period. After the initial three year period the Shire of Busselton will be responsible for maintaining the POS areas. Felling or modification of natural vegetation and/or trees will not be permitted unless the removal, clearing or pruning is approved by the Shire of Busselton, or any other governmental or statutory authority for fire break or fire prevention	Proponent for first three years in POS areas and purchaser of affected lots	Ongoing
	M4	Where practicable, retain all significant trees identified as containing possum dreys. Table 1 details the trees with possum dreys that will be retained.	Proponent initially and purchaser of affected lots	Pre and post-construction.
	M5	Encourage residents to retain and plant mature Peppermints and Eucalypt trees within their lots. Street and POS plantings of Peppermint and Eucalyptus trees will also be undertaken by the proponent.	Proponent for initial three year management period	Ongoing during initial three year management period then responsibility of Shire.

Issue	Management of Strategy		Responsibility	Timing
	M7	The treed corridors will be planted with Native Peppermint and additional species indigenous to the Busselton region, except for locations identified on the Landscape Strategy. The tree plantings will be progressively installed coincidental with the stage development as outlined above. These plantings will be monitored through a vegetation monitoring program (see M33).	Proponent	Ongoing during initial three year management period.
Conservation Management Issues - Rehabilitation	**M8**	Revegetation works will be implemented using indigenous species of local provenance, including the Native Peppermint tree. Revegetation will begin coincidental with the stage development and will begin with Stages 1 to 6 which is anticipated to start in 2006 and continue through 2007. Further details of timing are outlined in Section 4.2.2.	Proponent	Ongoing during initial three year management period.
	M9	The potential to collect local native seed stock from the surrounding bushland for use in rehabilitation activities within the POS areas will be investigated in collaboration with CALM and qualified native seed collectors.	Proponent to investigate with assistance from CALM	Ongoing during initial three year management period.
	M10	A vegetation monitoring program with measurable performance indicators will be established with the Shire of Busselton to determine the effectiveness of replanting works for providing WRP habitat.	Proponent for monitoring period	To commence three months after initial plantings for each development stage. To continue annually for period of three years from commencement of plantings in each stage and five years for the Bussell Highway corridor.

Issue	Management of Strategy		Responsibility	Timing
	M11	An agreed Revegetation and Rehabilitation Management Plan to be approved by the Shire of Busselton and a Wetland Management Plan to be approved by the DoE will be prepared and implemented. Any elements within theses management plans relating to or impacting on WRP management will be approved by the DEH.	Proponent	Ongoing
Conservation Management Issues – Weed Control	**M12**	Implement appropriate weed control methods for those species present which include Castor Oil, Apple of Sodom, Arum lily, Bracken, Lupin, Rye Grass and Wild Oats.	Proponent for initial three year management period	Ongoing during initial three year management period.
Creation of Additional WRP Habitat	**M6**	Creation of an east–west corridor of POS through the multiple use wetland swale and treed corridors along the northern and southern boundaries of the project area to link remnant habitat isolates and create an environment that allows the movement of possums through the Estate. This will include 100% native plantings of both riparian vegetation and dry land species, including understorey species to create adequate undergrowth. The rehabilitation success will be measured using performance indicators outlined in Section 4.2.6.	Proponent	Ongoing during initial three year management period.
Conservation Management Issues – Weed Control	**M12**	Implement appropriate weed control methods for those species present which include Castor Oil, Apple of Sodom, Arum lily, Bracken, Lupin, Rye Grass and Wild Oats.	Proponent for initial three year management period	Ongoing during initial three year management period.
	M13	Prevent the dumping of garden rubbish as part of the education programme.	Proponent for initial three year management period	Ongoing during initial three year management period.

Issue	Management of Strategy	Responsibility	Timing
	M14 Preference will be given to manual removal of weeds or spot herbicide applications in association with: • Concentrating on small infestations of aggressive weeds to prevent significant infestations; • Controlling the source of invasion where practical; and • Removing weeds before seed set.	Proponent for initial three year management period	Ongoing during initial three year management period.
Conservation Management Issues – Habitat Protection	**M15** Dead trees and fallen logs will not be removed from the POS areas.	Proponent for initial three year management period	Ongoing during initial three year management period.
	M16 The proponent will also conduct street and POS plantings of Peppermint and other indigenous species to create additional fauna habitat.	Proponent	Ongoing during initial three year management period.
Conservation Management Issues – Predator Management	**M17** Construct dog-proof gated fencing to define the covenanted area. The proponent will be responsible for maintaining the fences during the first three years after construction	Proponent	Ongoing during initial three year management period.
	M18 Raise community awareness of the potential impacts that pets such as dogs and cats may have on the WRP population during the marketing of the development through distribution of literature and installation of relevant signage. This community awareness will involve the distribution of literature or signage encouraging dog owners to keep dogs on leads and owners of cats to keep them in at night.	Proponent	Post construction

Issue		Management of Strategy	Responsibility	Timing
Conservation Management Issues – Fire Management	**M19**	Designated gates will provide access to the POS areas in the event of a wild fire.	Proponent	Post construction
Protection of WRP and WRP Habitat during Construction .	**M21**	Education of all staff, contractors and other personnel working on the development site via an Environmental Induction Program. A record of staff attending this program will be kept to aid measurability.	Proponent	Preconstruction
	M22	An experienced "fauna spotter" will be employed during the clearing process to ensure no WRP are injured or killed and to aid in their relocation to nearby trees if required. If possible, all dreys should be inspected and removed from trees to be felled the day (or if occupied, during the night when unoccupied) prior to clearing. Immediately prior to clearing, trees will again be searched for individual possums.	Contractor	Preconstruction
	M23	Prior to clearing operations, a single strand fence (star picket) will be installed around remnant habitat isolates. The identified significant trees will be marked and delineated for retention. Trees should be ring fenced to a minimum of 10m in diameter where possible to avoid damage.	Contractor	Preconstruction
	M24	A strategy to protect the trees containing dreys from impacts associated with infilling works across the site has been prepared in consultation with Arbor Logic and will be implemented. The qualifications and skills of Arbor Logic are supplied in Appendix D	Contractor	Preconstruction
	M25	Construction vehicles will be retained within the footprint of the earthworks or on designated access routes. Vehicle speeds will be kept to a maximum of 50km/hr.	Contractor	During construction.

Issue	Management of Strategy		Responsibility	Timing
	M26	No pets, traps or firearms will be allowed on site.	Contractor	During construction.
	M27	The works area will be maintained in a clean and tidy manner to ensure that feral or other animals are not attracted to the site.	Contractor	During construction.
	M28	If native fauna is encountered during construction it will be allowed to make its own way from the works area. If this is not possible a relevant specialist (i.e. zoologist) will be contacted to remove it.	Contractor	During construction.
	M29	If any injured fauna are encountered the Contractor will contact CALM's Wild Care 24hr hotline on (08) 9474 9055. If dead fauna are encountered this will be recorded along with the species and sex if known and reported to CALM and the Satterley Property Group site project manager.	Contractor	During construction
Interpretation and Education	**M30**	Possum habitat and wildlife corridor information signage of suitable size and design will be installed as required at key locations within the Estate based on advice from CALM.	Contractor	Post construction
	M31	Provide educational pamphlets through letter drops and at the Estate sales office.	Proponent	Post construction
	M32	The proponent will pay a local carer for one day each year for the initial three year management period to make school visits informing people about the WRPs in the area and how to conserve both the WRPs and their habitat.	Proponent for initial three year management period	Once a year for initial three year management period.

Issue	Management of Strategy	Responsibility	Timing
Monitoring and Review	**M33** Undertake a monitoring program to commence three months after initial planting has occurred and continue for five years for each development stage to determine the effectiveness of tree plantings within corridors and within POS areas. Specific performance indicators will determine the 'success' of the rehabilitation. The monitoring program will be undertaken annually, with rehabilitation and infill plantings being implemented as necessary.	Proponent for initial monitoring period	To commence three months after initial plantings for each development stage. To continue annually for a period of five years from commencement of plantings of each stage.
	M34 Undertake biannual surveys of the WRP population to commence three months after the clearing of each development stage and continue for three years for that development stage. Specific performance indicators will be used to measure the 'success' of the program to protect and maintain WRPs and their habitat. A review program's success will be undertaken as part of the annual reporting for the monitoring program.	Proponent for initial monitoring period	To commence three months after clearing of each development stage. To continue biannually for period of three years from commencement of site works in each stage.
	M35 Annual reports for the WRP and vegetation monitoring programs, and the five and ten year survey reports will be presented to the DEH and CALM.	Proponent for initial monitoring period	Annually and at the five and ten year marks.

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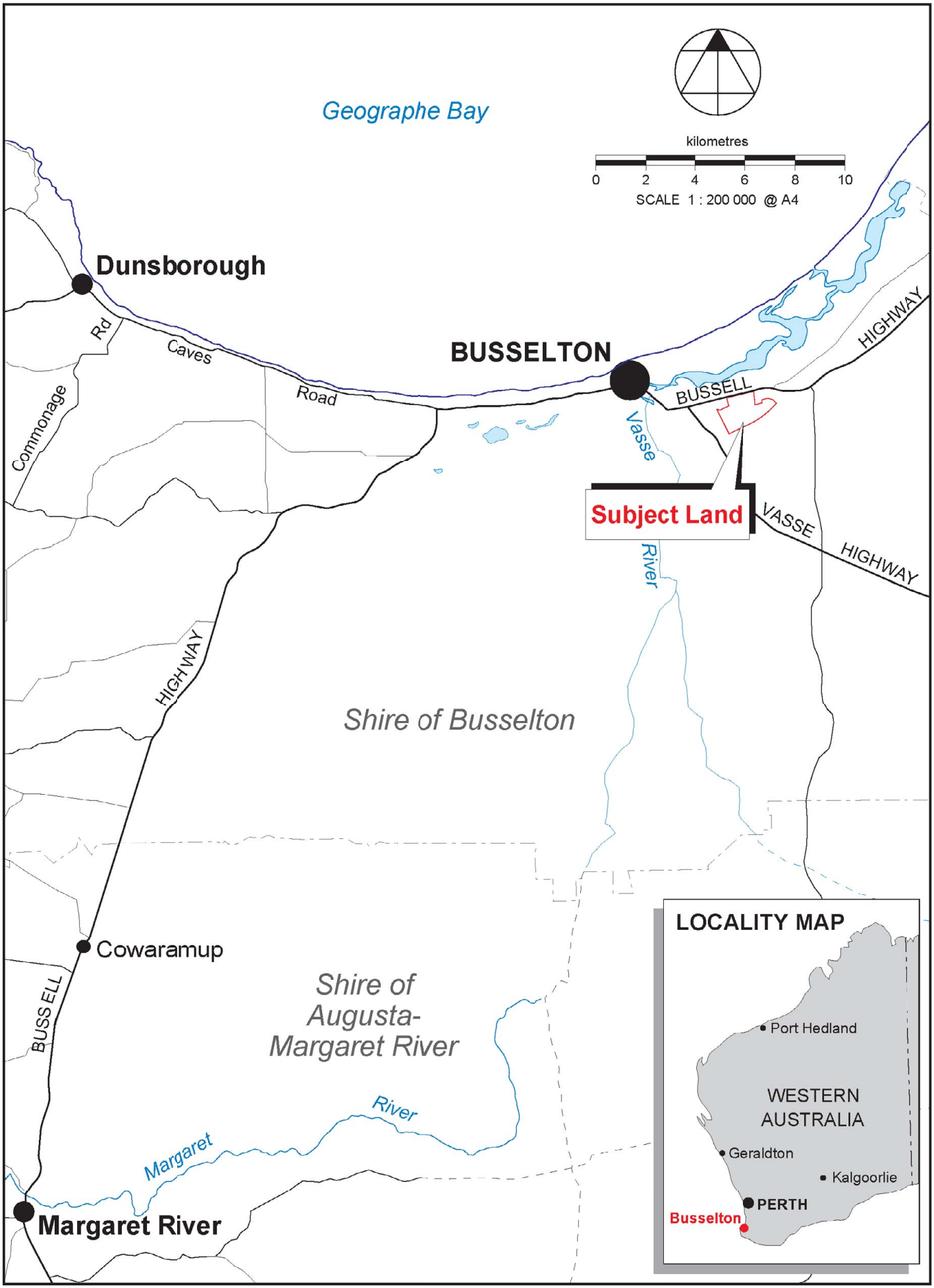
Figures

Western Ringtail Possum Management Plan
Provence Estate, Busselton



PRINTED: Fri 20 Feb 09 CHECKED: MS 20-02-09 DRAWN: CR 20-02-09 DATUM: N/A ENVI/DUNS/00023AA/Environmental Advice Provence/ED2009-006F01.dgn

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN
PROVENCE ESTATE, BUSSELTON

REGIONAL LOCATION

FIGURE 1

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

PRINTED: Fri 20 Feb 09
CHECKED: MS 20-02-09
DRAWN: CR 20-02-09
DATUM: N/A
ENVI/DUNS/00023AA/Environmental Advice Provence/ED2009-006F02.dgn

THE NEW PROPOSED ACCESS ROAD TO THE "VILLAGE CENTRE" CAN ONLY BE ESTABLISHED UPON THE CLOSURE OF LYDDY ROAD. ALSO, CABLE SANDS ROAD IS TO BE CLOSED UPON THE TUART DRIVE CONNECTION BEING ESTABLISHED.

