Attachments

Attachment 1: Flora Survey - Antonia Bagshawe – Lot 341 Balmoral Road Jarrahdale

Flora survey 6/11/2012 and 14/11/2012

A Healthy Habitats Stewardship Program service provided by Dr Penny Hollick, Botanist and Natural Area Ecologist (Serpentine Jarrahdale Shire)

Lot 341 Balmoral Road Jarrahdale is a 20 ha property with over 7 ha remaining of good to very good condition vegetation of Swamp and Yarragil 2 complexes. It has a stream running through it and a number of dams.

There are two dominant vegetation types on the property and a third nearby in the State Forest:

1. Jarrah (*Eucalyptus marginata*) woodland with a diverse understorey;
2. Myrtaceous shrublands and paperbark (*Melaleuca preissiana*) woodlands near the waterway and wetland; and
3. Diverse low shrublands on shallow soils associated with underlying granite in the State Forest.

The jarrah woodland is Yarragil 2 complex (a subcomplex of Darling Plateau uplands), and is in very good condition. The myrtaceous shrubland is Swamp complex (a subcomplex of Darling Plateau valleys), and is in good condition. The low shrubland is mapped as Swamp complex, but is more similar to Cooke complex, which is associated with granite outcrops on the Darling Plateau; it is in very good condition.

This property is of high biodiversity value, possessing as it does a variety of vegetation complexes in good or better condition. The bushland has been unburnt for a long time, and there are remarkably few weeds. Grazing by kangaroos is evident in most areas. *Phytophthora* dieback is considered to be present in the State Forest to the east of the property, but does not appear to be near the boundary yet.

A flora survey was carried out on 26 October 2010, to set up two monitoring quadrats on the property (in jarrah woodland, one of which was near a natural seep which has been excavated to form a dam) and a third in the low shrubland in the State Forest. The flora species found in each quadrat were recorded, including weeds (introduced species). The quadrats were resurveyed on 6 October 2011, and additional species from near the quadrats were also recorded. The locations of the quadrats are shown in Figure 1, and photos of each in Figures 2-4. The flora list for the property is shown in Table 1.

The extremely dry winter of 2010 (and summer of 2010-11) resulted in the deaths of a number of trees and some understorey. Despite this, however, the vegetation remains in good condition and many more plants were recorded in 2011 than in 2010. Considerable quenda activity was evident in the jarrah forest, as well as kangaroo grazing. The 2012 surveys were carried out on 6 and 14 November, when echidna activity (diggings around termite mounds) was observed near Quadrat B.

A total of 82 species were recorded in 2010, including three introduced weeds; in 2011, this increased to 110 species, including five weeds, and to 126 in 2012. Quadrat A (Swamp complex low shrubland on shallow soils) had 50 species recorded in 2010 (including one weed species), 59 in 2011 (including three weeds) with an additional seven species recorded nearby (including one weed), and 70 in 2012 (including three weeds) with an additional seven species recorded nearby (no weeds). Quadrat B (Yarragil 2 complex jarrah woodland) had 35 species recorded in 2010 (including one weed species), 53 in 2011 (including one

weed) with an additional nine species recorded nearby (no weeds), and 60 in 2012 (including two weeds) with an additional eight species recorded nearby (no weeds). Quadrat C (Yarragil 2 jarrah woodland near the seep) had 34 species recorded in 2010 (including three weeds), 42 in 2011 (including three weeds) with an additional nine species recorded nearby (no weeds), and 46 in 2012 (including three weeds) with an additional 11 species recorded nearby (no weeds).

Table 1 – Flora list for Lot 341 Balmoral Road, Jarrahdale (10, 11 etc = year recorded in quadrat, N = nearby)

Species (* denotes introduced or weedy plants)	Quadrat A (swamp)	Quadrat B (jarrah)	Quadrat C (jarrah / bullich)
Acacia barbinervis		10, 11, 12	
Acacia nervosa	10, 11, 12		
Acacia urophylla		10, 11, 12(N)	10, 11, 12
Agrostocrinum hirsutum	12(N)	12	
Allocasuarina fraseriana		10, 11, 12	
Allocasuarina humilis		10, 11, 12	
Anigozanthos manglesii		11, 12	
Aotus cordifolia			12(N)
**Arctotheca calendula*	11(N)		
Astroloma pallidum	10, 11, 12	10, 11, 12	10, 11, 12
Astroloma sp.	11, 12	10, 11, 12	
Austrodanthonia acerosa	12	12	
Austrostipa flavescens	12	12	10, 11, 12
**Avena fatua*	11, 12		
Baeckea camphorosmae	10, 11, 12		
Banksia grandis		11(N), 12(N)	
Banksia nivea	10, 11, 12		
Boronia fastigiata	10, 11, 12		
Borya scirpoidea	10, 11, 12		
Bossiaea eriocarpa		11, 12	
Bossiaea modesta	10, 11, 12		
Bossiaea ornata		10, 11, 12	10, 11, 12
**Briza maxima*	10, 11, 12		10, 11, 12
Burchardia congesta	10, 11, 12	10, 11, 12	10, 11, 12
Caesia micrantha			10, 11, 12
Caladenia flava	11, 12	11, 12	
Caladenia longicauda	11, 12		
Chamaescilla corymbosa	10, 11, 12	10, 11, 12	11, 12
Chorizema ilicifolium			11(N), 12(N)
Comesperma ciliatum	12		
Conostylis aculeata		11, 12	
Conostylis setosa	10, 11, 12	11, 12	10, 11, 12
Corymbia calophylla	10, 11, 12	10, 11, 12	10, 11, 12
Corynotheca micrantha		10, 11, 12	10, 11, 12
Cyrtostylis huegelii	12		
Dampiera hederacea			12(N)
Dampiera linearis	10, 11, 12		10, 11, 12
Desmocladus fasciculatus	10, 11, 12		
Drosera erythrorhiza	10, 11, 12	11, 12	
Drosera gigantea	10, 11, 12		
Drosera menziesii	11(N), 12(N)	11, 12	11(N), 12
Drosera pallida		11, 12	11(N), 12
Eriochilus sp.		11(N), 12(N)	
Eucalyptus marginata	11(N), 12(N)	10, 11, 12	10, 11, 12
Eucalyptus megacarpa			10, 11, 12
Eucalyptus patens	11(N), 12(N)		11, 12
Gastrolobium capitatum	10, 11, 12	10, 11, 12	
Gompholobium marginatum	10, 11, 12		
Grevillea pilulifera	10, 11, 12		
Haemodorum simplex	10, 11, 12		
Haemodorum laxum		10, 11, 12	
Hakea lissocarpha	10, 11, 12		
Hakea varia	10, 11, 12		
Hibbertia amplexicaulis		10, 11, 12	11(N), 12(N)
Hibbertia commutata	10, 11, 12	10, 11, 12	
Hovea chorizemifolia		11(N), 12	
Hovea trisperma		10, 11, 12	10, 11, 12
Hypocalymma angustifolium	10, 11, 12		

Hypocalymma robustum	10, 11, 12		
**Hypochaeris radicata*	11, 12	12	10, 11, 12
Hypolaena exsulca	10, 11, 12		12
Isotoma hypocrateriformis	12		
Kennedia coccinea			11(N), 12(N)
Kunzea micrantha	10, 11, 12		
Lachnagrostis filiformis	10, 11, 12		
Lagenophora huegelii	10, 11, 12	10, 11, 12	10, 11, 12
Lasiopetalum floribundum		10, 11, 12	10, 11, 12
Lechenaultia biloba	12	10, 11, 12	10, 11, 12
Lepidosperma leptostachyum		10, 11, 12	10, 11, 12
Lepidosperma pubisquameum	10, 11, 12		
Lepidosperma sp. E Perth Flora	11, 12	11, 12	11, 12
Levenhookia pusilla	12		
Levenhookia stipitata	10, 11, 12	11, 12	
Lomandra caespitosa	11(N), 12(N)	11(N), 12(N)	10, 11, 12
Lomandra nigricans		11, 12	11, 12
Lomandra spartea		11, 12	11(N), 12(N)
Macrozamia riedlei	10, 11, 12	10, 11, 12	10, 11, 12
Melaleuca preissiana	10, 11, 12		
Mesomelaena tetragona	10, 11, 12		
Mirbelia dilatata			10, 11, 12
Neurachne alopecuroidea	10, 11, 12	10, 11, 12	10, 11, 12
Opercularia vaginata	11, 12		11, 12
Orthrosanthus laxus	12		
Oxalis perennans		11(N)	11(N), 12(N)
Patersonia occidentalis		10, 11, 12	10, 11, 12(N)
Patersonia pygmaea	10, 11, 12	10, 11, 12	12
Pentapeltis peltigera		10, 11, 12	10, 11, 12
Persoonia longifolia		11(N), 12(N)	
Philydrella pygmaea	10, 11, 12		
Phyllanthus calycinus	11(N), 12(N)	11(N), 12(N)	10, 11, 12
Pimelea imbricata	12		
**Plantago* sp.		10, 11, 12	10, 11, 12
Prasophyllum sp.	10, 11, 12		
Pterostylis recurva		11, 12	
Pterostylis vittata		11, 12	
Ptilotus manglesii	10, 11, 12	11, 12	
Scaevola calliptera	11, 12	10, 11, 12	10, 11, 12
Schoenus clandestinus	10, 11, 12		
Schoenus pedicellatus			12(N)
Schoenus sp.	10, 11, 12		
Sphaerolobium aff. *macranthum*	10, 11, 12		
Stylidium bulbiferum	12		
Stylidium calcaratum	12		
Stylidium carnosum	10, 11, 12	10, 11, 12	
Stylidium schoenoides		11(N), 12(N)	11, 12
Stylidium sp.			10, 11
Synaphea petiolaris	10, 11, 12		
Taxandria linearifolia			12(N)
Tetraria octandra	10, 11, 12		
Tetrarrhena laevis		11, 12	10, 11, 12
Tetratheca hirsuta		10, 11, 12	
Thelymitra antennifera	11, 12		
Thelymitra crinita	10, 11, 12	11(N), 12(N)	11(N), 12(N)
Thelymitra flexuosa	11(N), 12(N)		
Thelymitra macrophylla		12	10, 11, 12
Thelymitra vulgaris		12	11(N), 12(N)
Thysanotus multiflorus			12
Thysanotus thyrsoideus		12	12

Trachymene pilosa		10, 11, 12	
Tremandra diffusa		11, 12	11, 12
Trichocline spathulata		10, 11, 12	
Tricoryne elatior	10, 11, 12	11, 12	11, 12
Tricoryne humilis	10, 11, 12		
Xanthorrhoea gracilis	10, 11, 12	10, 11, 12	10, 11, 12
Xanthorrhoea preissii	10, 11, 12	10, 11, 12	10, 11, 12
Xanthosia huegelii		10, 11, 12	10, 11, 12