NEIGHBOURHOOD NODE

BUSSELL HIGHWAY

EXISTING ANGLICAN SCHOOL

PROPOSED SCHOOL

FOR LANDSCAPE PROTECTION

EPP WETLAND

P.O.S.

DAP 1

DAP 2

DAP 3

DAP 4

DAP 5

DAP 6

VILLAGE CENTRE

VILLAGE CENTRE

EXISTING LAKE

TOURIST DEVELOPMENT SITE

NEIGHBOURHOOD NODE

CONNECTION TO TUART DRIVE SUBJECT TO FURTHER INVESTIGATION OF THE OUTER BYPASS ALIGNMENT

LOT SIZES AND CONFIGURATIONS WILL BE DETERMINED IN CONSULTATION AND TO THE SATISFACTION OF THE CALM, DOE AND THE SHIRE OF BUSSELTON TO PROVIDE FOR WILDLIFE MOVEMENTS AND THE ESTABLISHMENT OF LINKAGES TO EXISTING AND FUTURE VEGETATED AREAS.

LOT SIZES AND CONFIGURATIONS WILL BE DETERMINED IN CONSULTATION AND TO THE SATISFACTION OF THE CALM, DOE AND THE SHIRE OF BUSSELTON TO PROVIDE FOR WILDLIFE MOVEMENTS AND THE ESTABLISHMENT OF LINKAGES TO EXISTING AND FUTURE VEGETATED AREAS.

LASSE

HIGHWAY

BYPASS

OUTER

PROPOSED

POSSIBLE CONNECTION TO BE DETERMINED AT THE L.A.P. STAGE

NEIGHBOURHOOD NODE

STRUCTURE PLANNING "BY OTHERS"

P.O.S.

HIGHWAY

SUMMARY TABLE			
LOT SIZE	AREA	LOT YIELD (DISCRSN.)	AVERAGE LOT SIZE
R 2.5	31.71 ha	79	4000 m²
R 5	13.72 ha	49	2000 m²
R 10	14.34 ha	140	1000 m²
R 15/ R 20	46.74 ha	1350	450-650 m²
R 25/ R 30	8.25 ha	253	300 - 350m²
ROADS	32.01 ha	-	
SCHOOL	9.65 ha	1	
VILLAGE	5.30 ha	-	
POS	47.22ha	-	18.58 %
TOTAL:	253.04 ha	1811	

0 200 400 600m

LEGEND

- STRUCTURE PLAN AREA
- RESIDENTIAL R2.5
- RESIDENTIAL R5
- RESIDENTIAL R10
- RESIDENTIAL R15/R20
- RESIDENTIAL R25/R30
- VILLAGE CENTRE
- P.O.S./DRAINAGE
- EXISITING AND PROPOSED WATER BODY/FEATURE
- DUAL USE PATH
- (FUTURE) BUS ROUTE
- D.A.P. BOUNDARY
- EXISTING VEGETATION
- EXISTING SURVEYED TREES

Rev	Date	Item
m	14/5/04	Planning Policy 14 added; minor changes to plans added note
l	13/12/05	Planning Policy worked; minor changes to 3 cells & note (meeting) added
k	11/11/05	western road alignment changed; cell notes - road closure
j	8/11/05	worked version; road layout, splitting cell outlines, add tree survey planning policy statement no.9 added, & some colour legend
i	26/09/05	DRAFT ONLY - UPDATED cells top & bdy
h	13/09/05	40m buffer, paths & routes to top, Policy Statement 14 clarifying, 7 to 8.
g	-	lodged

Airport North DGP

Planning Policy Statements

1. This Development Guideline Plan provides a framework for future subdivision and development of the land. Actual subdivision may vary from the Development Guide Plan, and requires approval from the WA Planning Commission. Such variations may include minor adjustment to road configurations, lot density and public open space boundaries providing that the variations do not compromise the fundamental principles of the Development Guide Plan.
2. Prior to subdivision, the proponent will be required to:
   - Prepare a Western Ringtail Possum management plan to the satisfaction of the Commonwealth Department of Environment and Heritage as well as the Department of Conservation and Land Management prior to commencement of works.
   - Prepare an appropriate fire risk assessment in conjunction with FESA prior to commencement of works.
   - Undertake an archaeological and ethnographic survey to the satisfaction of the Department of Indigenous Affairs prior to commencement of works.
   - Undertake investigations into acid sulphate soils and include management proposals in a construction management programme to the satisfaction of the DOE and the Shire of Busselton prior to the commencement of works.
   - Undertake investigations into environmental uses for land previously used for industrial purposes and develop management strategies as necessary to the satisfaction of the Shire of Busselton and the DOE prior to subdivision approval.
   - Prepare a comprehensive drainage, nutrient and pollution management plan to the satisfaction of the Shire of Busselton prior to approval of a Detailed Area Plan.
   - Prepare Local Area Plans for particular development precincts in accordance with the provisions of the Shire of Busselton District Town Planning Scheme No 20.
3. Fill programmes for the land at the subdivision stage are to demonstrate that existing vegetation will be protected where possible.
4. All residential lots are to be connected to urban services i.e., reticulated water and sewer, underground power and telecommunications.
5. Street tree planting shall consist of predominantly endemic native species.
6. At the subdivision stage, arrangements will be made to the satisfaction of the Shire of Busselton for appropriate notifications to be placed on Certificates of Title to inform landowners and prospective purchasers of:
   (i) possible noise and traffic noise with respect to the Busselton Airport and future Outer Bypass road respectively, and
   (ii) the risk of exposure to Ross River Virus disease and nuisance mosquitoes.
7. Lots abutting Vasse Highway are to be determined on the Detailed Area Plans to address adequate building areas (for dwellings and outbuildings), adequate lot frontages (minimum 30 metres), and 40 metre wide landscape buffer adjacent Vasse Highway.*
8. Development of the land within the area the subject of this Development Guide plan requires the preparation of DAP's for all residential precincts and shall be in accordance with the Shire of Busselton Town Planning Scheme No 20.
9. Provision being made to accommodate a community facility to be located in the Local Village Centre and is to be identified on the Detailed Area Plan in accordance with the Shire of Busselton requirements.
10. A contribution to the preparation of an overarching drainage management plan for the Busselton Airport Structure Plan area which shall be prepared to the satisfaction of the Shire and the DOE prior to approval of a DAP for any area.
11. Preparation of a revegetation, rehabilitation and landscaping plan to the specification and satisfaction of the Department of Conservation and Land Management and the Shire of Busselton prior to approval of a Detailed Area Plan.
12. Preparation of a mosquito management plan to the satisfaction of the Shire of Busselton that in addition to other matters includes on and off site mosquito breeding sites and implementation.
13. Access to Vasse Highway from Lot 505 to be determined at Detailed Area Plan Stage.
14. Demonstration that subdivision design outcomes and lot orientation proposed by DAP's provide an acceptable level of noise access/orientation, prior to approval of DAP's, to the satisfaction of the Shire of Busselton. The minimum acceptable level will be in compliance with the requirements of current Liveable Neighbourhoods Policy.
15. This Development Guide Plan indicates a structural framework only for traffic management on the land. More detailed design is required to be reflected on Detail Area Plans to resolve the number of four-way intersections and other road design and traffic management outcomes.

This is the Development Guide Plan adopted by the Shire of Busselton pursuant to Clause 25 of District Town Planning Scheme No 20 on the day of 2004.

Chief Executive Officer

Date

Subject Land Boundary

SOURCE: Koltasz Smith, 16 March 2006

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN
PROVENCE ESTATE, BUSSELTON
DRAFT DEVELOPMENT GUIDE PLAN
FIGURE 2

PRINTED: Fri 20 Feb 09

CHECKED: MS 20-02-09

DRAWN: CR 20-02-09

DATUM: N/A

ENV/DUNS/00023AA/Environmental Advice Provence/ED2009-006F03.dgn

metres

0 50 100 150 200

SCALE 1 : 7 000 @ A3

HIGHWAY

BUSSELL

Osprey Dr

Liddy Road

Estuary Drive

Waters

Boulevard

Blum

ROW

Pt 31

9003

501

202

203

LEGEND

- Subject Land Boundary
- Cadastral Boundary
- Existing Fence
- Temporary Fence Required
- 1 Location of Western Ringtail Possum Drey and Identification Number
- Temporary Fence around Tree Required

PHOTO & CAD SOURCE: KOLTASZ SMITH, Received Jan., 2004;
Aerial Photograph taken 4-4-2001.

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN
PROVENCE ESTATE, BUSSELTON

LOCATION OF WESTERN RINGTAIL POSSUM DREYS & AREAS TO BE FENCED

FIGURE 3

PRINTED: Fri 20 Feb 09

CHECKED: MS 20-02-09 DRAWN: CR 20-02-09 DATUM: N/A

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WETLAND & REHABILITATION SPECIES

TREES
Acacia saligna - Orange wattle
Agonis flexuosa - W.A. Peppermint
Banksia littoralis - Swamp banksia
Eucalytus rudis - Flooded gum
Melaleuca raphiophylla - Paperbark
Melaleuca preissiana - Stout paperbark
Melaleuca hamulosa - Broom bush honeymyrtle
Melaleuca incana - Grey honeymyrtle
Melaleuca uncinata - Broom brush
SHRUBS & GROUNDCOVERS
Baumea juncea - Bare twig rush
Baumea articulata - Jointed twig rush
Gahnia trifida - Coast saw-sedge
Isolepsis nodosa - Club rush
Juncus kraussii - Sea rush
Lepidosperma effusum - Spreading sword sedge
Lepidosperma longitudinale - Pithy sword sedge
Lobelia alata - Angled lobelia
Pimelea sauveolens - Scented banjine
Sarcocornia blackiana - Samphire

MIXED DRYLAND & WETLAND SPECIES

Macrozamia reidei - Zamia palm
Caesia micrantha - Pale grass lily
Sowerbaea laxiflora - Purple tassles
Aphelia cyperoides -
Gahnia trifida - Cutting grass/Twine rush
Lepidosperma gracile - Slender sword sedge
Lepidosperma gladiatum - Coast sword sedge
Schoenus grandiflorus - Large flowered bog rush
Schoenus rigens -
Acanthocarpus preissii - Prickly lily
Lomandra micrantha - Small flower mat-rush
Anigozanthos manglesii - Red & green kangroo paw
Conostylis aculeata - Prickly conostylis
Patersonia occidentalis - Purple flag
Baumea juncea - Bare twig rush
Juncus kraussii - Sea rush
Desmocladus fascicularis -
Desmocladus flexuosus -
Xanthorrhoea gracilis -
Xanthorrhoea preissii - Grass tree
Craspedia variabilis - Billy button
Podotheca angustifolia - Sticky longheads
Crassula colorata -
Hibbertia aurea -
Hibbertia cuneiformis - Cutleaf hibbertia
Hibbertia hypericoides - Yellow buttercups
Hibbertia racemosa - Stalked guinea flower
Phyllanthus calycinus - False boronia
Dampiera linearis - Common dampiera
Goodenia micrantha -
Nuytsia floribunda - WA christmas tree
Acacia rossellifera - Stink tree/Summer scented wattle
Acacia saligna - Blue leaf wattle
Agonis flexuosa - WA peppermint
Corymbia calophyla - Marri
Eucalyptus gomphocephala - Tuart
Eucalyptus marginata - Jarrah
Eucalyptus rudis - Flooded gum
Kunzea ericifolia - Spearwood
Melaleuca preissiana - Paperbark/Modong
Melaleuca raphiophylla - Swamp paperbark
Gomphlobium tomentosum - Hairy yellow pea
Hardenbergia comptoniana - Native lilac
Jacksonia sternbergiana - Green stinkwood
Kennedia corinata -
Banksia attenuata - Candle banksia
Banksia grandis - Bull banksia
Banksia littoralis - Swamp banksia
Hakea prostrata -
Persoonia longifolia -
Pimelea rosea -

LAKE SPECIES

TREES
Melaleuca quinquinerva - Broad leaved paperbark
Melaleuca rhaphiophylla - Swamp paperbark
EMERGENT WATERPLANTS
Baumea juncea - Bare twig rush
Baumea rubiginosa - Jointed twig rush
Bolboschoenus coldwellii - Marsh club rush
Carex appressa - Tall sedge
Carex fascicularis - Tassel sedge
Cladium procerum - Leafy twig sedge
Eleocharis acuta - Common spikebush
Eleocharis sphacelata - Tall spikebush
Juncus aridicola - Tussock rush
Juncus kraussii - Sea rush
Lepidosperma longitudinale - Pithy sword sedge
Triglochin striatum - Streaked arrow grass

EXOTIC SPECIES

TREES
Lagerstroemia indica - Crepe myrtle
Pyrus ussuriens - Manchurian pear
Populus nigra 'Italica' (non suckering species)
Plantanus acerifolia - London plane tree
Acer negundo - Boxelder
SHRUBS
Viburnum odoratissimum - Honeysuckle
Syzygium paniculatum - Magenta cherry
Lavendula stoechas alba - Italian white lavender
Rosmarinus species - Rosmary
Buxus sempervirens - American boxwood
Argyranthemum 'Hybrid cultivaris' - Marguerite daisy
Felicia amelloides - Blue marguerites
Kniphofia hybrids - Red hot poker
Lomandra longifolia - Spiny-headed Mat-rush
GROUND COVERS
Wisteria sinensis - Chinese wisteria

NATIVE SPECIES

TREES
Eucalyptus gomphocephala - Tuart
Eucalyptus decipiens - Limestone marlock
Banksia attenuata - Candle banksia
Banksia menziesii - Firewood banksia
Banksia grandis - Bull banksia
Casuarina fraseriana - Sheoak
Agonis flexuosa - W.A. Peppermint
Eucalyptus marginata - Jarrah
SHRUBS & GROUNDCOVERS
Jacksonia furcellata - Grey stinkwood
Jacksonia sternbergiana - Green stinkwood
Acacia cyclops - Red-eyed wattle
Acacia cyanophylla - Golden-wreath wattle
Hakea glabella - Tiny star
Xanthorrhoea preissii - Grasstree
Macrozamia reidlei - Zamia palm
Acacia pulchella - Prickly moses
Melaleuca acerosa - Coastal honeymyrtle
Hibbertia spp.
Hibbertia racemosa - Stalked guinea flower
Casuarina humilis - Dwarf sheoak
Petrophila linearis - Pixie mops
Grevillea thelmanniana - Gilt dragon
Dryandra nivea - Couch honeypot
Calothamnus quadrifidus - One sided bottlebrush
Leucopogon parviflorus - Coast beard-heith
Hemiandra pungens - Snakebush
Conospermum triplinervium - Smokebush
Conospermum stoechadis - Common smokebush
Hovea trisperma - Common hovea
Beaufortia squarrosa - Sand bottlebrush
Melaleuca huegelii - Chenille honey myrtle
Sollya heterophylla - W.A. bluebell
Templetonia retusa - Cockies tongue
Verticardia grandiflolia - Claw feather flower
Westringia fruiticosa - Native rosemary
Kennedia prostrata - Running postman
Hardenbergia comptomiana - Native wisteria
Muehlenbeckia adpressa - Climbing lignum

REHABILITATION ENVIRONMENTAL CORRIDOR
INFORMAL OVERLAND DRAINAGE FLOW AND POSSUM MOVEMENT CORRIDOR WITH WEED CONTROL UNDERTAKEN WITH SUPPLEMENT PLANTING. CONCRETE PATH TO ACT AS EDGE TREATMENT BETWEEN PLANTING AND TURF EDGES.
100% NATIVE PLANTING AREA.

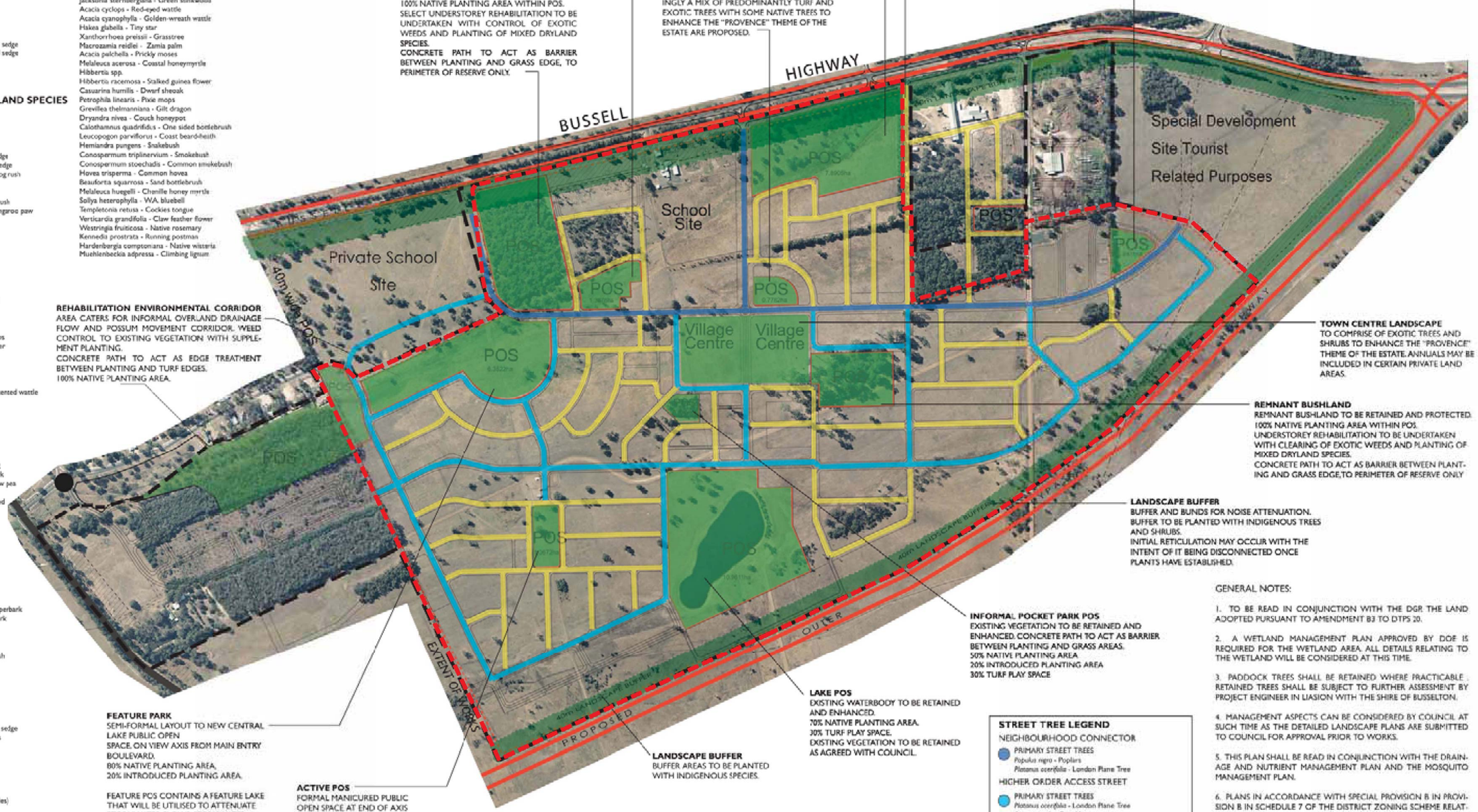
REMNANT BUSHLAND
REMNANT BUSHLAND TO BE RETAINED AND PROTECTED.
100% NATIVE PLANTING AREA WITHIN POS.
SELECT UNDERSTOREY REHABILITATION TO BE UNDERTAKEN WITH CONTROL OF EXOTIC WEEDS AND PLANTING OF MIXED DRYLAND SPECIES.
CONCRETE PATH TO ACT AS BARRIER BETWEEN PLANTING AND GRASS EDGE, TO PERIMETER OF RESERVE ONLY.

EPP WETLAND
THIS WILL BE THE SUBJECT TO THE DETERMINATION OF BOUNDARIES WITH THE DEPARTMENT OF ENVIRONMENT.
REHABILITATION WORKS WILL BE CONTROLLED BY AN AGREED/APPROVED "WETLAND MANAGEMENT PLAN". PERIPHERAL AREAS WILL BE TREATED AS "WETLAND ENHANCEMENT CATEGORY" LAND.

POCKET PARK
PARK TO CATER FOR BOTH A "KICKABOUT" AREA AND PASSIVE RECREATION RESERVE. ACCORDINGLY A MIX OF PREDOMINANTLY TURF AND EXOTIC TREES WITH SOME NATIVE TREES TO ENHANCE THE "PROVENCE" THEME OF THE ESTATE ARE PROPOSED.

LANDSCAPE BUFFER
BUFFER AND BUNDS FOR NOISE ATTENUATION. BUFFER TO BE PLANTED WITH INDIGENOUS TREES AND SHRUBS.
INITIAL RETICULATION MAY OCCUR WITH THE INTENT OF IT BEING DISCONNECTED ONCE PLANTS HAVE ESTABLISHED.

POCKET PARK
PARK TO CATER FOR BOTH A "KICKABOUT" AREA AND PASSIVE RECREATION RESERVE. ACCORDINGLY A MIX OF PREDOMINANTLY NATIVE AND EXOTIC TREES WITH SOME NATIVE SPECIES TO ENHANCE THE DEVELOPMENT THEME OF THE ESTATE ARE PROPOSED.



REHABILITATION ENVIRONMENTAL CORRIDOR
AREA CATERS FOR INFORMAL OVERLAND DRAINAGE FLOW AND POSSUM MOVEMENT CORRIDOR. WEED CONTROL TO EXISTING VEGETATION WITH SUPPLEMENT PLANTING.
CONCRETE PATH TO ACT AS EDGE TREATMENT BETWEEN PLANTING AND TURF EDGES.
100% NATIVE PLANTING AREA.

FEATURE PARK
SEMI-FORMAL LAYOUT TO NEW CENTRAL LAKE PUBLIC OPEN SPACE. ON VIEW AXIS FROM MAIN ENTRY BOULEVARD.
80% NATIVE PLANTING AREA,
20% INTRODUCED PLANTING AREA.

FEATURE POS CONTAINS A FEATURE LAKE THAT WILL BE UTILISED TO ATTENUATE STORMWATER FLOWS. STORMWATER WILL TRAVERSE BIO-RETENTION SWALES PRIOR TO DISCHARGE INTO THE LAKE. THE ATTENUATED FLOWS EXITING THE LAKE WILL FLOW WESTWARDS VIA A RECONSTRUCTED SWALE INTO AN EXISTING SWALE ADJACENT BLUM BOULEVARD.

ACTIVE POS
FORMAL MANICURED PUBLIC OPEN SPACE AT END OF AXIS ROAD.
25% NATIVE PLANTING AREA,
75% TURF PLAY SPACE.

LAKE POS
EXISTING WATERBODY TO BE RETAINED AND ENHANCED.
70% NATIVE PLANTING AREA.
30% TURF PLAY SPACE.
EXISTING VEGETATION TO BE RETAINED AS AGREED WITH COUNCIL.

LANDSCAPE BUFFER
BUFFER AREAS TO BE PLANTED WITH INDIGENOUS SPECIES.

INFORMAL POCKET PARK POS
EXISTING VEGETATION TO BE RETAINED AND ENHANCED. CONCRETE PATH TO ACT AS BARRIER BETWEEN PLANTING AND GRASS AREAS.
50% NATIVE PLANTING AREA
20% INTRODUCED PLANTING AREA
30% TURF PLAY SPACE

TOWN CENTRE LANDSCAPE
TO COMPRISE OF EXOTIC TREES AND SHRUBS TO ENHANCE THE "PROVENCE" THEME OF THE ESTATE. ANNUALS MAY BE INCLUDED IN CERTAIN PRIVATE LAND AREAS.

REMNANT BUSHLAND
REMNANT BUSHLAND TO BE RETAINED AND PROTECTED.
100% NATIVE PLANTING AREA WITHIN POS.
UNDERSTOREY REHABILITATION TO BE UNDERTAKEN WITH CLEARING OF EXOTIC WEEDS AND PLANTING OF MIXED DRYLAND SPECIES.
CONCRETE PATH TO ACT AS BARRIER BETWEEN PLANTING AND GRASS EDGE,TO PERIMETER OF RESERVE ONLY

LANDSCAPE BUFFER
BUFFER AND BUNDS FOR NOISE ATTENUATION.
BUFFER TO BE PLANTED WITH INDIGENOUS TREES AND SHRUBS.
INITIAL RETICULATION MAY OCCUR WITH THE INTENT OF IT BEING DISCONNECTED ONCE PLANTS HAVE ESTABLISHED.

STREET TREE LEGEND

NEIGHBOURHOOD CONNECTOR
PRIMARY STREET TREES
Populus nigra - Poplars
Platanus acerifolia - London Plane Tree

HIGHER ORDER ACCESS STREET
PRIMARY STREET TREES
Platanus acerifolia - London Plane Tree
Acer negundo - Boxelder
Prunus pissardi - Cherry plum
Pyrus ussuriensis - Manchurian pear

LOWER ORDER ACCESS STREET
TERTIARY STREET TREES
Agonis flexuosa - W.A. Peppermint
Corymbia ficifolia - Red flowering gum
Eucalyptus leucoxylon rosea - Pink iron bark
Melaleucs quinquinervia - Broad leaved paperbark
Casuarina equisetifolia - Australian pine

NOTE: FOR DETAIL STREET HEIRARCHY REFER TO DAP 1 PLAN

ALLOCATIONS OF THESE TREES TO BE NOMINATED AT DAP STAGE

GENERAL NOTES:

1. TO BE READ IN CONJUNCTION WITH THE DGR THE LAND ADOPTED PURSUANT TO AMENDMENT 83 TO DTPS 20.

2. A WETLAND MANAGEMENT PLAN APPROVED BY DOE IS REQUIRED FOR THE WETLAND AREA. ALL DETAILS RELATING TO THE WETLAND WILL BE CONSIDERED AT THIS TIME.