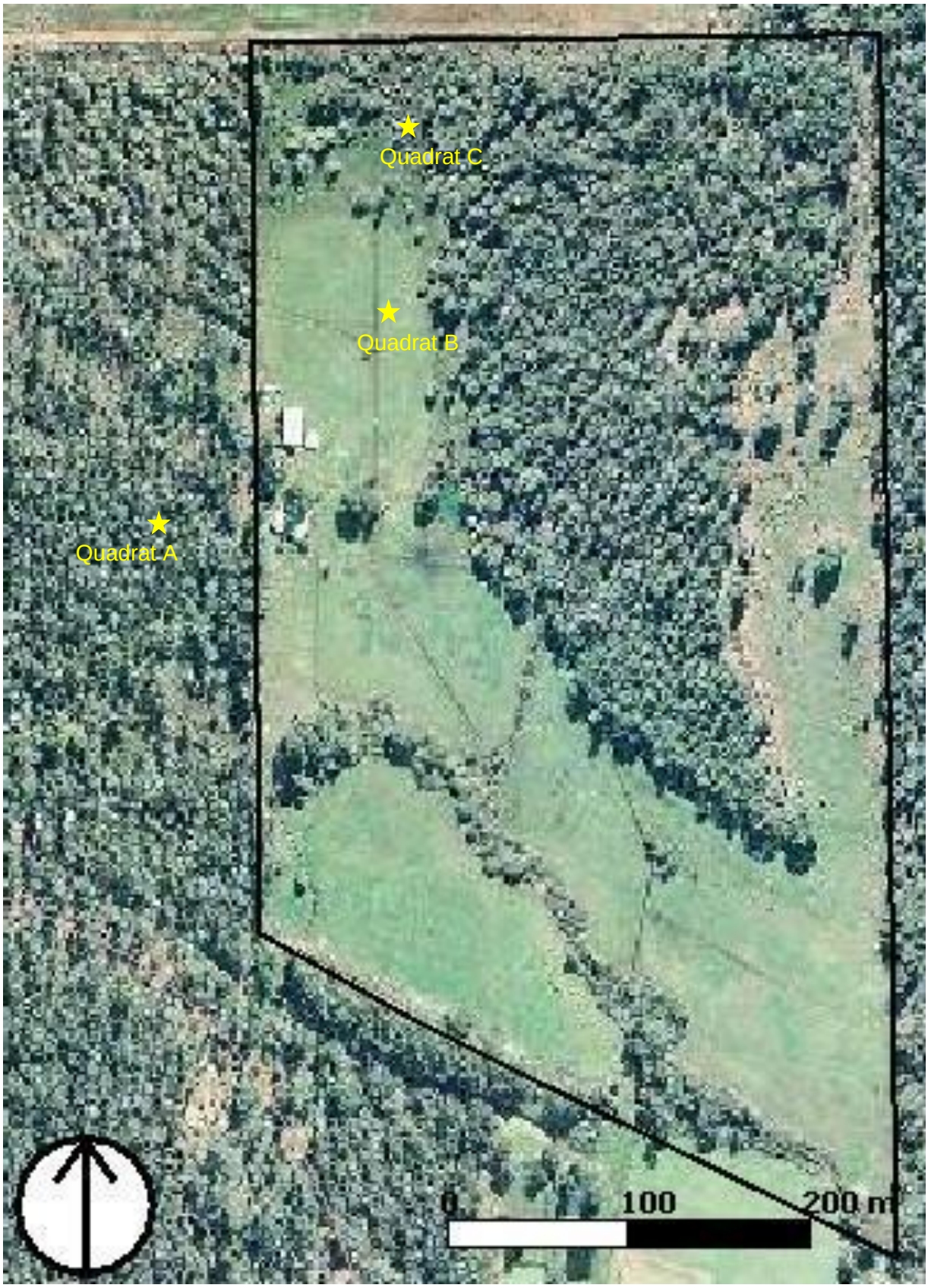


Figure 1 – Locations of monitoring quadrats.

Figure 2 – Quadrat A (Swamp complex low shrubland on shallow soils), taken on 26/10/10 (top), 6/10/11 (middle) and 6/11/12 (bottom).

Figure 3 – Quadrat B (Yarragil 2 complex jarrah woodland), taken on 26/10/10 (top), 6/10/11 (middle) and 14/11/12 (bottom).

Figure 4 – Quadrat C (Yarragil 2 jarrah woodland near the seep), taken on 26/10/10 (top), 6/10/11 (middle) and 14/11/12 (bottom).

Attachment 2: DEC Nature Conservation Covenant Program Management Guidelines (2004)

For Lot 341 Balmoral Road, Jarrahdale

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Nature Conservation Covenant Program

Management Guidelines

[DEPARTMENT'S COPY] / [LANDOWNER'S COPY]

Owner's Details

Landowner's name:	Dr Antonia Bagshawe
Company name:	
Postal address:	311 Balmoral Road, JARRAHDALE WA 6124
Phone number:	(08) 9526 0050 or 0427 429 507
Fax number:	(08) 9526 0056
Email address:	abagshawe@reachnet.com.au
Date of initial enquiry:	3rd April 2003

Nature Conservation Covenant Program

Department of Environment and Conservation

Species and Communities Branch

Locked Bag 104

BENTLEY DELIVERY CENTRE WA 6983

Phone: (08) 9334 0477

Fax: (08) 9334 0199

Email: covenant@dec.wa.gov.au

Nature Conservation Covenant – Management Guidelines

Preamble

These Management Guidelines are developed through a process of mutual consideration and represent the responsibilities of both parties for management of the covenanted land ("the Land").

They are intended to provide suggestions for a three-year period for the most appropriate management of the natural values of the Land, and the landowner ("the Owner") is not required nor necessarily expected to undertake all of the activities listed within. The activities are suggested so that, should the Owner wish to undertake management, they represent best-practice management for nature conservation and are prioritised in order of importance. However, where these Management Guidelines contain activities referred to in the Nature Conservation Covenant, they describe the manner in which such activities must be undertaken should the Owner wish to do so. After the three-year period, or if the property changes ownership, these Management Guidelines can be re-negotiated with the Owner and amended to reflect changing management practices.

While the Owner is responsible for any management activities undertaken on their Land, the Department of Environment and Conservation ("the Department") can provide management advice and any financial assistance specified.

One of the benefits of belonging to the Department of Environment and Conservation's Nature Conservation Covenant Program is that the Department can provide technical support in the event that your land's biodiversity conservation values are threatened by management actions undertaken or proposed to be undertaken by a third party. The Department can ensure that other agencies are made aware of the location of these environmentally important areas so that they can be taken into consideration when investigating new development proposals or when undertaking activities.

Once a covenant is registered on your land's title, information about the location, shape and size of the covenant site will be provided to other agencies for the purpose outlined above. This Program respects your confidentiality and will not provide other specific details about you or your property without your permission, however you should be aware that such information is available through the public land titles register.

If you have any concerns regarding the provision of the location of your registered covenant site to other Government agencies for biodiversity conservation purposes, or if further assistance on management advice is required, please advise your Covenant Officer, or contact the Nature Conservation Covenant Coordinator on (08) 9334 0477.

Property Details

Property name:	"Blackbutt Cottage"
Property address:	311 Balmoral Road, Jarrahdale
Area of property:	20.2343 hectares
Local gov't authority:	Shire of Serpentine-Jarrahdale
Lot number:	Lot 341on Deposited Plan 249521
Area of covenant site:	10 hectares

Synopsis of Conservation Values

The current conservation values of this property are:

- good to very good quality jarrah and marri forest, with pockets of bull banksia, grasstrees, thickets of mirbelia, scattered common sheoak, scattered bullich and swamp banksia, and a permanent fresh water waterhole;
- presence of white-tailed black cockatoos (Schedule 1), western brush wallaby (Priority 4), and red-tailed black cockatoos (possibly the Priority 4 forest sub-species); and
- suitable habitat for a wide diversity of flora and fauna, with linkages to State Forest.

Potential conservation values include:

- Potential habitat for Western Quoll (*Dasyurus geoffroii*), Quokka (*Setonix brachyurus*) and Numbat (*Myrmecobius fasciatus*) which are all listed on Schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2010(2)*; and
- Potential habitat for Southern Brown Bandicoot (*Isoodon obesulus* subsp. *fusciventer*) listed as Priority 4 on the Department's *Threatened and Priority Fauna List (August 2010)*.

Definitions

"Department" and "DEC" refers to the Department of Environment and Conservation.

"Chief Executive Officer" refers to the Chief Executive Officer of the Conservation and Land Management Executive Body.

Maps, plans and other items attached

Aerial photograph showing close-up of covenant site

Appendix 1 – List of Invasive Garden Plants and Potential Weeds in Bushland in the South-west of Western Australia

Appendix 2 – List of Declared Animals, Agriculture and Related Resources Protection Act 1976

Appendix 3 –Seed Collection from Native Plants, Wildlife Notes No. 4, Land for Wildlife

Summary of Management Issues, Objectives and Activities in Priority Order		
Issue 1	Risk of bushfires	
Objective	Fire management for bushfire prevention and to assist regeneration	
Activity 1	*Implement bushfire prevention strategies*	*Timeline: annually, summer*
Issue 2	Competition with weed species	
Objective	Prevent the spread of weedy plant species in the bushland	
Activity 2	*Manage existing weeds*	*Timeline: as necessary*
Issue 3	Disturbance caused through maintenance activities	
Objective	Perform maintenance activities in an environmentally sensitive manner	
Activity 3	*Maintenance of tracks, fences, transmission lines, firebreaks and fire access tracks*	*Timeline: as necessary*
Issue 4	Use of natural resources	
Objective	Establish an ecologically balanced removal program	
Activity 4	*Collection of plant propagation and identification material*	*Timeline: as appropriate*
Activity 5	*Timber collection*	*Timeline: as appropriate*
Issue 5	Predation of, and competition with, native fauna by introduced fauna	
Objective	Assist the survival of native fauna by controlling introduced animals	
Activity 6	*Restrict access to the bushland by domestic dogs*	*Timeline: all year*
Activity 7	*Manage foxes and feral cats*	*Timeline: three-monthly*
Activity 8	*Manage rabbits*	*Timeline: autumn / spring*
Activity 9	*Manage feral pigs*	*Timeline: as necessary*
Activity 10	*Manage honeybees*	*Timeline: as necessary*
Issue 6	Soil erosion and loss of seed bank in bare, cleared or degraded areas	
Objective	Manage and improve bare areas to improve habitat, long-term viability of the bushland, and to create buffers between the bushland and agricultural areas	
Activity 11	*Manage and improve bare, cleared or degraded areas where possible*	*Timeline: autumn - winter*
Issue 7	Degradation through grazing pressures	
Objective	Manage grazing pressures	
Activity 12	*Restricted access for emergency shelter*	*Timeline: as required*
Issue 8	Degradation due to plant disease	
Objective	Prevent the introduction or spread of plant diseases in the bushland	
Activity 13	*Implement a hygiene regime*	