3. PADDOCK TREES SHALL BE RETAINED WHERE PRACTICABLE . RETAINED TREES SHALL BE SUBJECT TO FURTHER ASSESSMENT BY PROJECT ENGINEER IN LIASION WITH THE SHIRE OF BUSSELTON.

4. MANAGEMENT ASPECTS CAN BE CONSIDERED BY COUNCIL AT SUCH TIME AS THE DETAILED LANDSCAPE PLANS ARE SUBMITTED TO COUNCIL FOR APPROVAL PRIOR TO WORKS.

5. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE DRAINAGE AND NUTRIENT MANAGEMENT PLAN AND THE MOSQUITO MANAGEMENT PLAN.

6. PLANS IN ACCORDANCE WITH SPECIAL PROVISION 8 IN PROVISION 8 IN SCHEDULE 7 OF THE DISTRICT ZONING SCHEME RELATING TO YALYALUP DEVELOPMENT AREA WILL BE PREPAIRED.

7. THE REQUIREMENTS OF THE MOSQUITO STRATEGY SHALL BE ADDRESSED WITHIN THE RELEVANT DAP SUBMISSION.

1:5000 at A1 | 1 : 10 500 @ A3 | MARCH 2006 REV D

LANDSCAPING STRATEGY

AIRPORT NORTH PRECINCT, YALYALUP

Subject Land Boundary

SOURCE: McNally Newtor Landscape Architects

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN
PROVENCE ESTATE, BUSSELTON
LANDSCAPE STRATEGY
FIGURE 4

Busselton Airport Structure Plan
Shire of Busselton
(Revised 2005)

metres
0 200 400 600 800
SCALE 1 : 15 000 @ A3

Connection to Tuart Drive subject to further investigation of the Outer Bypass alignment

Road reserve is not to encroach into the remnant vegetation which is to be wholly contained within the Open Space area.

Lyddy Road and Cable Sands Road connections to be closed upon the connection to Tuart Drive being finalised and constructed.

Left in - Left out only

Blum Boulevard terminated by cul-de-sac linked with pedestrian pathway.

60m Landscape Buffer along Bussell Highway

HIGHWAY

BUSSELL

Special Development Site Tourist Related Purposes

40m Landscape Buffer along Highway

Proposed Regional Transport Corridor 90m Reserve

Private School Site

School Site

40m wide POS

POS

Village Centre

VASSE

Shop

40m Landscape Buffer along Highway

Local Road only

Future Neighbourhood Connector

Notwithstanding the designation of 2000m² to 4000m² lots, Lot 18 Vasse Highway has the potential for increased density of residential development.

PROPOSED OUTER BYPASS

Showgrounds

Cemetery

Tourist

Busselton Water Board

BUSSELTON AIRPORT (refer to DGP)

Public Open Space Buffer to Industry

65 dBA Slow - represents the maximum noise level calculated for a single event in predetermined conditions

Airpark Hanger Lots

Final proposals for creation of any air park hanger lots will be subject to evaluation by relevant authorities, including the Federal Airports Corporation, Department of Environmental Protection and the Shire of Busselton. Further planning will also consider any future cross runway.

PLANNING POLICY STATEMENTS

Where Special Rural lots are situated over clay pan or Council considers standard septic systems may not function, it will require the use of alternative treatment units.

Prior to rezoning and preparation of a development guide plan for the land:-

i) appropriate ethnographic and archaeological surveys of the land are to be carried out to ensure that there is no breach of Section 17 of the Aboriginal Heritage Act; and

ii) appropriate investigations shall be undertaken to ensure that the potential for future noise impacts from the Busselton Regional Airport operations are taken into account in the development of the land: and

iii) any required noise attenuation associated with potential noise impacts determined from investigations is adequately planned for.

Subject Land Boundary

Special Residential. Lot Size generally 2000m2 to 4000m2

Composite Residential/Industrial with Highway buffer Building Enevelope - No development elsewhere
A - Industrial
B - Residential Building Envelope

Airport Industrial Park
All development shall comply with the Busselton Industrial Development Code and provisions relating to Airport Drive.

Special Development Site - Tourist related purposes. Subject to endorsement of Development Guide Plan.
Uses to include:
Limited Commercial, Wine Sales, Weekend Markets, Crafts, Local Produce, Tourist Accommodation, Caravan Park, Park Homes, Tourist Bureau and Entry Statement.
Note:
Final Zoning documentation shall restrict land uses to ensure that the area does not develop as a "out of town" shopping centre and does not achieve vechicle access from the Highway or Bypass Roads.

Community Purposes

Tourist

Public Open Space

Proposed or existing water body/feature

Agriculture

Local collector/neighbourhood connector road

For Land use details refer to - Busselton Air Port (North) DGP

R2.5
R5
R10
R15/R20
R25/R30

Adopted by Council on / /

CEO

coffey environments
SPECIALISTS IN LIVING AND WORKING PLACES

WESTERN RINGTAIL POSSUM MANAGEMENT PLAN
PROVENCE ESTATE, BUSSELTON
BUSSELTON AIRPORT STRUCTURE PLAN
FIGURE 5

FIGURE 5

SOURCE: Shire of Busselton (Revised 2005)

Appendix A
DEH Correspondence

Western Ringtail Possum Management Plan
Provence Estate, Busselton

Australian Government

Department of the Environment and Heritage

Mr Graeme Morris
Satterley Property Group
Project Manager for East Busselton Estate Pty Ltd
PO Box 410
SOUTH PERTH WA 6951

Dear Mr Morris

Satterley Property Group/Urban and commercial new development/Yalyalup/WA/East Busselton Residential Estate (EPBC Reference: 2004/1878)

The above action was referred by ATA Environmental on behalf of Satterley Property Group, and received on 22 November 2004, for decision whether or not approval is needed under Chapter 4 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The referral documentation nominated Satterley Property Group as the person proposing to undertake the action.

The referral has now been considered under the EPBC Act and I have decided that the action is a controlled action. This means that the action cannot be taken without approval under Part 9 of the Act.

A copy of the document recording my decision is attached for your information.

I have designated Satterley Property Group as the proponent for the action. This means that you are responsible for carrying out certain steps as part of the environmental impact assessment under Part 8 of the Act. The first step in the assessment process is for you to provide preliminary information as the basis for determining the level of assessment.

The minimum content of the preliminary information is prescribed under Part 5 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (see http://www.deh.gov.au/epbc/). A guide and form providing information on the format, content and submission of preliminary information is also available from this web site.

Once the Preliminary Information is received, it will be checked to see if any further information is required in order to determine the level of assessment. If we do not need any additional information, then the decision-maker will decide whether the level of assessment will be based on Preliminary Information, a Public Environment Report, Environment Impact Statement or Public Inquiry. Please note that all levels of assessment will require a public consultation phase. Any specific requirements will be advised to you by the Department. Following the public review, you will have the opportunity to review your information in light of any comments received and the Department will prepare an assessment report for consideration by the decision-maker.

GPO Box 787 Canberra ACT 2601 Telephone (02) 6274 1111 Facsimile (02) 6274 1666
Internet: www.deh.gov.au

Towards the end of the assessment process, the Department will request a notice from the State under section 130 of the EPBC Act. This notice provides information on the assessment of matters other than the controlling provisions stated in the attached decision, and is required before the decision-maker can approve the proposal. You should contact the relevant State authorities, if you have not already done so, to ensure that all necessary State assessments proceed, so that the section 130 notice can be provided in due course. Once the section 130 notice is received by the Department, the approval process for your action will be finalised within 30 business days.

Please note that works associated with the proposal should not commence until approval has been given under the EPBC Act.

The work undertaken to date by your company to formulate draft mitigation measures and management plans designed to reduce the impact on Western Ring-tailed Possum will form the basis of the assessment. Our expectation is that the assessment and approvals process will settle the detail of the measures to minimize the potential for impacts on matters protected under the EPBC Act. The focus will be to protect habitat linkage areas for the Western Ring-tailed Possum and to reduce the potential for impacts on the nearby Vasse-Wonnerup Ramsar site.

The assessment officer for this project is Ms Lesley Donohoe [02 6274 1907]. She will contact you shortly to discuss the assessment process.

Yours sincerely

Mark Flanigan
Assistant Secretary
Policy & Compliance Branch

7 December 2004

COMMONWEALTH OF AUSTRALIA

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

DECISION ON CONTROLLED ACTION, CONTROLLING PROVISIONS AND DESIGNATION OF PROPONENT

I, MARK FLANIGAN, Assistant Secretary, Policy and Compliance Branch, Department of the Environment and Heritage, a delegate of the Minister for the Environment and Heritage for the purposes of section 75 of the *Environment Protection and Biodiversity Conservation Act 1999*, decide that the proposed action, set out in the Schedule, is a controlled action; that the controlling provisions for the action are those set out in the Schedule; and designate Satterley Property Group as proponent of the action.

SCHEDULE

The proposed action to develop the East Busselton Estate, on Lots 2, 9003 and 202 Bussell Highway and Vasse Highway, located approximately 5 km southeast of Busselton, Western Australia (EPBC 2004/1914).

The Part 3, Division 1, controlling provisions are:

- sections 16 and 17B (Wetlands of international importance);
- sections 18 and 18A (Listed threatened species and communities); and
- sections 20 and 20A (Listed migratory species).

Dated this 21 day of December 2004

ASSISTANT SECRETARY
POLICY AND COMPLIANCE BRANCH
DEPARTMENT OF THE ENVIRONMENT AND HERITAGE

Appendix B
Preliminary Information Document

Western Ringtail Possum Management Plan
Provence Estate, Busselton

Environment Protection and Biodiversity Conservation Act 1999

Preliminary Information Form – Part 1

This form (Part 1) is to be used if a person proposing to take a controlled action or a person applying for a permit in relation to whales, dolphins or porpoises (a cetacean permit) has decided, or has been requested, to provide Preliminary Information under section 86 of the Act. The purpose of this form is to enable the Minister to decide which approach to use for assessing the action.

Part 2 of this form is a separate document that need only be completed for actions that have been referred by a Commonwealth agency for the Commonwealth Environment Minister's advice under section 160 of the EPBC Act.

Please complete this form then print it out, get any signatures required, attach the necessary map/s or other information and send the completed preliminary information to Environment Australia at:

Preliminary Information
Environment Assessment Branch
Environment Australia
GPO Box 787
CANBERRA ACT 2601

Please read the guide that accompanies this form carefully and ensure that the completed preliminary information meets the requirements of the Regulations, as outlined in the guide, in terms of format and content.

1. Contacts

Preliminary information must be submitted by either the person proposing to take the action or the designated proponent.

1.1 Corporation or individual(s) proposing to take the action
(Include name(s) of corporation or individual(s) proposing to take the action, postal address, telephone, fax, email and ACN for a corporation)

East Busselton Estate Pty Ltd
P.O. BOX 410
SOUTH PERTH 6951
Ph. (08) 9368 9022
Fax (08) 9368 9001
ABN 38009 054 979

Is this the person submitting this preliminary information? **YES**

If a corporation is proposing to take the action, please also provide the name of a contact officer for this matter.

Mr Graeme MORRIS

1.2 Proponent for the action (if different from corporation or individual(s) proposing to take the action)

(Include name of corporation designated as proponent for the action, postal address, telephone, fax, email and ACN for a corporation)

Is this the person submitting this preliminary information?

If a corporation is the proponent for the action, please also provide the name of a contact officer for this matter.

2. Information in the referral or permit application

2.1 Referral reference number recorded on the notice of the referral decision *This question is only relevant where a referral has already been submitted and a decision has been made that approval for the action is required.*

EPBC Reference: 2004/1878

2.2 If information provided in the referral or in the cetacean permit application requires revision or updating, or if you wish to provide additional information, please provide details below.

3. Assessments under State or Territory legislation

3.1 Provide details of any environmental assessment of relevant impacts of the action under State or Territory legislation, including:

(a) copies of assessment documentation, including documents, prepared by the person proposing to take the action or a government agency, that describe the impacts of the actions or how the impacts are to be managed; and

(b) a description of any public consultation occurring, or to occur, during the State or Territory assessment process; and

(c) copies of documents recording the outcomes of the consultations.

The Shire of Busselton's proposed Draft Scheme Amendment No. 83 to District Town Planning Scheme No. 20 (which relates to the proposed Provence Estate and surrounding properties), has been forward to the Western Australian Environmental Protection Authority (EPA) under Section 38(1) of the *Environmental Protection Act 1986*. Section 38(1) of the Act requires that a decision-making authority must refer a proposal to the EPA for a decision on whether the proposal should be subject to environmental impact assessment under the Act, if it considers the proposal is likely to have a significant effect on the environment.

Scheme Amendment

A number of public consultation periods will occur as a matter of planning process controlled by the local government. This will involve public consultation during the

rezoning of the land, public consultation during the approval of a Structure Plan for the overall development and public consultation for the provision of Outline Development Plans (ODP's) over developable portions of the site.