Covenant Restrictions

Under the terms of the covenant the Owner shall not:

a) subdivide or permit subdivision of the Land;

b) place or permit to be placed any structure or dwelling on the Land, save for the existing transmission line;

c) destroy or remove or permit the destruction or removal of any local indigenous flora or any indigenous fauna or their related habitats on or from the Land, save for:

   i) seeds and other plant material, in accordance with the mutually agreed Management Guidelines referred to in Clause 2;

   ii) timber, in accordance with the mutually agreed Management Guidelines referred to in Clause 2; and

   iii) the purpose of carrying out maintenance of the existing tracks, fences, and transmission line, in accordance with the mutually agreed Management Guidelines referred to in Clause 2;

d) plant any flora other than local indigenous flora on the Land;

e) destroy or do or permit (unless required by law) any act that would result in the deterioration in the natural state or in the flow, supply, quantity or quality of any body of water on the Land, save for the existing waterholes and drains;

f) cause, introduce or permit the introduction of domestic stock or other non-indigenous fauna to enter or remain upon the Land, save for:

   i) emergency shelter within a designated area, in accordance with the mutually agreed Management Guidelines referred to in Clause 2;

   ii) beehives brought onto the Land in accordance with the mutually agreed Management Guidelines referred to in Clause 2; and

   iii) save for domestic dogs in accordance with the relevant local government authority's regulations, which must be under control (as defined in the mutually agreed Management Guidelines referred to in Clause 2) at all times;

g) conduct, permit or consent to any investigation or exploration for, or the mining, extraction, removal or production of gas, petroleum, minerals, soil, stones, sand, rock, gravel, clay or other substances on the Land;

h) permit or consent to (unless required by law) the construction, erection or establishment of any transmission lines or other services or works on the Land;

i) carry out or permit on the Land the operation of any trade, industry or business, nor the use of vehicles including but not limited to trail bikes or four wheel drive vehicles or farm machinery other than when required for the proper management and protection of the Land, nor the storage of rubbish or garden refuse or materials, nor any activities inconsistent or incompatible with the conservation of the vegetation and fauna on the Land;

j) erect or permit to be erected any fence on the Land, save for a perimeter fence around the Land.

k) introduce or permit the introduction upon the Land of any rocks, soil, gravel, sand or other basic raw materials except from external sources first approved in writing by the Department as being free of weeds and known plant pathogens including *Phytophthora* Dieback disease, nor use or permit the use of earth moving machinery on the Land unless it has been first cleaned offsite and/or where appropriate precautions have been taken to reduce the risk of introduction or further spread of weeds and plant pathogens; and

l) use or permit the use on the Land of guns, hunting weapons, animal traps or poisons, save for the purposes specified in the mutually agreed Management Guidelines referred to in Clause 2.

Management Activities and Monitoring

Issue 1	Risk of bushfires	
Objective	Fire management for bushfire prevention	
Activity 1	*Implement bushfire prevention strategies*	*Timeline: annually, summer*

Bushfire suppression and hazard reduction

Where possible and practical, maintain good vehicular access and firebreaks around the perimeter of the bushland, in accordance with your relevant local government authority's and Bush Fire Brigade's regulations and guidelines for fire management. If possible, maintain a supply of water at all times of the year for fire fighting purposes. Some local governments require a readily-mobile operational fire fighting unit containing a minimum of 400 litres of water to be on stand-by between the 1st of November and the 30th of April each year.

Your existing Fire Management Plan should include issues such as the identification of fire threats and the values to be protected; the design, location and maintenance of fire access tracks and low-fuel buffer zones, which should comply with FESA's *Planning for Bushfire Protection* minimum performance standards guidelines; the design of and implementation guidelines for a hazard reduction program, which may include fuel reduction burns as appropriate; management of any overhead transmission lines (eg. vegetation occurring within 2 metres of the supporting poles could be sprayed with herbicide to restrict its growth); and the production of a map depicting the location of fire suppression resources and the current fire history of the property.

Department's offered assistance

Information on fire, and assistance with bushland management following an unplanned fire.

Monitoring

Record the date, location (on an aerial photo and lot plan), extent, season, and intensity of any unplanned fires. Establish a photo-monitoring point adjacent to these areas in order to record the response of the vegetation to fire, and its ability to recover over time.

References

Davies, S. (2000). *Fire Management Planning for Urban Bushland*. Fire and Emergency Services Authority of Western Australia, and Urban Bushland Council WA Inc, Western Australia.

Fire and Emergency Services Authority of Western Australia, and Department of Planning (2010). *Planning for Bush Fire Protection Guidelines (Edition 2)*. Western Australian Planning Commission.

Fire and Emergency Services Authority of Western Australia (Jun 2000). *The Homeowner's Bush Fire Survival Manual*.

Management Activities and Monitoring

Issue 2	Competition with weed species
Objective	Prevent the spread of weedy plant species in the bushland
Activity 2	*Manage existing weeds* — *Timeline: as necessary*

Weeds are plants that occur outside of their natural environment (this includes garden plants), and compete with native species. In some cases they can also cause a fire hazard, be toxic to stock or native animals, choke waterways and be hazardous to human health. Weeds are generally fast growing and can reproduce quickly, and often dominate areas that have been subject to disturbance.

Weeds at this site include:

Flatweed (*Hypochaeris radicata*) and pasture weeds such as Clover (*Trifolium sp.*) seen along the covenant boundary and sparsely in the regeneration area.

Queensland silver wattle (*Acacia podalyriifolia*) approximately five plants occur south west of the gravel pit nearby the mobile apiary site shown on the closeup map.

Photography by K.C Richardson and K.R Theile . Images used with the permission of the Western Australian Herbarium, Department of Environment and Conservation (http://florabase.dec.wa.gov.au/help/copyright). Accessed on Thursday, 13 October 2011.

Continued overleaf …

Management Activities and Monitoring (cont')

Issue 2	Competition with weed species (*cont'*)	
Objective	Prevent the spread of weedy plant species in the bushland (*cont'*)	
Activity 2	*Manage existing weeds (cont')*	*Timeline: as necessary*

Seek advice from the Department where unfamiliar plants are found.

Management methods

Weeds are best managed just before they flower (or as soon as possible during flowering), as the plant will be actively growing rather than dormant, and won't have set seed yet.

When managing weeds it is important to remember that it is generally impossible to eradicate them completely from an area, but it is possible to manage them so that native species can re-establish.

In most instances follow-up management will need to be done a couple of months later, then on an annual basis for the following three or so years. Revegetation and natural regeneration should out-compete weeds over time.

Manage any Declared Plants and Environmental Weeds that you find in your bushland. The Department, or your local District Agriculture Biosecurity Officer, can provide advice on the identification and management of these species.

Ensure that you wear gloves to protect against any chemicals or spines, and avoid getting the milky sap that some weeds produce on your skin as it may cause an allergic reaction.

Revegetation and natural regeneration at the Site should gradually out-compete weeds through suppression and competition over time.

Manual methods

For new, small or isolated populations of weeds or individual weedy plants, weeds can be dug up or hand-pulled (if practical) and disposed of. Weeds with corms or bulbs will need to be dug up and all the corms and bulbs extracted intact.

For larger plants and trees with trunks, cut through the stem or trunk of the plant just below ground level. In lignotuberous plants (such as some species of wattles and eucalypts), cut just under the swelling on the stem or trunk.

Continued overleaf...

Management Activities and Monitoring (cont')

Issue 2	Competition with weed species (*cont'*)
Objective	Prevent the spread of weedy plant species in the bushland (*cont'*)
Activity 2	*Manage existing weeds (cont')* *Timeline: as necessary*

Chemical methods

Before using chemicals, familiarise yourself with the contents of the relevant "material safety data sheet", poisons information and poisons emergency contact number.

For most weeds, a general herbicide, such as glyphosate applied at the recommended dilution plus a wetting agent is effective.

For grassy weeds, a grass-selective herbicide applied at the recommended dilution plus a wetting agent is effective, however do not use over sensitive plants such as orchids.

Some methods of applying herbicide that could be used at your site include:

- *Spot spraying*. Spray individual plants with a mist of herbicide from a knapsack or standard spray bottle. Take care not to allow the spray to drift onto native plants.
- *Stem wiping*. Use a domestic spray bottle (dedicated to this purpose) with a piece of sponge secured over the nozzle to brush herbicide against the leaves of plants. Squeeze the trigger of the spray bottle to moisten the sponge.
- *Blanket spraying*. Large or widespread populations can be over-sprayed with herbicide, however be aware that herbicides will affect native species as well.

Chemical management methods of the weeds on your property:

- Flatweed (*Hypochaeris radicata*): Wiping rosettes with 30% glyphosate provides effective control. For dense infestations apply Lontrel® 10 ml/10 L + wetting agent.
- Clover (*Trifolium* sp.): Spot spray with 1% glyphosate before flowering in August, otherwise spot spray Lontrel® 3 ml/10L (150 ml/ha) up to 6 leaf stage.
- Queensland silver wattle (*Acacia podalyriifolia)*, Fell mature plants by cutting at the base or ringbarking. Young Acacias less than 2m tall can usually be controlled by spraying the leaves until just wet with a mix of 100mL glyphosate (450g/L) plus 25mL Pulse in 10 litres of water.

Monitoring

Perform twice-yearly checks of edges, tracks, disturbed or sparse areas and creekline areas at the sites for new populations of weeds. This is particularly important during the spring months.

Establish photo-monitoring points to monitor any areas where weeds occur and are being managed, in order to evaluate the success of a particular herbicide and its effect on the surrounding bushland. The areas are best photographed just before treatment and about six weeks later, after any follow-up treatment, and then on an annual basis.

For more information on weed control, contact the Department of Agriculture and Food on (08) 9366 2300.

References

Brown, K. and Brooks, K. (2003). *Bushland Weeds – a Practical Guide to their Management*. Environmental Weeds Action Network (Inc), Western Australia.

Moore, J. and J. Wheeler. (2002). *Southern Weeds and Their Control*. Department of Agriculture, Western Australia.

Management Activities and Monitoring (cont')

Issue 3	Disturbance caused through maintenance activities
Objective	Perform maintenance activities in an environmentally sensitive manner
Activity 3	*Maintenance of tracks, fences, transmission lines, firebreaks and fire access tracks* — *Timeline: as necessary*

Maintenance or servicing activities on tracks, fences, transmission lines, firebreaks and fire access tracks should be carried out carefully so that disturbance to the surrounding bushland is kept to a minimum.

Any pruned vegetation resulting from maintenance activities should not be dumped in the bushland. Prunings of native vegetation can be spread out over degraded or previously cleared areas that may require revegetation, or removed from the site altogether. Any weeds that are removed should be disposed of properly.

Fences

Check fences at least once annually and following any storm events for fallen debris, and maintain as necessary to prevent stock accessing the site.

Tracks

Ideally for hygiene reasons, obtain any required gravel for track maintenance from disease-free sites in the local area (if possible from elsewhere on your property) to avoid the possible introduction of new weeds or diseases.

Vehicle tracks should not be greater than 3 metres wide at any point. Currently there are no established walk trails within the bushland, but if these are desired please contact the Department for advice on their placement and construction. Walk trails should not be greater than 1 metre wide at any point.

Transmission lines

The location of existing transmission lines are indicated on the aerial photograph included with these Management Guidelines. Generally speaking, the service provider is responsible for maintaining their transmission lines (eg. power, telephone, water). A common exception to this is for private power lines (such as those that supply individual houses), for which maintenance becomes the responsibility of the landowner.