Environmental Approvals Process

As part of the referral process, the EPA Services Unit, on behalf of the EPA, has undertaken inter- and intra-departmental review relating to the scheme amendment. Besides various branches of the Department of Environment being consulted (Land and Water Quality, Wetlands, Terrestrial Ecology, Air Quality), other State departments currently being consulted include the Departments of Conservation and Land Management (CALM), Health (DoH), Indigenous Affairs (DIA) and Main Roads WA. This review enabled the EPA Services Unit to determine whether there were significant environmental issues needing to be addressed by the proponent prior to reporting to the Chairman of the EPA whereupon the level of assessment was determined.

On 1 August 2005, the EPA advised the Shire of Busselton that the level of assessment set for the scheme amendment was 'Scheme not assessed, advice given'.
It was the EPA's opinion that while the scheme raises environmental issues, the potential environmental impacts that may result from the scheme do not warrant detailed environmental assessment by the EPA.

4. Other sources of information on the relevant impacts and their management

4.1 Provide details of any environmental assessment of relevant impacts of the action (other than assessment mentioned in 3 above), including:
(a) copies of assessment documentation; and
(b) a description of any public consultation occurring, or to occur, during the assessment process; and
(c) copies of documents recording the outcomes of the consultations.

4.2 Provide details of any plan, program or strategy that relates to the action and the management and mitigation of any relevant impacts of the action.

Western Ringtail Possum (WRP) Management

The distribution of the WRP previously encompassed a variety of vegetation types including coastal Peppermint, and Peppermint/Tuart associations, Eucalypt woodlands, Casuarinas (*Allocasuarina huegeliana*), and Mallee heath from the Hampton Tableland (Baynes, 1987).

Currently the WRP is almost exclusively restricted to the coastal Peppermint woodland and coastal Peppermint/Tuart associations from the Australind-Eaton area to Two Peoples Bay. The only known extant inland populations are in the lower Collie River Valley, Perup Nature Reserve and surrounding forest block near Manjimup.

While the majority of the site has been historically cleared due to grazing and mineral sands mining, two pockets of remnant vegetation remain. They are:
i. A 4.5ha remnant Peppermint (*Agonis flexuosa*) Low Closed Forest located along the northeastern boundary of Lot 9003; and
ii A 2ha Tuart (*Eucalyptus gomphocephala*) and Peppermint Tall Woodland.

Through the WRP surveying previously undertaken, both of these pockets of remnant vegetation are considered WRP habitat and will be preserved as areas of public open space (POS).

Management:
WRP habitat identified to be preserved in areas of POS within the proposed development.

Prepare and implement a Western Ringtail Possum Management Plan to the satisfaction of the DEH and CALM) covering factors and management measures as detailed in Section 7.

Abutting the northwestern portion of Lot 9003 is a 16 lot subdivision (known as the *Hawker* subdivision) (Figure 1 for location). Although historically parkland cleared, this tract of land contains a number of mature Peppermints. As a condition of

subdivision approval, these trees have been designated significant trees and the proponent has ensured through planning mechanisms, that each of the lots will have designated building envelopes designed to enable all significant trees to be retained. These trees will form part of a linkage corridor connecting the proposed POS area with Willow Grove Estate located to the west of the proposed development.

Management:
Building envelopes have been identified to ensure protection of significant trees.

As part of the Shire's requirements to reduce noise impacts from the traffic travelling along Bussell Highway, the proponent will be required to plant a 40m wide vegetated buffer located between the road reserve and the commencement of development. The road reserve bordering the proposed development currently retains a mix of Marri (*Corymbia calophylla*) and Peppermints with a diverse understorey. It is the proponent's intention that the vegetated buffer will contain a similar diversity of plant species currently located on the site.

Management:
40m wide vegetated buffers to abut the Bussell Highway and the future outer bypass road reserves will be planted out with appropriate indigenous flora.

Directly to the south of the *Hawker* subdivision and south of the thicket of Peppermints (proposed POS) on Lot 9003 is a multiple use management category wetland that meanders in a southwest-northeast direction through the proposed development from its western boundary towards the EPP wetland located in Lot 2. This wetland is currently very degraded with only a few remnant *Melaleuca rhaphiophylla* (Paperbark) specimens remaining. Where practicable, it is planned to rehabilitate this wetland so that it functions as part of the bioretention system. The rehabilitation will involve intensive planting of both riparian vegetation and dryland species. In the long-term, it is anticipated this ribbon of riparian and dryland vegetation will function as a fauna movement corridor.

Management:
Rehabilitate degraded multiple-use wetland through intensive planting of both riparian and dryland species of native provenance where practicable.

Water Management

The Drainage and Nutrient Management Plan details a total water management strategy for development of the proposed development incorporating stormwater drainage management and nutrient management and is based on the principles of Water Sensitive Urban Design. The document is consistent with principles outlined in the Draft Water Resources Management Strategy for the Busselton-Dunsborough Region and the DoE's current position on Urban Stormwater Management as outlined in the Stormwater Management Manual (2004) and Draft Decision Process for Stormwater Management in Western Australia (2005).

Stormwater and nutrient management will be achieved through responsible landscape and management practice, and through a series of stormwater detention basins, existing open drains and swales designed to:

- attenuate post-development peak runoff rates;
- maximise infiltration opportunities at point of source; and
- improve water quality from existing land use practices.

Management:

Existing multiple-use wetlands within the proposed development are highly degraded and are typically without fringing vegetation. Rehabilitation of these wetlands will be undertaken where practicable.

Water quality management will be achieved through application of both structural and non-structural controls including the use of source controls and catchment management consistent with the DoE's recommended approach to stormwater management.

A monitoring programme to be undertaken over a three-year period will enable quantitative assessment of hydrological impacts of the proposed development. The programme will address:

- monitoring of surface water discharges from the development via the proposed detention basins;
- monitoring of groundwater level and quality; and
- preparation of annual monitoring reports to be submitted to the DoE for review.

Note: An outline of the nature, content and likely developer undertakings to be contained in the WRT Possum Management Plan accompanies this referral.

5. Need for an environmental impact statement or public environment report

(Note: questions 6-8 do not need to be completed if the answer to 5.1 is yes)

5.1 Do you think that the relevant impacts of the action should be assessed by an environmental impact statement or a public environment report?

No

5.2 (Optional) Please outline why you believe the impacts of the action **should not** be assessed by an environmental impact statement or a public environment report.

The DEH determined that there were three Controlling Provisions relating to the referral to develop Lots 2, 9003 and 202 Bussell Highway and Vasse Highway, Busselton.

- sections 16 and 17B (Wetlands of international importance) (Vasse-Wonnerup Estuary);

- sections 18 and 18A (Listed threatened species and communities) (Western Ringtail Possum – *Pseudocheirus occidentalis*); and
- sections 20 and 20A (Listed migratory species) (in particular the DEH have identified the following four species of Sandpiper as being most at risk of impact (Lesley Donohoe, pers. comm.): Wood Sandpiper – *Tringa glareola*, Common Greenshank – *T. nebularia*, Curlew Sandpiper – *Calidris ferruginea* and Sharp-trailed Sandpiper – *C. acuminata*).

Sections 16 and 17B (Wetlands of international importance)

The Vasse-Wonnerup Estuary is recognised as one of the most valuable estuarine bird habitats in the southwest of Western Australia listed under the RAMSAR Convention. At its closest point to the proposed development (500m), the wetland is known as the Vasse Estuary comprising shallow, largely calm waters, up to 600m wide in places and extending for approximately 5km before it joins the Wonnerup Estuary and discharging into Geographe Bay at Wonnerup Inlet.

The Vasse Estuary receives flows from the Sabina River (located approximately 1.2km east of the proposed development) and Abba River (approximately 3.6km to the east) together with run-off from fringing rural and residential areas (LeProvost Dames & Moore, 1997).

Residential developments are known to result in an increase in hard surfaces thereby resulting in additional overland flow. The proponent acknowledges the potential for an increase in overland flow entering the Sabina River and Vasse Estuary through the existing drain network through the development of the site. However State government controls imposed through the planning process (conditions of subdivision approval) require that post-development flow (discharge) rates be attenuated to pre-development levels. Hence regulatory mechanisms are in place that will guide engineering design to limit or mitigate potential off-site impacts of stormwater from the proposed development.

Sections 18 and 18A (Listed threatened species and communities)

Initial surveying of the population of Western Ringtail Possums inhabiting the proposed development indicates the WRP are present on site. As a result of historical land use practices, the site retains limited remnant vegetation except in a couple of pockets as previously described. The treed habitat isolates located either side of the Bussell Highway (to the north Reinscourt/to the south proposed Provence Estate) provide important habitat islands for the WRP.

The pocket located in north of Lot 9003 provides a significant habitat within the proposed development. The proponent is committed to providing a vegetated buffer along the northern boundary of the proposed development and along the multiple use wetland (to the south of the *Hawker* subdivision). In the long-term this will act as a corridor link between on-site habitat and WRP habitat located in both the Reinscourt (rural-residential) and *Willow Grove* (low density) subdivisions.

The only other significant habitat isolate located in the centre of Lot 202 will be retained as POS within the proposed development. Isolated trees that provide limited habitat for WRP will be cleared as part of the proposed development.

Retention of significant pockets of remnant vegetation within the site, augmented by the creation of an east – west treed corridor of Public Open Space through the site and treed corridors along the northern and southern boundaries of the site, will create an environment that allows the movement of possums through the Estate.

Recent discussion with the Local Government has indicated that the northern and southern corridors abutting the highways (existing and proposed highways) are likely to be accepted as Public Open Space vested in the Local Government for care and control.

Street tree plantings will be carried out by the developer progressively as land is developed. It is intended to use the Western Australian Peppermint tree indigenous to the Busselton region as street trees in the Estate with specimen exotics used only in such locations as the Town Centre.

Sections 20 and 20A (Listed migratory species)

The four species identified by the DEH are Marine Listed migratory species protected under the JAMBA, CAMBA and Bonn Convention. The species are waders that are non-breeding migrants that migrate to Australia annually (generally September through to May) although the Sharp-tailed Sandpiper and Common Greenshank have been observed at a number of Perth sites all year round. Both the Sharp-tailed and Greenshank Sandpiper having an Australia wide distribution excluding central Western Australia, the Wood Sandpiper being distributed through the majority of Australia excluding central Western Australia, Cape York Peninsula and South Australia and the Curlew Sandpiper frequenting coastal and inland major river systems (Stevenson, 2003).

The species identified are known to utilise the Vasse-Wonnerup Estuary in particular the mouth of the Sabina River located at the river's interface with the Vasse Estuary. The mouth of the Sabina River is composed of mudflats that provide an abundance source of aquatic invertebrates that proliferate in the nutrient enriched sediments.

To date the most comprehensive published waterbird surveys undertaken of the Vasse-Wonnerup Estuary are those of Jaensch *et al.* and Bamford (Jaensch *et al.*, 1988; Bamford, 1995).

Jaensch *et al.* study included seasonal surveying undertaken from 1981-1985 and included the mouth of the Sabina River and tidal flats adjacent to the Bussell Highway as survey points. In relation to the four identified species, the highest number counts of individuals were:

- Wood Sandpiper – *Tringa glareola* – 16*
- Common Greenshank – *T. nebularia* – 14/200*
- Curlew Sandpiper – *Calidris ferruginea* - 395
- Sharp-trailed Sandpiper – *C. acuminata* – 2300*

(* Post-study data)

Bamford's study was undertaken between August 1994 and February 1995 with emphasis on floodplain habitat usage and impact of disturbance. In relation to the four identified species, the highest number counts of individuals were:

- Wood Sandpiper – *Tringa glareola* – 15 (October 1994)
- Common Greenshank – *T. nebularia* – 65 (December 1995)
- Curlew Sandpiper – *Calidris ferruginea* - 200 (February 1995)
- Sharp-trailed Sandpiper – *C. acuminata* – 53 (December 1995)

Bamford noted that the counts of waders presented by Jaensch *et al.* (1988) for the Vasse Estuary were much higher than were found in his 1994/95 surveys. Bamford surmised that this variation might have resulted either from incomplete counts or the commencement of the practice of releasing seawater into the Vasse Estuary in the early 1990s.

With respect to Bamford's work on disturbance implications (pedestrians, dogs, shooters, bait-differs, off-road vehicles, helicopters, military aircraft), Bamford noted that it is difficult to generalise about the impact of disturbance as it is reported to be extremely variable. Bamford's results recorded baseline responses of waterbirds to controlled disturbance at a location where the birds had little opportunity for habituation. It is important to note that none of the species identified by the DEH were mentioned as being impacted upon.

The areas of the Vasse Estuary where observations of the four species have been recorded are the floodplain flats adjacent to Bussell Highway (approximately 500m to the north of the proposed development) and the mudflats at the mouth of the Sabina River (1.6km northeast of the proposed development).

The proponent is committed to putting in place a variety of on-site mitigation measures to manage key environmental issues in keeping with the requirements (guidelines and criteria) of the DoE and the DoH.

6. Alternatives to the proposed action

6.1 Describe:
(a) any options for how the proposed action may be taken; and
(b) any alternatives to the proposed action, including not taking the action; and
(c) the relative effect of the options and alternatives on the relevant impacts of the action.

The Shire of Busselton is one of the nation's fastest growing Local Government Areas in Australia and demand for land is outstripping the capacity of developers to supply suitable building sites.

The Shire of Busselton fulfils the role of a decision-making authority for selecting land suitable for urban development. As part of this function, potential changes in land use are scrutinised through the local government level prior to scheme amendments being referred to the State EPA. Land chosen for rezoning would therefore:

- avoid land of high ecological values;
- avoid land subject to seasonal inundation and close to major transport routes;
- allow for the provision of serviced lots where practicable; and
- provide 200ha close to a regional centre which provides infrastructure.

As part of the process of supplying building lots for housing, the subject land has been identified by the Shire as suitable for urban development as it:

- does not front on to any areas of high ecological value;
- is in private ownership;
- has previously been extensively cleared for mineral sands 'strip' mining and agricultural purposes (grazing); and
- is not on the floodplain of the Vasse-Wonnerup estuary.

Importantly the State EPA has indicated through its provision of advice to the Shire, that other than for the small portion of EPP wetland and its associated buffer occurring onsite, there is very little land within the Provence Estate that it considers 'constrained'.

(a),(b) and (c)

No development option:
The consequences of not proceeding with the proposed development are that the environmental, employment, economic and social benefits of the proposal will not be achieved. The benefits that will be lost include:

- The site allows affordable residential housing lots to be constructed;
- The region is under extreme pressure for growth and denial of this land for development will contribute to increased existing home prices and a less affordable housing environment in the Busselton region;
- The Shire of Busselton will forego the potential to a considerable increase in rates revenue derived from the rezoned land;
- The loss of employment and consequential earnings for both local and regionally-based trades and allied workforce that would otherwise be gained in a major masterplanned residential development such as Provence Estate;
- Demand for housing near the regional centre of Busselton will not be met, and alternative land, possibly in more environmentally sensitive locations, may be identified and developed for this purpose; and
- The continued use of the land for agricultural purposes will not realise rehabilitation of the east – west corridor for enhanced wildlife habitat and movement, improved stormwater run-off quality or a rehabilitated and enhanced wetland area.

7. Mitigation techniques to eliminate or reduce relevant impacts

7.1 Provide details of measures that will be implemented to avoid or manage any relevant impacts of the action. Include, if appropriate, evidence in the form of reports or technical advice on the feasibility and effectiveness of the proposed measures.

Sections 16 and 17B (Wetlands of international importance)

Management Measures
In order to minimise potential impacts on the Vasse-Wonnerup Ramsar Wetland the following management measures are planned:

Flood Management:
The proposed development will require discharge to the Lower Vasse River, Sabina River and Vasse-Wonnerup Estuary. The adopted design criteria for new development areas is that post-development flows are attenuated to pre-development levels. Flood management for the proposed development has been based on maintaining the peak flow at the downstream boundary with existing design peak flows to protect downstream areas and existing adjacent development areas from flooding and erosion. Consistent with DoE requirements, local infiltration techniques will be adopted (where possible) to infiltrate 1 in 1 year 1 hour events.

Water Quality Management:
Advice received from the DoE (Neville Welsh, pers. comm.) indicates that there is currently no published water quality targets set by the DoE for water discharge to the Vasse-Wonnerup Estuary.

The approach adopted for the proposed development is based on determining existing water quality by monitoring pre-development, establishing targets based on ANZECC (2000) and EPA Bulletin 711, implementing water quality measures to achieve targets and monitoring post-development to assess performance.

Groundwater Management:
The AAMGL policy was developed in the early 1990s by the Water and Rivers Commission (now the DoE) as a mechanism to prevent nutrient rich groundwater being drained from areas as surface water, polluting water bodies downstream, preventing drying out the wetlands and saving the groundwater dependent vegetation. The AAMGL policy requires new open drains or subsoil drains to be laid at or above the AAMGL. Fill must be imported to give adequate separation between the land surface and the groundwater (JDA, 2005).

Considering the significance of the receiving water body (ie Vasse-Wonnerup Estuary), setting of regional drainage at the existing AAMGL is proposed for this development, with no subsoil drainage and fill of house pads as required.

Sections 18 and 18A (Listed threatened species and communities)

Management Measures
In order to minimise potential impacts the following management measures are planned:

WRP Management:
The proposed development will retain the last remnants of old growth Peppermint stands (northern portion of Lot 9003 and centre of Lot 202).

Vegetated habitat corridors comprising appropriate species of local provenance will be planted to link the old growth stand in Lot 9003 with WRP habitat located to the west in Lot 501 and east with Reinscourt. These corridors will be located through the site as well as along the northern and southern boundaries abutting the existing and proposed highways.

A Western Ringtail Possum Management Plan will be prepared and implemented for the proposed development, with the management of the ecological linkage corridor as a critical factor steering the preparation of the Plan. As such, the Plan will focus on maintaining the natural attributes and values that the area currently supports. In this regard, the provision of landscaping enhancement is considered appropriate to enable passive use and appreciation of the area comprising the linkage corridor within the overall context of the site.

In addition, the implementation of the management plan will provide for a minimal level of passive recreational use within the linkage corridor consistent with the primary aim. To achieve the primary aim for the linkage corridor, the objectives of the proposed management plan will be to:

- Protect and conserve the natural values of the linkage corridor habitat.
- Promote the linkage corridor as a conservation area and education resource for the use and enjoyment of the local and wider community.
- Promote limited access within the POS areas portions of the linkage corridor for passive recreational use.
- Provide a long-term strategy for the management of existing vegetation within the linkage corridor and implementation of rehabilitation strategies.
- Increase public awareness and understanding of the value of the linkage corridor and its role in conserving the existing population of WRP and the issues associated with their management.

To ensure that these objectives are achieved, a number of management measures are proposed for the linkage corridor and associated WRP population and these will be addressed in the management plan:

- Identification of Suitable WRP Linkage corridor
- Maintenance Requirements for Linkage corridor on Private Land if required
- Conservation Management Issues
  - Rehabilitation
  - Habitat Protection
  - Predator Management

- Fire management
- Interpretation and Education
- Monitoring and Review of the Plan

Sections 20 and 20A (Listed migratory species)

Management Measures
In order to minimise potential impacts on Listed migratory species, the following management measures are planned:

Water Quality Management:
In order to minimise potential impacts of the proposed development on the water quality and quantity of the Vasse-Wonnerup Estuary, the implementation of the management measures previously outlined (ie groundwater, flood, water quality management) will mitigate further nutrient enrichment and heavy metal and hydrocarbon contamination of the Sabina River and Vasse-Wonnerup Estuary. The proponent is committed to installing both structural controls (gross pollutant traps and hydrocarbon separators) and non-structural controls (vegetated swale network) on-site to minimise potential for off-site impacts to occur.

8. Environmental record of the person proposing to take the action

8.1 If the person proposing to take the action is a corporation, provide details of the corporation's environmental planning policies and practices.
(Note: It would be useful to include details of any environmental management plans or environmental management system accreditation, including reviews and reports on the effectiveness of the EMPs or EMSs.)

Through its environmental consultant for the proposed development ATA Environmental, the Satterley Property Group adopts the procedures and protocols of ATA Environmental accredited under ISO 9002.

Environmental Policy

Satterley Property Group is a property development company currently operating in Western Australia. The Company seeks "best practice" in environmental management and accepts and respects community and regulatory concern for the environment and shall make its Environmental Policy available to all interested parties, including the general public. To support its commitment, the Company:

1. Acknowledges responsibility to minimise and manage the environmental changes caused by its operations as a critical business function.
2. Shall, with the encouragement, participation and support of all employees and contractors, and through our Health, Safety and Environment System, maintain sound environmental practices, respond quickly and effectively to any environmental incidents arising from Satterley Property Group's operations.
3. Shall include environmental management and remediation considerations in all stages and aspects of our property development activities.
4. Shall strive to prevent pollution, minimise waste and conserve resources as we manage our environment. Major considerations include noise, water, dust, vegetation, fauna, soils, waste materials and land rehabilitation.
5. Shall set and strive to maintain standards to comply with all applicable legal requirements, government policies and agreements for the protection of the environment.
6. Shall develop and strive to improve practices through consultation with professional personnel, the community, government agencies and industry groups.
7. Will discuss openly and constructively issues of community concern.

8.2 Provide details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the person proposing to take the action or applying for a cetaceans permit.

No proceedings have ever been taken against the Satterley Property Group under Commonwealth, State or Territory law pertaining to the protection of the environment or conservation and sustainable use of natural resources.

8.3 (Optional) Provide other information about the environmental record of the person proposing to take the action.

Satterley Property Group is recognized internationally for excellence in urban development and renewal, landscaping and rehabilitation and community planning and implementation. The many prestigious international, national and state awards received in recent years are testimony to the innovative approach and diverse expertise of the Satterley Property Group.

NIGEL SATTERLEY
2003 REIWA's Kevin Sullivan Memorial Award for individual excellence and achievement.
2002 Urban Development Institute of Australia – President's Award.
2000 Western Australian Government's Ministry of Housing Citation for services to the housing industry.

ASCOT GARDENS
1998 UDIA State Award for Excellence in Urban Development (250 lots and under).
1998 City of Belmont Opportunity Award.

BEAUMARIS
2003 UDIA State Finalist in Residential Development Over 250 Lots.
2002 UDIA State Finalist in Environmental Excellence.
2002 UDIA State Finalist in Residential Development (less than 250 lots).
1994 Landscape Industry Association Premier Estate Subdivision Award.

BRIGHTON
2004 UDIA State Finalist Masterplanned Development.
2003 Urban Development Institute of Australia (UDIA State Finalist for Residential Development Masterplanned Community).
2002 Planning Institute of Australia (PIA) National Award Certificate of Merit for Urban Design.
2002 Urban Development Institute of Australia (UDIA) State Finalist for Residential Development (under 250 lots).

DALYELLUP
2004 UDIA State Award for Masterplanned Development.
2003 UDIA State Award for Excellence Masterplanned Development.
2003 PIA Special Commendation for Structure Plan Report.
2003 UDIA National Finalist Masterplanned Community.
2003 FIABCI International finalist.
2002 Landscape Industries Association Award for Excellence in Public Open Space.
2002 UDIA National Award for Residential Subdivision.
2002 UDIA Finalist in the Presidents Award.

2002 UDIA State Award for Excellence in Masterplanned Development.
2002 PIA Certificate of Merit for Urban Design (Built Form).
2001 UDIA State Award for Excellence in Urban Development (greater than 250 lots).
2000 RAPI National Award, Certificate of Merit for Urban Design.
2000 RAPI President's Award.
1999 RAPI State Award for Urban Design.

HALLS HEAD, MANDURAH
1988 Environmental Protection Authority Award for Environmental Excellence.

MINDARIE KEYS
1999 UDIA President's Award for Most Outstanding Development in Australia (Land Sales).

SANCTUARY WATERS
1998 UDIA State Finalist for Excellence in Urban Development in Residential Subdivision.

NEW LIVING PROGRAM (URBAN RENEWAL, THE NEW KWINANA, THE NEW NORTH)
2002 UDIA National Finalist for the President's Award.
2002 UDIA National Finalist for Urban Renewal.
2001 UDIA State Award for Urban Renewal.
2001 UDIA State Award for Excellence in Urban Renewal.
2000 UDIA State Finalist for Urban Renewal.
2000 Master Builders Association Excellence Awards for Alterations and Additions.
1999 United Nations World Habitat Award "The New Kwinana".
1999 UDIA National Finalist Award foe excellence in Urban Renewal.
1998 UDIA State Award for Excellence in Urban Renewal.
1997 FIABCI International Finalist for Excellence in Urban Renewal.
1996 MBA Housing Excellence Award for Alterations and Additions.

PRINCETON
2003 UDIA State Finalist Environmental Excellence.
2003 UDIA State Finalist Water Sensitive Urban Design.

REGENT WATERS
1997 UDIA National Award for Best Small Residential Subdivision.
1996 UDIA State Award for Best Small Residential Subdivision.

SECRET HARBOUR
2003 UDIA State Finalist, Water Sensitive Urban Design.
2003 UDIA National Finalist Storm Water Industry Association, Water Sensitive Urban Design.
2002 UDIA State Finalist for Environmental Excellence.
2001 UDIA State Finalist for Environmental Excellence.
2000 UDIA State Award for Environmental Excellence.
1998 UDIA State Award for Environmental Excellence.
1996 UDIA State Award for Excellence in Large Residential Estates.

THE AVENUES
1996 UDIA National Award for Excellence in Urban Development.
1996 The Landscape Industry National Award for Central Park.
1995 UDIA State Award for Excellence in Urban Development (999 lots or under).
1995 The Landscape Industry State Award for Central Park.

THE PENINSULA ESTATE
2000 UDIA State Award for Excellence in Residential Development (greater than 250 lots).
2000 UDIA National Award for Environmental Excellence.
2000 FIABCI International Finalist for Residential Development.
1999 UDIA State Award for Environmental Excellence.