Overhead transmission lines may occasionally require the trimming of vegetation occurring underneath them. They may also need to be accessed for servicing (usually from a parallel adjacent access track). As part of your fire management you may like to consider spraying herbicide on or slashing the vegetation occurring around the base of transmission line poles to a 2 metre radius. Prunings resulting from maintenance activities could be mulched and spread underneath the transmission lines to inhibit plant growth.

Firebreaks

The establishment and maintenance of firebreaks and fire access tracks should be done in accordance with your relevant local government authority's and Bush Fire Brigade's regulations and guidelines for fire management.

Monitoring

Monitor tracks and firebreaks for any signs of erosion, particularly on slopes with frequent use. If areas of erosion are encountered, contact the Department for advice.

Management Activities and Monitoring (cont')

Issue 4	Use of natural resources
Objective	Establish an ecologically balanced removal program
Activity 4	*Collection of plant propagation and identification material* — *Timeline: as appropriate*

Under the covenant you may opportunistically collect seed from your bushland for the non-commercial purpose of revegetation. Plant material may also be collected as voucher specimens for identification. Plant propagation material other than seed can also be collected for the purpose of revegetation in the local area, but not for any commercial purpose. However, you cannot burn, irrigate, prune, fertilise or undertake any other activity specifically for the purpose of manipulating the production of seed or plant material. If a direct seed trial is undertaken in the regeneration area then the below method can be used to collect seed for this process.

Methods

Timing of seed collection is important. The aim is to collect mature seed with the highest viability possible. Collect seed from many different plants of the same species in order to obtain a diverse gene pool. Seed is best collected into paper bags to prevent it from sweating. Make sure that seed from different species is kept in separate bags. Seed can be collected by handpicking, using loppers or secateurs to remove branches, or spreading a tarp under a plant.

Collect / photograph a specimen of each species of plant that seed is collected from, including fruits, buds and flowers (where possible). Tag and number the specimens, providing details of the date of collection, a brief description of the plant, its preferred soil type and position in the landscape, and the surrounding vegetation type. Write the same details on the relevant paper bag containing that species' seed. This will enable identification of the species and its seed at a later stage.

The following conditions must be adhered to if undertaking this activity:

- No more than 30% of the flowers, 20% of the seed or 10% of the foliage may be taken from any individual plant during any one reproductive season, or in the case of annual flora harvesting is to be limited to 30% of the plants in a population. This ensures that there will be some resources available for natural regeneration, and for foraging animals and birds. No whole plants or roots of plants are to be taken.
- Do not harvest those species on the Department's *Declared Rare and Priority Flora List 2010(2)* without prior permission from the Department.
- Take precautions to avoid the spread of plant pathogens (in particular *Phytophthora* spp. dieback) whilst undertaking picking activities. Ensure that blades of secateurs, saws and pruners are kept sharp and cleaned regularly with methylated spirits.
- No protected flora shall be taken in such a manner which destroys or jeopardises the survival of the plant, population or associated vegetation, or in the case of annual flora, in such a manner that jeopardises the survival of the population and associated vegetation.
- Any leaf or other plant material stripped from harvested flower stems is to be spread in the harvest area to facilitate nutrient return through vegetation decomposition.

For further information regarding seed collection, please see Appendix 3, a *Land for Wildlife* publication entitled "Seed Collection from Native Plants", or contact DEC's Covenant Program on (08) 9337 0477.

Continued overleaf...

Management Activities and Monitoring (cont')

Issue 4	Use of natural resources (*cont'*)
Objective	Establish an ecologically balanced removal program (*cont'*)
Activity 4	*Collection of plant propagation and identification material (cont')* — *Timeline: as appropriate*

Monitoring

It is worth keeping notes on the abundance of particular species harvested, the time of year that they were harvested, their response to harvesting, and any other information that may be useful for future harvesting. If harvesting is done following a particularly dry or wet season, keep notes on the amount of resource that is available. These notes will assist with harvesting activities in future, particularly if targeting a certain species or habitat type. Keep a record of any rare or unusual plants, and of all notes and photographs taken.

References

Bradby, K. and Morris, V. (1997). *Seed Collection from Native Plants*. Wildlife Notes No. 4, Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Rohl, L. and Smith, R. (1999). *Management Guidelines for Remnant Vegetation being Harvested for Cutflowers*. Wildlife Notes No. 7, Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia

Hussey, B.M.J. and Wallace, K.J. (1993). *Managing Your Bushland*. Department of Conservation and Land Management, Western Australia.

Management Activities and Monitoring (cont')

Issue 4	Use of natural resources	
Objective	Establish an ecologically balanced removal program	
Activity 5	*Timber collection*	*Timeline: as appropriate*

Timber may be collected from your bushland for the non-commercial purpose of firewood for your own use on the Land / for sale under a current Commercial Producer's Licence. Timber removal should be managed so that it does not adversely affect the nature conservation values of the bushland over the long term.

Please note that these timber collection guidelines do not over-ride any legislative requirements for permission to cut or remove timber (eg the *Environmental Protection Act 1986*). Phone the Department's Covenant Program on (08) 9334 0477 for further advice.

- These timber collection guidelines are prepared as per the Department's regulations for the taking of timber on Crown land.
- The definition of native vegetation under the *Environmental Protection Act 1986* is "*indigenous, aquatic or terrestrial vegetation, and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation*".
- Under the *Environmental Protection Act 1986* the taking of standing timber, dead or alive, constitutes clearing and therefore requires a clearing permit. Certain exemptions exist where the timber is taken for firewood, farm use or where the tree is required to be taken for firebreak or track maintenance. These exemptions can be found under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. The most common exemptions that may apply to this site follow.

Item 5 Clearing for firewood

Clearing to provide firewood for use by the owner or occupier of the property on which the vegetation is located for domestic heating or cooking, being clearing which –

(a) does not kill any live vegetation and does not prevent regrowth of the vegetation;
(b) is carried out to provide firewood to the extent to which firewood could not be obtained from vegetation already cleared for another purpose; and
(c) does not, together with all other limited clearing on the property in the financial year in which the clearing takes place, exceed 1 hectare.

Under this exemption, the wood is for domestic use by the owner or occupier of the land only. It must not be sold, given away or used off-site. Contact the Covenant Co-ordinator on (08) 9334 0477 for further advice.

Item 6 Clearing to provide fencing and farm materials

Clearing to provide for use by the owner or occupier of the property on which the vegetation is located for constructing and maintaining fences, buildings and other structures on land in the possession of the owner or occupier, being which clearing which –

(a) does not kill any live vegetation and does not prevent growth of the vegetation;
(b) is carried out to provide timber to the extent to which the timber could not be obtained from vegetation already cleared for another purpose; and
(c) does not, together with all other limited clearing on the property in the financial year in which the clearing takes place, exceed 1 ha.

The vegetation collected under this exemption is to be for personal use by the owner or occupier of the land only. It must not be sold, given away or used off-site.

Continued overleaf...

Management Activities and Monitoring (cont')

Issue 5	Predation of, and competition with, native fauna by introduced fauna
Objective	Assist the survival of native fauna by managing introduced animals
Activity 6	*Restrict access to the bushland by domestic dogs* *Timeline: all year*

The landowner has stated that the neighbours' dogs venture onto her property. An image was captured with the remote camera that appeared to be a brown dog but clarity is poor and their presence cannot be confirmed from this one image. In the event that dogs do enter the covenant site, the following should be taken into account.

Dogs can harass and disturb wildlife, and may also disturb soil through digging and scratching or enrichment by their droppings.

Dogs must be prevented from killing or injuring wildlife in the covenant site, and their access should be restricted. Dogs must either be on a leash or under control at all times, as described in the conditions below.

The following conditions must be adhered to if undertaking this activity:

- Dogs should not be out of voice control range of the owner at any time, such that the owner must be able to get the dog to return to them within two voice commands and the dog placed on a leash if necessary.
- Dogs that pose a threat to wildlife should be placed on a leash at all times.

The use of a muzzle on dogs permitted to enter bushland areas is recommended especially when 1080 poison baits are being used in the area for feral animal management.

Management Activities and Monitoring

Issue 5	Predation of, and competition with, native fauna by introduced fauna (*cont'*)	
Objective	Assist the survival of native fauna by managing introduced animals (*cont'*)	
Activity 7	*Manage foxes and feral cats*	*Timeline: three-monthly*

Foxes and feral cats prey on a wide range of native fauna including mammals, birds, frogs and invertebrates. Cats are also the principle vector for the disease Toxoplasmosis that can seriously affect native fauna, as well as some types of stock.

Western Shield 1080 baiting is undertaken monthly in the Jarrahdale area on DEC estate therefore it is unnecessary for you to undertake fox control using 1080 baits on your property. The second point below can be disregarded unless baiting regimes are changed.

Management methods

- Shoot foxes and feral cats on sight or during spotlighting expeditions. The best time for this is spring or late summer, or as conditions allow.
- Contact your local District Department of Agriculture and Food Biosecurity Officer for advice on the use of 1080 poison baits on your property. Manage foxes with a controlled baiting program. A coordinated community approach involving neighbours will be the most effective method. 1080 poison baits must be used with caution.
- A baited wire cage trap can be used to capture foxes and feral cats. Caught animals must be disposed of humanely (a .22 calibre rifle shot to the brain at point blank range is appropriate). Traps may be available through your local government authority.

Monitoring

Monitor fox and feral cat numbers by undertaking spotlight surveys during optimal conditions (i.e. when it's not cold, with low wind, no rain and a new moon).

References

Lund, D. and Staff of the Vertebrate Pest Research Services (2001). *Options for Fox Control*. Farmnote 91/2001. Department of Agriculture and Food, Western Australia.

Thompson, P. (2000). *Red Fox*. Farmnote 115/2000. Department of Agriculture and Food, Western Australia.

Adamson, H. (2001). *Make your own cat trap*. Western Wildlife Vol. 5 No. 2, Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Baxter, A. (2002). *An Innovative Cat Trap*. Western Wildlife Vol. 6 No. 2, Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Horner, A. and Platt, S. (1993). *Foxes – Options for Control in Wildlife Habitat*. Land for Wildlife Note No. 24, Land for Wildlife Scheme. Department of Conservation and Natural Resources, Victoria.

Platt, S. (1993). *Cats and Wildlife – How You Can Protect Both*. Land for Wildlife Note 25, Land for Wildlife Scheme. Department of Conservation and Natural Resources, Victoria.

Management Activities and Monitoring (cont')

Issue 5	Predation of, and competition with, native fauna by introduced fauna (*cont'*)	
Objective	Assist the survival of native fauna by managing introduced animals (*cont'*)	
Activity 8	*Manage rabbits*	*Timeline: autumn / spring*

Rabbits graze young plants and compete for resources with native fauna and help support fox and cat populations. Rabbits have been confirmed to be present on your property as captured by the remote camera (photo included in the stewardship report).

Management methods

- Contact your local District Department of Agriculture and Food Biosecurity Officer for advice and authorization on the use of 1080 poison 'One-Shot' oats or pindone on your property. Please note that pindone should only be used in baiting stations that exclude macropods (kangaroos and wallabies) – the advising Officer will be able to provide advice on how to achieve this.
- Shoot rabbits on sight. The best time for this is dawn or dusk when they are most active. Late summer and autumn is the most effective time to manage rabbits.
- Using impaction explosives to destroy warrens should only be done by qualified persons and only if warrens are confirmed to be housing only rabbits and not other fauna. This technique can be useful in sandy areas or rocky or stony areas where access is limited.
- If warrens are confirmed to be housing only rabbits and not other fauna, fumigation of warrens can be done using Phosphine tablets or similar.
- 'Ripping' warrens is not recommended as accessing the warrens with machinery is likely to cause excessive disturbance to the soil and vegetation.