AWARD ABBREVIATIONS:
UDIA – Urban Development Institute of Australia
REIWA – Real Estate Institute of Western Australia
PIA – Planning Institute of Australia
MBA – Master Builders Association

9. Social and economic matters

9.1 (Optional) Provide information relating to economic and social matters including:

- people, groups or communities that may be affected by the action; and
- the economic impact the action is likely to have on the local and broader community.

(Note: This requirement is not mandatory, but gives proponents an opportunity to provide information relevant to the Minister's decision under section 136 of the Act on whether or not to approve an action and what conditions to attach to an approval.)

The Busselton region has been experiencing rapid growth resulting in high demand for residential building sites. The pattern of landuse and geomorphology of the Busselton region act as constraints in providing suitable land for housing construction. The presence of the network of wetlands from Vasse to Wonnerup restricts the availability of suitable land located to the north of wetland system and south of Geographe Bay coastline. Except for a few smaller residential developments currently being constructed, the supply of developable land is now limited. South of the wetland system, land that has historically been used for agricultural purposes is now being sourced to provide land for residential housing.

As part of this process, the Satterley Property Group proposes to develop a residential estate at Provence Estate, situated in the South West of Western Australia approximately 5km southeast of Busselton to the south of the Vasse Estuary. Provence Estate will be Busselton's first masterplanned community.

The proposed development is to be supported by recreational, tourist and commercial services, consistent both with the needs of residents as well as visitors to the region and the need for environmental protection.

The proposed development will provide permanent, affordable residential accommodation and it is estimated that the total population at full development would be approximately 4500. Given the highly desirable environment and lifestyle in the Busselton and 'Capes' region, housing prices are very high. Provence Estate will provide a range of affordable homesites commencing at approximately $90,000 per lot inclusive of a fencing, landscape and early building package valued at between $7,500 and $10,000.

Consistent with Western Australian Government requirements, the development will consist of:

- a range of residential densities (R2.5 – R30);
- a village centre providing limited commercial development;
- a primary and middle school in addition to the recently established Anglican K-12 College;
- a mix of dwelling types including strata units and single residential; and
- supporting infrastructure consistent with the scale of the development.

10. Details of information used in part 1 of the preliminary information

10.1 Provide details including:

(a) the source of the information; and

(b) how recent the information is; and

(c) how the reliability of the information was tested; and

(d) what uncertainties (if any) are in the information.

SEE OVER PAGE

INFORMATION SOURCES

SOURCE	RELIABILITY TEST	KNOWN UNCERTAINTIES
Ahern CR, McElnea AE, Sullivan LA (2004). *Acid Sulfate Soils Laboratory Methods Guidelines*. In *Queensland Acid Sulfate Soils Manual 2004*. Department of Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia.	Published government document	Nil
ATA Environmental (2003). *Preliminary Site Investigation and Sampling and Analysis Plan – Busselton Meats Facility, Lot 2 Busselton Bypass, Busselton.* Report No. 2003/194. Report prepared for the Satterley Property Group.	Reviewed by the WA Department of Environment	Nil
ATA Environmental (2004). *East Busselton Subdivision – Western Ringtail Possum Survey.* Report No.2004/26. Report prepared for the Satterley Property Group.	Consultant Report	Indeterminate[1]
ATA Environmental (2004). *Preliminary Acid Sulfate Soils Investigation, East Busselton Estate.* Report 2004/11. Report prepared for the Satterley Property Group.	Consultant Report	Indeterminate[1]
ATA Environmental (2004). *Detailed Site Investigation Busselton Meats Facility, Lot 2 Bussell Highway, Busselton.* Report No. 2004/121. Report prepared for the Satterley Property Group. Report prepared for the Satterley Property Group.	Reviewed by the WA Department of Environment	Nil
Bamford, M. J. (1995). Study of the Use by Waterbirds of the Floodplains of the Vasse and Wonnerup Estuaries. A report prepared for the Department of Conservation and Land Management, January 1995.	Peer reviewed	Nil
Department of Environment (DoE) (2004). *Identification and Investigation of Acid Sulfate Soils and Groundwater.* Acid Sulfate Soils Guideline Series, Department of Environmental Protection, Perth.	Published government document	Nil

SOURCE	RELIABILITY TEST	KNOWN UNCERTAINTIES
Department of Environment (DoE) (2004). *Guidance for Groundwater Management in Urban Areas on Acid Sulfate Soils*. Acid Sulfate Soils Guideline Series, Department of Environment, Perth.	Published government document	Nil
Department of Environment (2004). Stormwater Management Manual for Western Australia, February 2004.	Published government document	Nil
Environmental Protection Authority Bulletin (1993). Western Australian Water Quality Guidelines for Fresh and Marine Waters, *Bulletin 711*, October 1993.	Published government document	Nil
Brad Goode Consultant Anthropologists (2004). Ethnographic and Archaeological Survey of the East Busselton Estate. A report prepared for the Satterley Property Group.	Reviewed by the WA Department of Indigenous Affairs	Nil
Hill, A.L., Semeniuk, C.A., Semeniuk, V. and Del Marco, A. (1996). *Wetlands of the Swan Coastal Plain –Wetland Mapping, Classification and Evaluation*. Water and Rivers Commission and Department of Environmental Protection, Perth, Western Australia.	Published government document	Nil
Jaensch, R.P., Vervest, R.M. and Hewish, M.J. (1988). *Waterbirds in Nature Reserves of South Western Australia 1981-1985*. Royal Australasian Ornithologists Union Report No. 30, 1988.	Peer reviewed	Nil
JDA Consulting Hydrologists (2005). *Provence Drainage and Nutrient Management Plan*. A report prepared for the East Busselton Estate Pty Ltd.	Consultant report	Indeterminate
LeProvost Dames and Moore (1997). Ford Road Environmental Study. Report No. R626 prepared for the Shire of Busselton, April 1997.	Consultant report	Indeterminate
Stevenson, C. (2003). *Birds of Perth – Western Australia, 2000-2003*. Http://www.birdsofperth.com/default.htm	Published document	Indeterminate

11. Signature and Declaration

Signature of person providing the preliminary information

I, GRAEME MORRIS
(*full name*), declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature .....

Date .....

If the person completing this form is or is representing, a small business (ie. a business having less than 20 employees), please provide an estimate of the time taken to complete this form. Please include:

- the time actually spent reading the instructions, working on the questions and obtaining the information; and
- the time spent by all employees in collecting and providing this information.

_____ Hours _____Minutes

REFERENCES:

Ahern CR, McElnea AE, Sullivan LA (2004). *Acid Sulfate Soils Laboratory Methods Guidelines*. In *Queensland Acid Sulfate Soils Manual 2004*. Department of Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia.

ANZECC (2000). *Australian Water Quality Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council.

ANZECC/NHMRC (1992). *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*. Australian and New Zealand Environment and Conservation Council (ANZECC) and National Health and Medical Research Council (NHMRC).

ATA Environmental (2003). *Preliminary Site Investigation and Sampling and Analysis Plan – Busselton Meats Facility, Lot 2 Busselton Bypass, Busselton.* Report No. 2003/194. Report prepared for the Satterley Property Group.

ATA Environmental (2004). *East Busselton Estate – Vegetation and Flora Assessment.* Report No. 2004/14. Report prepared for the Satterley Property Group.

ATA Environmental (2004). *East Busselton Subdivision – Western Ringtail Possum Survey.* Report No.2004/26. Report prepared for the Satterley Property Group.

ATA Environmental (2004). *Preliminary Acid Sulfate Soils Investigation, East Busselton Estate.* Report 2004/11. Report prepared for the Satterley Property Group.

ATA Environmental (2004). *Detailed Site Investigation Busselton Meats Facility, Lot 2 Bussell Highway, Busselton.* Report No. 2004/121. Report prepared for the Satterley Property Group. Report prepared for the Satterley Property Group.

Bamford, M. J. (1995). Study of the Use by Waterbirds of the Floodplains of the Vasse and Wonnerup Estuaries. A report prepared for the Department of Conservation and Land Management, January 1995.

Baynes, A. (1987). The original mammal fauna of the Nullabor and southern peripheral regions: evidence from superficial cave deposits. In 'A Biological Survey of the Nullabor region, South Australia and Western Australia in 1984'. Eds N.L. McKenzie and A.C. Robinson) pp. 139-152. (South Australian Department of Environment and Planning: Adelaide).

Department of Environment (DoE) (2004). *Identification and Investigation of Acid Sulfate Soils and Groundwater.* Acid Sulfate Soils Guideline Series, Department of Environmental Protection, Perth.

Department of Environment (DoE) (2004). *Guidance for Groundwater Management in Urban Areas on Acid Sulfate Soils.* Acid Sulfate Soils Guideline Series, Department of Environment, Perth.

Department of Environment (2004). Stormwater Management Manual for Western Australia, February 2004.

Environmental Protection Authority Bulletin (1993). Western Australian Water Quality Guidelines for Fresh and Marine Waters, *Bulletin 711*, October 1993.

Hill, A.L., Semeniuk, C.A., Semeniuk, V. and Del Marco, A. (1996). *Wetlands of the Swan Coastal Plain –Wetland Mapping, Classification and Evaluation.* Water and Rivers Commission and Department of Environmental Protection, Perth, Western Australia.

Jaensch, R.P., Vervest, R.M. and Hewish, M.J. (1988). *Waterbirds in Nature Reserves of South-Western Australia 1981-1985.* Royal Australiasian Ornithologists Union Report No. 30, 1988.

JDA Consulting Hydrologists (2005). *Provence Drainage and Nutrient Management Plan.* A report prepared for the East Busselton Estate Pty Ltd.

LeProvost Dames and Moore (1997). Ford Road Environmental Study. Report No. R626 prepared for the Shire of Busselton, April 1997.

Stevenson, C. (2003). *Birds of Perth – Western Australia, 2000-2003.* http://www.birdsofperth.com/default.htm

Appendix C
Draft Conditions for EPBC Approval

Western Ringtail Possum Management Plan
Provence Estate, Busselton

COMMONWEALTH OF AUSTRALIA

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

DECISION TO APPROVE THE TAKING OF AN ACTION

Pursuant to section 133 of the *Environment Protection and Biodiversity Conservation Act 1999*, I, IAN GORDON CAMPBELL, Minister for the Environment and Heritage, approve the taking of the following action:

> The proposed action to develop the East Busselton Estate, on Lots 2, 9003 and 202 Bussell Highway and Vasse Highway, Western Australia, and associated infrastructure and activities (EPBC 2004/1878).

by the Satterley Property Group subject to the conditions set out in ANNEXURE 1.

This approval has effect for:

> Sections 16 and 17B (Wetlands of international importance);
> Sections 18 and 18A (Listed threatened species and communities); and
> Sections 20 and 20A (Listed migratory species) of the *Environment Protection and Biodiversity Conservation Act 1999*

This approval has effect until 31 December 2021.

Dated this - day of 2006

.....

IAN GORDON CAMPBELL

ANNEXURE 1

1. The person taking the action must construct the residential development on Lots 2, 9003 and 202, in accordance with the site plan provided in Annexure 2.

2. The person taking the action must ensure a minimum of 6.5ha of remnant Peppermint (*Agonis flexuosa*) is placed under a conservation covenant. The covenant must include all the areas listed as public open space on the site plan provided in Annexure 2. The covenant must ensure that the *Agonis flexuosa* is protected and maintained as long-term foraging and breeding habitat for the Western Ringtail Possum (*Pseudocheirus occidentalis*).

3. The person taking the action must prepare and submit for the Minister's approval, a Western Ringtail Possum (*Pseudocheirus occidentalis*) Management Plan (the Plan). The plan must address the objective of long-term preservation of the Western Ringtail Possum and connectivity of its habitat on site. The plan must address the matters listed below and clearly state the performance criteria, monitoring and reporting actions, responsibility and timing of each. The plan must include:

    (a) maps of the construction zone showing the areas to be cleared and the location of temporary fencing required to protect the remaining native vegetation during construction activities;

    (b) clearly identified existing Western Ringtail Possum habitat and proposed additional habitat;

    (c) planting of *Agonis flexuosa* to improve Western Ringtail Possum habitat corridors across the site;
    (d) arrangements for the long-term management of conservation areas on site;
    (e) conservation management measures to manage;
        i. rehabilitation;
        ii. habitat protection;
        iii. predator management;
        iv. fire management;
    (f) maps of the areas for preservation of existing habitat in any public open space areas (not included in the conservation areas identified at Annexure 2) and designated building envelopes;
    (g) measures to mitigate impacts on the Western Ringtail Possum during vegetation clearing;
    (h) a strategy prepared in consultation with a suitably qualified arborist to protect trees utilised by Western Ringtail Possums from impacts associated with infilling works throughout the site;
    (i) environmental awareness training for all staff, contractors and other personnel working on the development site;
    (j) interpretation and education strategies; and
    (k) monitoring and review of the plan.

    Works must not commence on the site before the above plan is approved.
    The approved plan must be implemented.