Monitoring

Monitor rabbit numbers by undertaking spotlight surveys as conditions permit.

References

Staff of the Vertebrate Pest Research Services (2003). *European Wild Rabbit - Oryctolagus cuniculus*. Farmnote 39/2003. Department of Agriculture and Food, Western Australia

Twigg, L. and Lowe, T. (2003). *Bait Stations and Rabbit Control*. Farmnote 38/2003. Department of Agriculture and Food, Western Australia.

Farrelly, G., Merks, P. and Staff of the Vertebrate Pest Research Services (2001). *Options for Rabbit Control*. Farmnote 89/2001. Department of Agriculture and Food, Western Australia.

Kruger, E. (2005). *Landholder Use of 1080 One Shot Oat Rabbit Bait*. Farmnote 63/2005. Department of Agriculture and Food, Western Australia.

Twigg, L. and Lowe, T. (2007). *Fumigation for Rabbit Control*. Farmnote 279. Department of Agriculture and Food, Western Australia.

Twigg, L. and Lowe, T (2008). *Rabbit Warren and Harborage Destruction*. Farmnote 286. Department of Agriculture, Western Australia.

Lowe,T. and Twigg L. (2007). *Rabbit control in urban and semi urban areas*. Farmnote 241. Department of Agriculture and Food, Western Australia.

Management Activities and Monitoring (cont')

Issue 5	Predation of, and competition with, native fauna by introduced fauna (*cont'*)
Objective	Assist the survival of native fauna by managing introduced animals (*cont'*)
Activity 9	*Manage feral pigs* *Timeline: as necessary*

Feral pigs are large omnivores which feed on vegetable matter (crops, seeds, fruits, shoots of young vegetation, etc) and predate animals (lambs, birds and eggs, small native mammals, insects, etc) and eat carrion. Feral pigs cause environmental damage by rooting and trampling vegetation and polluting waterways, and also harbour and spread diseases (incl. *Phytopthora* sp. dieback) and parasites. They are a recognised threat to the survival of at least two species of native Western Australian fauna listed on Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice of 2010 (yellow-bellied frog - *Geocrinia vitellina*, and white-bellied frog - *Geocrinia alba*).

Feral pigs have been captured in traps within the covenant site in the past. This method as outlined in point 3 should continue to be implemented as required.

Management methods

- Shoot feral pigs on sight or during spotlighting expeditions. The best time for this is spring or late summer, or as conditions allow.
- Contact your local District Department of Agriculture and Food Biosecurity Officer for advice on the use of 1080 poison grain baits in your area. Set up a bait station at a strategic location on the property (such as near a known water access point) and free-feed the pigs with regular grain until the pigs have become accustomed to visiting the bait station, at which point poison baits should then be substituted. A regular long-term coordinated community approach will be the most effective method. 1080 poison baits must be used with caution.
- A baited wire cage trap can be used to capture feral pigs. Caught animals must be disposed of humanely (a .22 calibre rifle shot to the head at point blank range is appropriate). Traps may be available through your local government authority.

The *Orange-bellied and White-bellied Frogs Recovery Plan 1999-2001* (reference below) states that "Total eradication of feral pigs is not currently feasible because methods used in feral pig management, such as poisoning with 1080, shooting and trapping, are not highly effective. In addition feral pigs tend to occur at low densities and are highly mobile. They are also often reintroduced by hunters."

Monitoring

Monitor feral pig numbers by undertaking spotlight surveys during optimal conditions (ie. when it's not cold, with low wind, no rain and a new moon).

References

Staff of the Vertebrate Pest Research Services (2000). *Feral Pig*. Farmnote 110/2000. Department of Agriculture, Western Australia.

Martin, G. Knight and T. Lund, D. (2003). *Feral Pig Free-feeding*. Farmnote 51/2003. Department of Agriculture, Western Australia..

Wardell-Johnson, G., Roberts, J.D., Driscol, D. and Williams, K. (1995). *Orange-Bellied and White-Bellied Frogs Recovery Plan*. Wildlife Management Program No. 19. Department of Conservation and Land Management, Western Australia.

Management Activities and Monitoring (cont')

Issue 5	Predation of, and competition with, native fauna by introduced fauna (*cont'*)
Objective	Assist the survival of native fauna by managing introduced animals (*cont'*)
Activity 10	*Manage honeybees* *Timeline: spring*

The mobile apiary may be placed within the bushland, provided that the conditions below are followed.

The following conditions must be adhered to if undertaking this activity:

- The placement of hives must be restricted to existing cleared areas (such as the area indicated on the map) so that damage to the surrounding vegetation does not result from placement or access.
- The bushland must be monitored (method suggested below) for signs of swarms and spread of feral honeybees, and any feral hives found are to be removed.

Feral European Honey Bees (*Apis mellifera*) compete with reptile and bird species for nesting hollows, and with native insects for food. They also have the potential to damage flowers as they search for pollen and nectar, thereby reducing the reproductive potential of those plants.

Management methods

Check tree hollows for signs of bee-hives. Occasional walks in the bushland at dawn or dusk will help to indicate the presence of honeybees as the subdued light reflects off their wings - you can easily follow the bees. Note that there may be apiarist (bee-keeper) bee-hives in nearby bushland, and the bees may be visiting your bushland.

Where bee-hives or bees are found in the bushland, identify the bee species. In the South West of Western Australia, native bees do not form hives like the European Honey Bee. Native bees are generally solitary and nest in small holes in timber, bamboo or brick work. Native bees will hibernate in these small holes over autumn and winter and are generally active over the spring and summer period. In the north of the State, the native Sugar Bag Bees are hive forming, however, their honey is stored in resin pots that have a grape like appearance and not in the hexagonal cells (honeycomb) of the European Honey Bee. Native bees are important pollinators of many plant species, and should be left alone.

Once a positive identification of feral honeybees has been made, apply to a pest controller or apiarist to remove the feral honeybees from the tree hollow, or to obtain advice on their removal or destruction. Generally, apiarists will collect mobile swarms but not established hives. Check with apiculture bodies listed in the Yellow pages.

The hive can be controlled by blocking the entrance. The bees will eat the wax and honey left and eventually starve. If you decide to approach the hive yourself, note that hives should be approached in the evening, when the bees are less active and the majority of bees have returned to the hive. If you are allergic to bee stings, do not attempt to remove them yourself!

Monitoring

Monitor known tree hollows once a year during spring when bees are most likely to swarm. Keep a record of observations and the results of activities.

References

Allan, L. (2001). *Honey Bee Swarms and Nests*. Farmnote 38/2001. Department of Agriculture, Western Australia.

Management Activities and Monitoring (cont')

Issue 6	Soil erosion and loss of seed bank in bare, cleared or degraded areas
Objective	Manage and improve bare areas to improve habitat, long-term viability of the bushland, and to create buffers between the bushland and agricultural areas

Activity 11 — *Manage and improve bare, cleared or degraded areas where possible* — *Timeline: autumn - winter*

Where bare, cleared, grazed or otherwise degraded areas (ie, where the natural vegetation has been disturbed or removed) occur within bushland, they can provide a harbour for weeds and erosion. The potential for these problems can be reduced through revegetation and by encouraging natural regeneration, while at the same time improving the quality, connectivity and habitat values of bushland.

Often an ecosystem is modified to such an extent that one or more factors necessary for natural regeneration to occur are missing. In these circumstances it may be necessary for land managers to assist the rehabilitation of an area by mimicking certain processes to stimulate germination and natural regeneration, or through planting by hand.

<u>At your site</u>

- The site contains a ~ 2.5Ha degraded area where natural regeneration is occurring with varied success. Shown in the below photograph and indicated on the close up map included with these Management Guidelines.

Facing south

Facing north

Continued overleaf…

Management Activities and Monitoring (cont')

Issue 6	Soil erosion and loss of seed bank in bare, cleared or degraded areas (*cont'*)
Objective	Manage and improve bare areas to improve habitat, long-term viability of the bushland, and to create buffers between the bushland and agricultural areas (*cont'*)
Activity 11	*Manage and improve bare, cleared or degraded areas where possible (cont')* — *Timeline: autumn - winter*

Suggestions

A trial of ripping and direct seeding with locally-native species or seed collected from your own property (see Activity 4) , and using techniques such as brushing to encourage natural regeneration, would assist in rehabilitating this area to provide habitat for wildlife.

Some methods of achieving this are provided on the next two pages.

References

Casey, M.F. and Chalmers, I.T. (1993). *Tree Tops: the Tree Planting Book for Farmers.* Kondinin Group, Western Australia.

Kings Park and Botanic Gardens (1999). *Smoke to Sow and Grow*. Kings Park and Botanic Gardens, Western Australia.

Hussey, B.M.J. (2001). *Photographic Monitoring of Vegetation*. Wildlife Notes No. 9, Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Hussey, B.M.J. (1999). *How to Manage Your Wandoo Woodlands*. Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Hussey, B.M.J. (1998). *How to Manage Your Granite Outcrops*. Land for Wildlife Scheme. Department of Conservation and Land Management, Western Australia.

Hussey, B.M.J. and Wallace, K.J. (1993). *Managing Your Bushland*. Department of Conservation and Land Management, Western Australia.

Mullan, G.D. and White, P.J. (2001). *Soil Ripping for Revegetation Establishment: a New Approach in the Western Australian Wheatbelt*. Department of Conservation and Land Management, Western Australia.

Management Activities and Monitoring (cont')

Issue 6	Soil erosion and loss of seed bank in bare, cleared or degraded areas (*cont'*)
Objective	Manage and improve bare areas to improve habitat, long-term viability of the bushland, and to create buffers between the bushland and agricultural areas (*cont'*)
Activity 11	*Manage and improve bare, cleared or degraded areas where possible (cont')* — *Timeline: autumn - winter*

Method 1 - Direct seeding

The main advantages of direct seeding compared to planting seedlings are that it is cheaper, a wide range of species can be planted at the one time, and the end result will mimic natural regeneration more so than rows of shrubs and trees.

Weed control can be difficult, and insects and birds can be an issue after seeding as they will eat seeds, and dry conditions immediately after germination can kill the young plants. Make sure any weeds and pests are controlled both before and after seeding.

Prepare the site before planting, including any earthworks or soil preparation that may be necessary, pest (insect / rabbit) and weed control, and temporary fencing to deter kangaroos. Prepare the seed bed by ripping or raking as it helps to improve early growth.

Choose seed obtained from a local provenance source (such as your site). For the purpose of these Management Guidelines, 'local provenance' can be defined as similar vegetation on a similar landform within 15 kilometres of the site to be revegetated, or the nearest source. To collect seed from Crown land a *'Scientific or Other Prescribed Purposes licence'* is required from the Department. On private property, the landowner's permission is required.

Choose the right species and a suitable seeding rate and mix for the site, and choose the correct time of year for sowing. Also make sure the seeds are viable, and treat hard-coated seeds before seeding.