5. The person taking the action must design and implement a Water Management Strategy which implements documented industry best practice water sensitive design principles and practices, including:
   - a review of environmental values and water quality objectives for the Vasse Wonnerup wetland;
   - replicating natural surface and groundwater flows and water quality;
   - protecting the environmental values of receiving waters, including through attainment of water quality objectives (in this instance for the Vasse-Wonnerup wetland system) consistent with Figure 2.1.1 of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000*; and
   - water quality objectives employed in the Water Management Strategy must be sought from the Western Australian Environment Protection Authority and the South West Catchments Council. Where water quality objectives are not available from these authorities, the water quality trigger values published in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, 2000* must be employed.

6. The Water Management Strategy is to include the following elements:
   - the water treatment management practices and management practice treatment trains that will be used to achieve environmental performance targets;
   - how attainment of water quality objectives for these receiving waters will be supported by the action;
   - the environmental performance targets for the action, including rates of pollutant export off-site; and
   - how monitoring activities that will be undertaken to track environmental performance of the action as well as continuously improve the modelling efforts. Groundwater and surface water monitoring must be undertaken pre, during and post development (subdivision and construction) for the purpose of performance monitoring and continuous improvement of the Model for Urban Stormwater Improvement Conceptualisation (MUSIC). This is to include a period of five years following completion of construction and during operation of the subdivision.

7. Preparation of the Water Management Strategy will employ the MUSIC, where that model is calibrated for local hydrogeological conditions and attainment of environmental performance targets. Those environmental performance targets are to be for the following pollutants:
   - total suspended solids (TSS);
   - total nitrogen (TN);
   - dissolved inorganic nitrogen (DIN);
   - total phosphorus (TP); and
   - dissolved inorganic phosphorus (DIP).

8. If water quality measurements exceed the environmental performance targets set under the Water Management Strategy then works must stop immediately and the Department of Environment and Heritage must be advised immediately. Failure to stop works and notify this Department will be considered a breach of approval conditions.

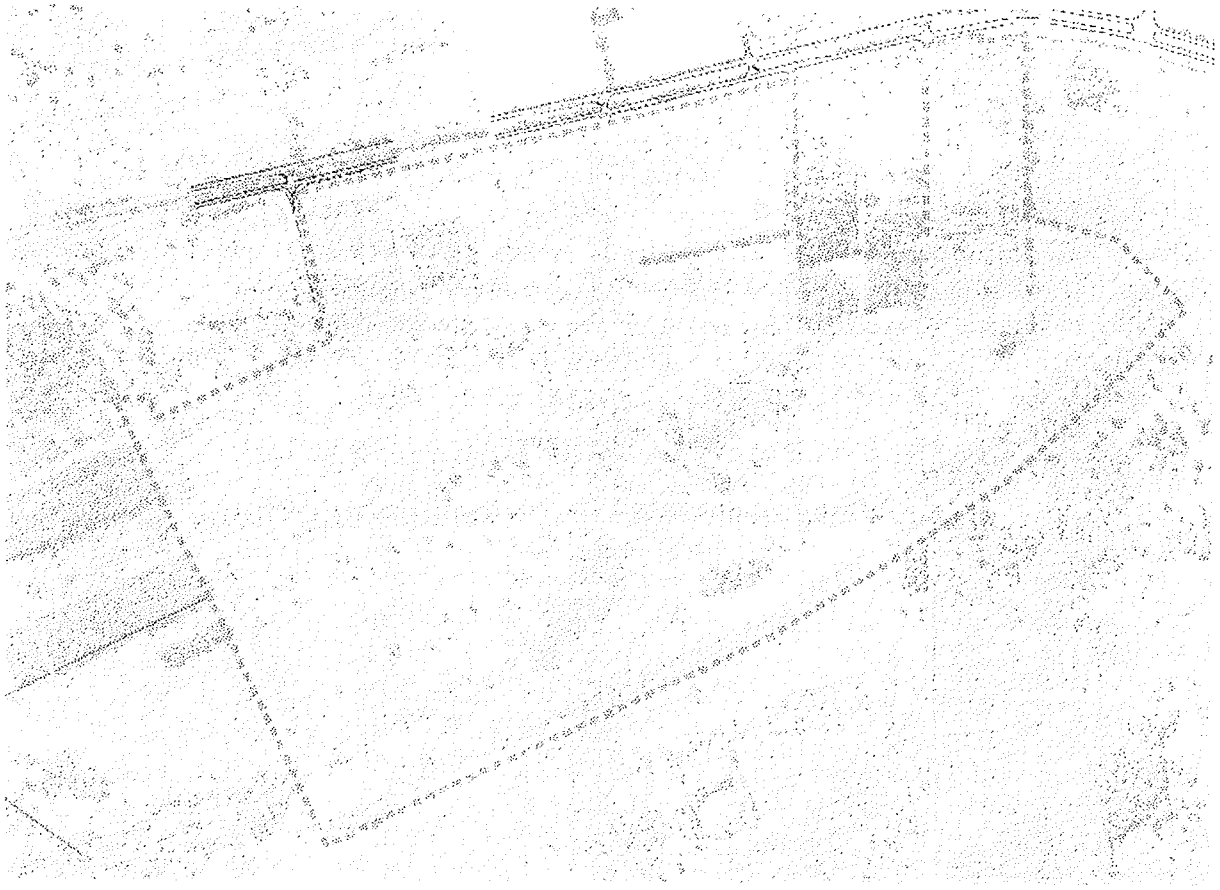
   Works must not commence on the site before the above strategy is designed and implemented.

9. If, at any time after 5 years from the date of this approval, the Minister notifies the person taking the action in writing that the Minister is not satisfied that there has been substantial commencement of the residential development on Lots 2, 9003 and 202, the residential development on Lots 2, 9003 and 202 must not thereafter be commenced.

Definitions

Conservation covenant - an agreement between a landholder and a Covenant Scheme Provider (this may be a covenant organisation, a local council or a government agency) that provides for the long-term conservation of vegetation subject to the covenant. The covenant is registered on the title of the land and binds all future owners.

ANNEXURE 2



Appendix D
Skills and Qualifications of Arbor Logic

Western Ringtail Possum Management Plan
Provence Estate, Busselton

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About ARBOR logic:

ARBORlogic is a new and independent entity that brings together in excess of 30 years experience in the management of urban trees from all corners of the globe, and particular expertise in Western Australia and its unique environment, people, projects and politics.

ARBORlogic has the knowledge you require. It is our intent to take Arboriculture in this state to new levels and to remain with the forerunners in modern Arboricultural practices nationwide.

Our aim is to:

- Mould together aspects of sociology, urban design, architecture and sustainability into modern Arboriculture.
- To help retain and manage worthwhile trees as well as plan for the future of urban landscapes.
- To help educate and enlighten all that are involved with trees in the values of our urban forest.
- To work together with stakeholders to build on the quality of our urban forests.

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arboricultural consultants

The future of our urban environment must embrace these objectives and the extent of knowledge and integrity with which we challenge traditional theories and understandings and explore new horizons.

Let us help you keep abreast of how to best shape our communities for the future generations to enjoy. It is with this in mind that the founding partners bring to you ARBORlogic.

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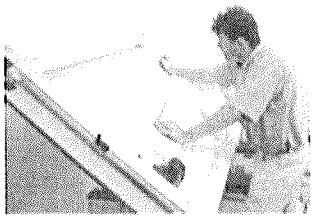
ARBOR logic Personnel:

Jason Royal (Arboricultural Consultant)

- City & Guilds Certificates Forestry (Hereford College, UK, 1988).
- National Diploma Arboriculture (Merrist Wood, UK, 1992).



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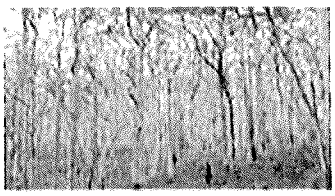

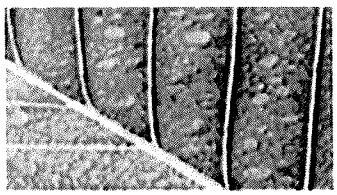

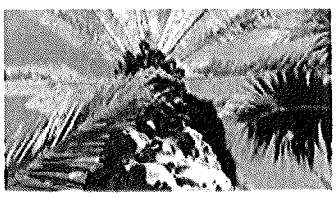

Beginning his career as a climber/tree surgeon, Jason has had over 16 years experience not only in Australia, but also in the UK and mainland Europe. This includes time spent in further education at Merrist Wood College (Guildford, UK) in attaining a National Diploma in Arboriculture. He also has extensive field experience in the transplanting of mature tree stock, and gaining invaluable knowledge of tree root-zones, and their management.

Jason is very accomplished in conducting tree surveys, using the latest computing technology and GPS equipment; an excellent place to start for local government and other bodies in implementing their tree asset management plans.
He has been a guest lecturer and trainer for TAFE, Rottnest Island Authority and has played an integral role in the set up of training seminars for various governing bodies within Western Australia.

Getting the right tree in the right place is a driving force for Jason. To that end he has specialized in urban development and tree management, design and takes a keen interest in urban aspects of environmental engineering.

Peter Coppin (Horticultural Consultant)

- Associate Diploma in Agriculture (Curtin University, 1975).
- Attends numerous short courses and conferences.

With over 30 years experience in agriculture and horticulture, Peter has an exceptionally broad knowledge covering a range of disciplines including plant production, plant pathology and entomology. His specialist area of interest is in tree crops, particularly fruit and nuts. He spent 15 years involved in tree and nut crop research and development at the W.A. Department of Agriculture's Stoneville Horticultural Research Station, and during that time also ran his own

orchard and nursery property.

Peter then spent 10 years as a horticultural advisor handling an immense range of queries from gardeners, nurseries, hobby farmers, contractors and local government. He is highly skilled in training, has lectured at TAFE, Curtin University and other tertiary bodies, holds short courses and workshops , and operates as a horticultural consultant.

Training and education are a passion for Peter, as it is so important for people to be able to access the correct information and advice. He actively supports the planting of trees for fruit, nut or timber production, not just as ornamentals.

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ARBOR logic Projects:

2005 - City of Geraldton:

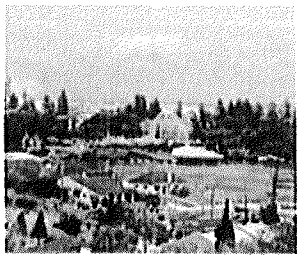
Throughout various stages of 2005, ARBOR logic had been undertaking a comprehensive and amenity tree audit of City of Geraldton's street and reserve tree population.

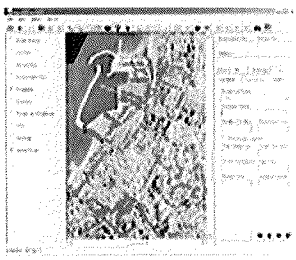
The City recognised that many tree related and safety issues were beginning to arise with its aging tree population, and that an audit of its population was required so that the appropriate management and maintenance strategies could be implemented.

Data from the audit was entered into a custom made database which had been formulated in conjunction with the City's IT personnel to allow for cross referencing of records and use of multiple search variables.

During the works it was recognised that a review of all Policy and Practices relating to the care and management of their trees also needed to be undertaken to ensure that the City utilises the best modern Arboricultural practices for the future management of their trees. This included their tree pruning and removals policy, species selection and establishment practices, as well as preservation strategies for the protection of their amenity asset.

A degree of staff training was also undertaken to build on and increase the level of Arboricultural knowledge of the City's personnel utilised for tree maintenance.



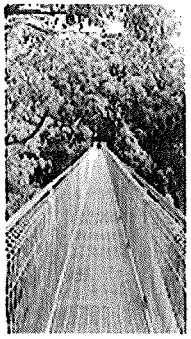


This project required ARBOR logic to cover a wide range of Arboricultural management issues to enable the City to implement measures to ensure that their amenity tree population continues to mature, evolve, and provide value and enjoyment for generations to come. Further information on the outcomes from the audit can be found on the City of Geraldton's website (www.geraldton.wa.gov.au).

2004 - Valley of the Giants:

In June of 2004 Arborlogic, contracted by CALM, began work on a comprehensive inspection and evaluation of the trees surrounding the Tree Top Walk in the Valley of The Giants, Walpole. Built in 1996, the Tree Top Walkway is an elevated walkway, which allows access into the upper canopy (reaching 40 metres above ground level) of an area of native forestland in South West Australia. Here people can experience and discover tree species unique to the area such as Red Tingle (Eucalyptus jacksonii), Yellow Tingle (Eucalyptus guilfoylei) and Karri (Eucalyptus diversicolor) up close in their natural habitat.


to work in an ecosystem known only to this part of the world. By combining our knowledge and experience, we endeavoured to assist CALM in managing this unique resource in a way that allows people to continue to learn about trees and the forest ecosystem for many years to come.




Scope of Works:

- Undertake a visual inspection of all Specimens situated within immediate vicinity of the aerial walkway.
- Provide comment on their health, condition and structural integrity.
- Ascertain and identify potential hazards in view of risk management responsibilities.
- Provide information to help formulation Short-term and Long-term Management strategies.

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