The seed can be scattered by hand or using specialised direct seeding machinery. In both methods the seed needs to be 'bulked up' with a substance such as sand, sawdust, vermiculite or even kitty litter to ensure an even spread of seed over the area.

Method 2 - Planting seedlings

Where possible, obtain seedlings that have been grown from seed obtained from a local provenance source (local provenance defined above under "direct seeding"). Many nurseries are willing to grow seedlings from seed collected and supplied by the landowner.

Prepare the site before planting, including any earthworks or soil preparation that may be necessary, pest (insect / rabbit) and weed control, and temporary fencing to deter kangaroos. Make sure any weeds and pests and controlled both before and after planting.

Before transporting seedlings to the site, make sure they are acclimatised to the sort of conditions they are expected to survive in. On arrival at the site, keep the seedlings in a shaded area until they are required for planting out. Planting should be done into moist soil, preferably following the first winter rains.

A planting tube, such as a Potti Putki®, is the fastest and easiest method of planting by hand, especially where there are a large number of seedlings involved. Alternatively, machinery such as a tractor-mounted tree planter can be used for planting rows, however a person should follow behind and check that plants are in the ground correctly.

Make sure that seedlings are planted vertical and at least as deep as they were in the seedling trays or pots. Compress the soil around seedlings to prevent them drying out.

Management Activities and Monitoring (cont')

Issue 6	Soil erosion and loss of seed bank in bare, cleared or degraded areas (*cont'*)
Objective	Manage and improve bare areas to improve habitat, long-term viability of the bushland, and to create buffers between the bushland and agricultural areas (*cont'*)
Activity 11	*Manage and improve bare, cleared or degraded areas where possible (cont')* — *Timeline: autumn - winter*

Method 3 - Encourage natural regeneration

There are a few methods of achieving this. In some instances, disturbing the soil with a rake or th 'ripping' (see description below) may be all that is necessary for natural regeneration of some species to o Other methods include:

Weed control

Gradual weed control over several years, working from the edge of an infestation slowly to the centre allow native vegetation to slowly replace weeds without exposing the area to further invasion. Metho weed control are discussed in more detail in **Issue 2**.

Brushing

Cut seed-laden branches from seed-holding plants such as sheoaks, paperbarks and eucalypts, and lay the the bare ground. Seed should germinate under the branches.

Mosaic burns

The heat and chemicals produced by fire can stimulate germination in a wide range of plant species, and of these species may otherwise become locally extinct if fire is excluded over the long term. If delib burning is not appropriate for your bushland, heap burns or use of smoke water can be effective regene tools. The use of mosaic burns to assist regeneration is a complex issue because it can be difficult to ach particularly in small remnants. The theory behind mosaic burns is that about 10% of the bushland is periodically (in such a way that each pocket has several years, possibly decades, between burns) to cr mosaic of different-aged vegetation pockets to provide a variety of habitats.

Smoke water and heat treatment

An alternative to a mosaic burn. Smoke water and/or heat treatment can be applied directly to hard-c seeds, such as those from wattles, to assist germination by providing some of the chemicals and/or temperatures necessary for breaking down the hard seed coat. Alternatively, apply smoke water directly bare soil in an area free from overhanging trees and shrubs, and with the leaf litter raked aside. Smoke can be made at home by bubbling the smoke from a small fire through a beaker of water using a ho purchased from Botanic Gardens and Parks Authority (Kings Park).

Heap burn

An alternative to a mosaic burn. In an area free from overhanging branches, pile fallen timber and other d into a heap, and burn to assist the germination of seed stored in the soil, and to create an ashbed into w seed can be sown.

Ripping

This method is suggested before direct seeding in the regeneration site

The aim of mechanically 'ripping' the soil in previously cleared areas (such as unused gravel pits) is to d and loosen compacted soils to a depth of 45-100 centimetres, in order to allow germinating plants acc nutrients, water and other resources more easily, and so that roots have space to grow. Depending o accessibility of the site, ripping can often be carried out with standard agricultural machinery. Speci ripping machinery may be single tine (ie, a single blade deep-ripping a single line), or multiple tined (ripping 2 or 3 lines simultaneously). Ripping is ideal preparation for brushing, as it creates niches for se lodge and germinate. Follow-up weed control may be necessary.

Management Activities and Monitoring (cont')

Issue 7	Degradation through grazing pressures
Objective	Manage grazing pressures
Activity 12	*Restricted access for emergency off-shear shelter* *Timeline: as required*

Emergency off-shear shelter

Grazing by stock and other non-indigenous grazing animals is a problem in bushland because these animals usually occur in high densities and can trample plants, as well as eating vegetation at a rapid rate often faster than it can recover. Stock and other non-indigenous grazing animals preferentially graze emerging shoots and leaves, and ground-covers and shrubs are usually affected first. They also introduce nutrients and spread weed seeds in their manures, and their movement along common pathways to feed or water sources causes the soil surface crust to break up and often results in soil compaction.

For these reasons, stock and other non-indigenous grazing animals should be permanently excluded from bushland at all times. The easiest way to prevent damage to the bushland by stock and other non-indigenous grazing animals is to fence it to exclude them. This may reduce the pressure on the bushland to the extent that it can recover without further assistance, which is why fencing is usually the first priority in protecting remnant vegetation.

However, when paddocks located elsewhere on the property are affected by excess water (eg. waterlogging or flooding), which could be detrimental to the health of resident paddocked animals, the fenced 'paddock area' of the Site may be used as temporary shelter for your herd of Alpacas provided the conditions below are followed.

The following conditions must be adhered to if undertaking this activity:

- Your herd of Alpacas must only be allowed in the fenced 'paddock area' of the covenant Site, as marked on the included map. Where possible, exclude the animals from the area during very dry weather, and for at least two years after a bushfire.
- Your herd of Alpacas may enter the fenced 'paddock area' for a period of no longer than 60 days at a time, and no more frequently than a minimum of twelve months between these periods, in order to allow the vegetation to continue regenerating.
- If the regenerating native vegetation in the 'paddock area' is declining in quality as a result of access by the animals, then this activity is to be re-assessed.

Monitoring

Monitor the quality of the native vegetation following its use for emergency shelter for your herd of Alpacas. If the quality of the vegetation appears to be declining or if new weed populations are noticed, refrain from using this area for emergency shelter and contact the Department for advice.

If necessary control new weed infestations.

Management Activities and Monitoring (cont')

Issue 8	Degradation due to plant disease
Objective	Prevent the introduction or spread of plant diseases in the bushland
Activity 13	*Implement a hygiene regime* *Timeline: all year*

Diseases are organisms that have a negative impact on individual plants or animals or on populations of plants or animals within bushland. They may be viruses, bacteria or fungi, and they may be native or introduced. Where native organisms are concerned, the disease may not usually cause problems under natural conditions, but in the altered state of remnants today, their effects may be amplified (for example, *Armillaria* spp.). *Quambalaria coyrecup* is a fungus that is thought to be native to the south-west of Western Australia. It has been found to cause canker in Marri which can kill the tree, and is doing so at an increasing rate. There are also other introduced *Quambalaria* species in WA that cause tree decline. Introduced species are usually more of a problem because they are in a different environment and their natural predators/controls may be absent (eg. *Phytophthora* spp.). Where building envelopes adjoin bushland, there is a risk that garden pests may be introduced with imported plants and soil.

Maintain a high standard of hygiene for any activity within the bushland to prevent the introduction or spread of plant diseases (in particular, the root-rot fungus *Phytophthora* spp. dieback) and weeds. If any unusual death of plants occurs, seek advice from the Department.

Hygiene methods

Minimise soil disturbance. Schedule activities that involve soil disturbance for low rainfall months, November to March, when the soil is dry.

If the local government authority permits, firebreaks could be maintained using herbicide as an alternative to grading or ploughing, and low fuel buffers around buildings could be maintained through slashing rather than grading.

Minimise the number of tracks through the bushland, and ensure those that are utilised are well-drained. If possible prevent vehicle and machinery access in susceptible areas / the affected area, particularly in wet conditions. Ensure that all vehicles and machinery stay on the established tracks, and if practical they could be washed down or cleaned of soil before and after entering the bushland.

Where possible, ensure all materials not sourced from the immediate property (such as sand, gravel or plants) are obtained from a reputable source and certified as ‘disease-free’ prior to importing into the bushland (such as when doing track maintenance or revegetation). Check with your local relevant local government authority for a list of certified dieback-free quarry sources. Where disease-free materials are not immediately available the use of alternative materials should be considered (such as crushed limestone or by-products such as 'metal fines'). Plants introduced for the garden or revegetation should be non-invasive, and disease and pest free, and gardening and other tools should be cleaned before and after use.

Where the site is regularly accessed by other groups (e.g. government agencies, service providers etc), provide them with hygiene methods and protocols for inclusion in their own operations guidelines for the site, and consider installing disease risk / hygiene signage

Continued overleaf…

Management Activities and Monitoring (cont')

Issue 8	Degradation due to plant disease (*cont')*
Objective	Prevent the introduction or spread of plant diseases in the bushland *(cont')*
Activity 13	*Implement a hygiene regime (cont')* *Timeline: all year*

Monitoring

A photo-monitoring point adjacent to the bushland can be a useful tool for observing any changes in vegetation quality. Proteaceous plants (such as *Banksia* spp.) are indicators of *Phytophthora* spp. dieback. The most appropriate time for photos is during the spring, when diversity is likely to be at its greatest. Note any changes.

References

Kilgour, S. (2000). *Managing Phytophthora Dieback in Bushland. A Guide for Landholders and Community Conservation Groups*. Dieback Working Group, Western Australia.

Dieback Working Group. (2008). *Managing Phytophthora Dieback in Bushland: A Guide for Landholders and Community Conservation Groups.* http://www.dwg.org.au/files/DWG%20Handbook.pdf

Paap. T., McComb, J.A., Shearer, B.L., Burgess, T.L., and Hardy, G.E.S. (2006) *Marri decline*. Marri Bulletin No. 1. November 2006 www.path.murdoch.edu.au/downloads/**marri**Brochure.pdf

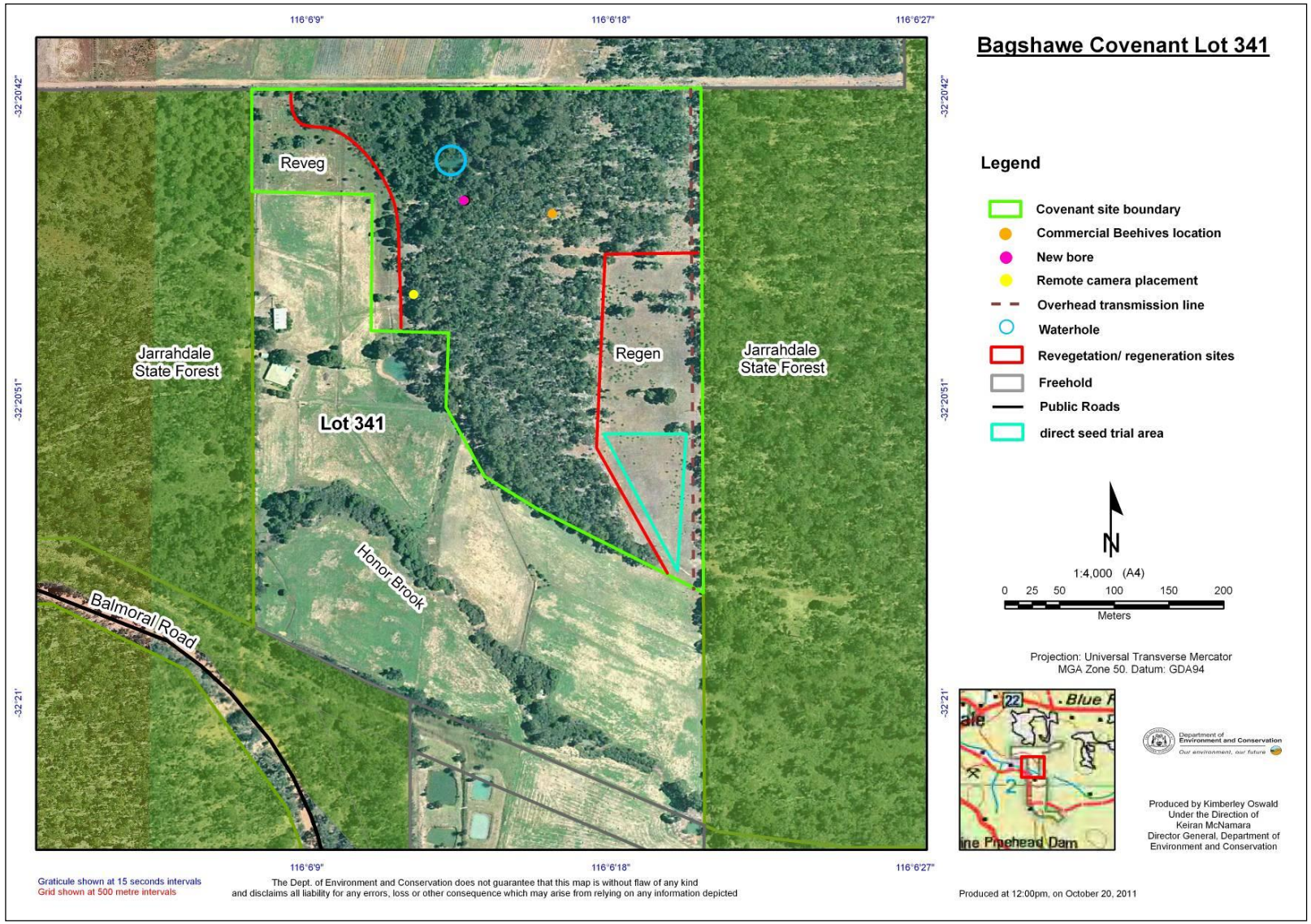
Review

(Guidelines are designed to be reviewed every three years, or earlier if circumstances change)

An evaluation of the monitoring results will provide information on the effectiveness of the management activities, and allow for the modification of those activities where appropriate to improve management. This process should include reviewing the:

- fire management strategy, and the effectiveness of smoke water and fire as a regeneration tool (if used);
- state of weed incursion into the bushland, including assessment of the response of weeds to current weed management techniques (alter management as necessary);
- impact of maintenance activities, assessed as effects on surrounding vegetation;
- impact of the taking of natural resources, including assessment of the ecological sustainability of seed and timber collection, and appropriateness of continued use;
- state of feral animal (fox, feral cat, rabbit, pig and bee) populations, determined by the decline in feral animal populations, the number of baits taken (if applicable), and the state of local wildlife by any changes in population noticed;
- effectiveness of managing for habitat and plant diversity, including the regeneration response of the understorey and the need for revegetation; and
- disease status of the bushland and assessing whether any plant pathogens are present or have spread within the area, and review of any control methods as necessary.

Covenant Site Location – Site Close up (scale 1:4,000; date 20/10/2011)



Aerial photography courtesy of Landgate. Contact phone 9273 7373, website: http://www.landgate.wa.gov.au/corporate.nsf/web/contact+us#map

APPENDIX 1

Agreement

These Management Guidelines are developed through a process of mutual consideration for achieving the goals in relation to the Land over the next three years or until the property changes ownership, and the Owner will undertake as far as is practicable the management activities identified within them.

The Department will provide the financial assistance and will arrange for the provision of such technical advice as deemed necessary for implementing these Management Guidelines, and can also assist the Owner should the land be subject to external threats. Please contact the Nature Conservation Covenant Program Coordinator on (08) 9334 0477 if assistance or advice is required.

Signed: ..... **Date:** .....

Antonia Frances Bagshawe
Owner

Signed: ..... **Date:** .....

Chief Executive Officer
Conservation and Land Management Executive Body

List of Invasive Garden Plants and Potential Weeds in Bushland in the South-west of Western Australia

(Prepared by Cherie Kemp, Jenny Dewing and Avril Baxter, Land for Wildlife, Department of Environment and Conservation)

Common name	***Botanical name***	***Weed Status***	***Life Form***
African Boxthorn	*Lycium ferocissimum*	Pest Plant	Hedge plant to 3m, prickly, fleshy leaves with pale mauve flowers and red berries.
African Cornflag	*Chasmanthe floribunda*	Minor weed	Herbaceous plant to 1.5m, spikes of orange flowers, clumps similar to Watsonia.
African Daisy	*Gazania / Dimorphotheca / Arctotis* spp.	Minor weed	Ground covering, low mat forming daisies from South Africa.
African Thistle	*Berkheya rigida*	Declared Plant	Sometimes called Augusta or Berkheya thistle.
Alligator Weed	*Alternanthera philoxeroides*	Declared Plant	Aquatic
Apple of Sodom	*Solanum linnaeanum*	Declared Plant	Small sprawling erect annual or short lived perennial herbaceous plant with blue or purple flowers, large yellow fruits, toxic.
Arrowhead / Sagittaria	*Saggitaria* spp. *S. montevidensis* *S. platyphylla*	Declared Plant	Aquatic
Arum Lily	*Zantedeschia aethiopica*	Declared Plant	Clumping plant with tubers, large white flowers with yellow centres.
Azolla	*Azolla filiculoides*	Minor weed	Small branched floating plant with tiny fronds 1-2mm long, forming extensive mats on water. May be red in sunlight.
Baboon Flower	*Babiana* spp. *B. angustifolia* *B. tubulosa*	Potential serious weed	Forms clumps of flowering stems 15-40cm. Flowers white, lilac, pinkish purple, violet.
Baby's Tears	*Soleirolia soleirolii*	Minor weed	Low growing, spreading ground covering plant with round leaves.
Basil	*Ocimum* spp. *O. basilicum* *O. tenuiflorum*	Minor weed	Aromatic herbs, small upright plants with white or pale mauve flowers.

Bird of Paradise	*Caesalpinia gilliesii*	Minor weed	Large shrub/small tree with fern like foliage and yellow flowers with red stamens.
Black Berry Nightshade	*Solanum nigrum*	Nuisance weed	Small sprawling erect annual or short lived perennial herbaceous plant with white and purple flowers, black berries, toxic.
Black Flag	*Ferraria crispa*	Nuisance weed Toxic	Clumping plant with succulent foliage and black flowers.
Black Wattle / Green Wattle	*Acacia decurrens*	Significant environmental weed	Tree with yellow flowers during winter. Seeds remain dormant in the soil for many years.
Blackberry	*Rubus fruticosus* agg.	Declared Plant	Perennial woody rambler, spreads by underground rhizomes and seeds. Berries spread by birds along roadside, river and stream corridors. Active growth in spring and summer with autumn fruits.
Blackwood	*Acacia melanoxylon*	Minor weed	Tree to 30m, with yellow flowers.
Blue Periwinkle	*Vinca major*	Significant environmental weed	Perennial climber. Flowers in winter and spring.
Boneseed / Bitou Bush	*Chrysanthemoides monilifera*	Declared Plant	Woody perennial shrub.
Bridal Creeper	*Asparagus asparagoides*	Declared Plant	Tuberous perennial herb which dies back each summer and resprouts from tubers, often before the first rains. Grows vigorously over winter to flower from spring to early summer.
Broom	*Genista* spp. *G. monspessulana* *G. linifolia*	Significant environmental weed	Rounded shrubs to 2.5m with drooping branches, and bright yellow flowers in spring which develop into pods that shed in early summer. Plants flower in their second season.
Buckthorn	*Rhamnus alaternus*	Potential serious weed	Small tree to 5m, shiny leaves with red fruits.
Butterfly Bush	*Buddleia* spp.	Minor weed	Straggly shrubs with white, yellow, pink, blue or purple flowers.
Cabomba	*Cabomba caroliniana*	Declared Plant	Aquatic
Canadian Pond Weed	*Elodea Canadensis*	Declared Plant	Aquatic
Canary Grass	*Phalaris* spp.	Minor weed	Tufted perennial grass. Flowers in spring & summer.
Cannas	*Canna* spp. (hybrid)	Minor weed	Large herbaceous plant with yellow, orange or red flowers.
Cape Gooseberries	*Physalis angulata*	Minor weed	Hairy shrub with gooseberries.

Cape Lilac	*Melia azedarach*	Minor weed	Tall deciduous tree to 15m with leaflets, fragrant lilac flowers in spring, hard yellow berries.
Cape Tulip, One-leaf / Two-leaf	*Moraea* spp. *M. flaccida* *M. miniata*	Declared Plant	Small clumping plants to 25cm high, yellow or orange flowers.
Castor Oil Plant	*Ricinus communis*	Significant environmental weed	Spreading shrub to 4m with separate male and female flowers. Colonises disturbed sites.
Chinee Apple / Date	*Ziziphus mauritiana*	Declared Plant	Spreading tree, round leaves, brown fruit.
Common Heliotrope	*Heliotropium europaeum*	Declared Plant	Woody perennial shrub to 1m tall, blue/mauve flowers.
Cootamundra Wattle	*Acacia baileyana*	Significant environmental weed	Large shrub or small tree to 10m with ferny grey/mauve leaves, and yellow flowers in winter producing long seed pods.
Cotoneaster	*Cotoneaster* spp.	Nuisance weed	Small trees with white flowers and red berries.
Cotton Bush, Narrow-leaf	*Gomphocarpus fruticosus*	Declared Plant	Perennial upright herb.
Couch	*Cynodon dactylon*	Significant environmental weed	Perennial grass, spreads by a creeping rhizome. Active growth in spring and summer.
Cumbungi / Bulrush	*Typha orientalis*	Significant environmental weed	Perennial riparian herb to 4.5 m. Prolific seeder (95% viable), and spreads aggressively by rhizomes. Colonises disturbed sites, especially wetlands. Dies back over winter, resprouts in spring, flowers in early autumn.
Cyperus Grass	*Cyperus involucratus*	Nuisance weed	Grass-like clumps.
Dock	*Rumex* spp.	Nuisance weed	Annuals or perennials with stout taproots. Withstands inundation.
Doublegee	*Emex* spp. *E. australis* *E. spinosa*	Declared Plant	Annual
Belladonna Lily	*Armaryllis belladonna*	Minor weed	Bulbous clumping plants to 0.5m with pale pink flowers.
English Ash	*Fraxinus excelsior*	Significant environmental weed	Medium to large deciduous tree.
Evening Primrose	*Oenothera* spp.	Minor weed	Herbaceous groundcover, yellow, white and pink flowers.
Fig Tree	*Ficus* spp.	Major weed	Upright trees with leathery leaves and fruit.
Fleabane	*Conyza* spp.	Nuisance weed	Annual herb. Flowers are produced in summer.

Flinders Range Wattle	*Acacia iteaphylla*	Minor weed	Spreading tree to 5m with pale yellow flowers and long seed pods.
Freesia	*Freesia* spp.	Major weed	Small clumping plants with white flowers.
Geraldton Carnation Weed	*Euphorbia terracina*	Significant environmental weed	Small perennial herb, short lived.
Geranium / Pelargonium	*Pelargonium* spp.	Major weed	Perennial shrub with herbaceous stems to 1.5m. Pink, white, red, mauve flowers
Giant Reed	*Arundo donax*	Nuisance weed Serious weed	Bamboo-like reed to 6m tall with large fluffy flower.
Gladiolus	*Gladiolus* spp.	Major weed	Clumping plant, with corms, to 60cm tall, pink flowers.
Golden Wattle	*Acacia pycnantha*	Minor weed	Upright tree to 8m with long leaves and yellow flowers.
Honey Myrtle	*Melaleuca armillaris*	Minor weed	Compact, upright shrub to 5m with soft needle like leaves and white / pink / mauve flowers.
Honeysuckle / American Box	*Lonicera* spp. *L. japonica*	Minor weed	Climber/creeper with pale yellow highly fragrant flowers.
Hydrocotyl / Shield Pennywort	*Hydrocotyl* spp. *H. ranunculoides* *H. verticillata*	Declared Plant	Aquatic
Ixia	*Ixia* spp.	Potential serious weed	Small clumping plant with corms, with yellow, pink or white flowers.
Jonquil	*Narcissus* spp.	Minor weed	Small bulbous clumping plants with white flowers.
Kikuyu	*Pennisetum clandestinum*	Significant environmental weed	Perennial grass with a creeping rhizome. Active growth period is in spring and summer Flowers in summer.
Lagarosiphon	*Lagarosiphon* spp.	Declared Plant	Aquatic
Lantana	*Lantana* spp.	Minor weed	Shrubs to 3m tall, sometimes 5m tall, straggly varying coloured flowers, black berries.
Lavender (Italian, Allardi, Allards varieties)	*Lavendula* spp.	Minor weed	Small shrubs with aromatic leaves and mauve flowers.
Leafy Elodea	*Egeria densa*	Declared Plant	Aquatic
Lemon-scented Gum	*Eucalyptus citriodora*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeder.
Lions Ears	*Leonotis* spp.	Potential serious weed	Straggly shrubs to 2m with white or orange flowers.

Lippia	*Phyla nodiflora*	Minor weed	Ground covering plant with pale pink flowers.
Mint / Pennyroyal	*Mentha* spp. *M. pulegium*	Declared Plant Major weed	Ground covering herbaceous plants with aromatic mint leaves and small mauve flowers.
Montbretia	*Crocosmia* spp.	Minor weed	Small clumping bulbous plants with orange flowers.
Morning Glory	*Ipomoea indica*	Minor weed	Climber with pale mauve flowers.
Nasturtiums	*Tropaeolum majus*		Yellow/orange/red flowers.
Native Iris	*Dieties* spp.	Minor weed	Clumping plants with white iris like flowers.
Thistle	*Carduus sp.* *Carduus nutans*	Declared Plant	Annual or biannual herb. Flowers in spring and early summer. Seeds are carried on a parachute of simple hairs.
Norfolk Island Hibiscus	*Lagunaria patersonii*	Minor weed	Tree to 15m, small hibiscus like pink flowers.
Olive Tree	*Olea europaea*	Minor weed	Tree to 15m, creamy flowers, black olives.
Pampas Grass	*Cortaderia selloana*	Significant environmental weed	Large clumping grass with tall fluffy spikes.
Parrot's Feather	*Myriophyllum aquaticum*	Declared Plant	Aquatic
Paspalum	*Paspalum dilatatum*	Nuisance weed	Tufted rhizomatic perennial grass, flowers in spring and summer.
Passionfruit	*Passiflora* spp.		Vine or creeper with cream flowers.
Paterson's Curse / Salvation Jane	*Echium plantagineum*	Declared Plant	Upright herbaceous perennial, Purple flowers.
Pepper tree	*Schinus* spp. *S. molle* *S. terebinthifolia*	Minor weed	Upright tree with dense crown, deep green leather leaves, red berries.
Perennial Thistle / Canada Thistle	*Cirsium arvense*	Declared Plant	Herbaceous perennial.
Pigface	*Mesembryanthemum crystallinum*	Minor weed	Spreading groundcover with fleshy leaves and pink flowers.
Pink Satin Bush	*Podalyria sericea*	Minor weed	Dense shrub to 2m, silvery leaves and pale pink flowers.
Pink Star Flower	*Drosanthemum candens*	Minor weed	Spreading groundcover, with pale pink flowers.
Polygala	*Polygala myrtifolia*	Minor weed	Dense shrub to 3m with deep green leaves, and purple and white pea flowers.
Poplar Tree	*Populus* spp.	Suckers prolifically	Tall upright columnar trees.

Poppies	*Papaver* spp.	Minor weed	Upright herbaceous annuals with brightly coloured flowers, seed spreads.
Protea	*Protea* spp.	Minor weed	Upright bushy shrub to 2m
Queensland Silver Wattle / Mt. Morgan Wattle	*Acacia podalyriifolia*	Minor weed	Tree to 3m with silvery leaves and yellow flowers.
Ragwort	*Senecio jacobaea*	Declared Plant	Small herbaceous perennial.
Red Box	*Eucalyptus polyanthemos*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.
Ribwort Plantain	*Plantago lanceolata*	Minor weed	Annual or short lived perennial herb.
Robinia	*Robinia pseudoacacia*	Minor weed	Tall deciduous tree to 15m with spiny stems, and white flowers.
Rose	*Rosa* spp. *R. sinensis* *R. canina*	Minor weed	Straggly climber.
Saffron Thistle	*Carthamus lanatus*	Declared Plant	Herbaceous perennial thistle with cream to yellow flowers.
Salvinia	*Salvinia molesta*	Declared Plant	Small succulent looking plant on surface of water.
Senegal Tea	*Gymnocoronis spilanthoides*	Declared Plant	Aquatic
Sida / Spinyhead / Flannel Weed	*Sida* spp. *S. acuta* *S. cordifolia*	Declared Plant	
Silver Wattle	*Acacia dealbata*	Significant environmental weed	Spreading shrub or tree to 8m, with creamy yellow flowers in early spring and long seed pods. Suckers freely after fire and if roots are damaged.
Skeleton Weed	*Chondrilla juncea*	Declared Plant	
Snowdrops / Snowflake	*Leucojum aestivum*	Minor weed	Bulbous small clumping plants with white snowdrop flowers.
Soursob / Oxalis	*Oxalis* spp. *O. pes-caprae*	Nuisance weed	Perennial herb. Dies off in summer.
Southern Mahogany / Bangalay	*Eucalyptus botryoides*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.
Spotted Gum	*Eucalyptus maculata*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.

St. John's Wort / Tutsan	*Hypericum* spp. *H. perforatum* *H. androsaemum*	Declared Plant	Herbaceous perennial.
Statice	*Limonium* spp.	Potential serious weed	Clumping plants with upright stems with white, pink, yellow, blue and purple papery flowers.
Stinkwort	*Dittrichia graveolens*	Nuisance weed	An annual herb that is summer growing. Flowers late summer.
Sugar Gum	*Eucalyptus cladocalyx*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.
Sunflower	*Helianthus* spp.	Minor weed	Tall upright herbaceous plant with large yellow and brown flowers.
Sweet Pittosporum	*Pittosporum undulatum*	Minor weed	Tree to 7m, white flowers, yellow berries.
Sydney Blue Gum	*Eucalyptus saligna*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.
Sydney Golden Wattle / Sallow Wattle	*Acacia longifolia*	Minor weed	Bushy shrub/tree to 5m, long yellow flowers and seed pods.
Tagasaste	*Chamaecytisus palmensis*	Minor weed	Tall shrubs to 5m, white flowers.
Tamarix	*Tamarix aphylla*	Minor weed	Tree to 10m, pink flowers, suckering.
Tasmanian Blue Gum	*Eucalyptus globulus*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.
African Scurf Pea	*Psoralea pinnata*	Minor weed	Dense shrub to 4m, blue or mauve pea flowers.
Thornapple	*Datura* spp. *D. stramonium* *D. ferox* *D. leichhardtii* *D. wrightii* *D. inoxia* *D. metel*	Declared Plant	Woody perennials.
Tree Mallow	*Lavatera arborea*	Significant environmental weed	Tree to 3m, flowers lilac to purple.
Tree of Heaven	*Ailanthus altissima*	Minor weed	Tree to 25m, yellow flowers. Suckers form and smother low shrubs.
Tutsan, Flair	*Hypericum* x *inodorum*	Declared Plant	Small woody perennial.

Variegated Thistle	*Silybum marianum*	Declared Plant	Tall thistle with variegated leaves. Single purple flower head.
Veldt Grass	*Ehrharta calycina*	Significant environmental weed	Perennial tufting grass. Originally a pasture plant. Actively growing from May to December. Sets seed readily. Flowers in Spring.
Victorian / Coastal Tea Tree	*Leptospermum laevigatum*	Major weed	Upright tall and bushy shrub to 7m, white flowers, fast growing.
Water Hyacinth	*Eichhornia crassipes*	Declared Plant	Aquatic
Water Lettuce	*Pistia stratiotes*	Declared Plant	Aquatic
Watsonia	*Watsonia* spp.	Significant environmental weed	Perennial herb with a creeping rhizome. Dormant during summer with active growth in winter. Flowers in spring and summer. Produces cormels on flowering stalks. Cormels detach and create new outbreaks.
Weeping Willow / Willow	*Salix* spp.	Minor weed	Upright trees, weeping trees with catkins.
White Horse Nettle	*Solanum elaeagnifolium*	Nuisance weed	Small herbaceous plant, sometimes annual or short-lived perennial, yellow and purple flowers, yellow berries.
Wild Oats	*Avena* spp.	Minor weed	A tufted annual grass.
Wild Radish	*Raphanus raphanistrum*	Nuisance weed	An annual herb. Flowers throughout the year, mainly in spring.
Yellow Stringy-bark	*Eucalyptus muelleriana*	Plantation escapees invade bushland	Tall tree, often quick growing and prolific seeders.

References

1 Scheltema, M. and Harris, J. (eds) (1995). *Managing Perth's Bushlands*. Greening Western Australia
2 Hussey, B.M.J., Keighery, G.J., Cousens, R.D., Dodd, J. and Lloyd, S.G. (1997). *Western Weeds – A guide to the weeds of Western Australia*. The Plant Protection Society of WA (Inc)
3

Contacts

- District Agriculture Protection Office – phone the Margaret River office on (08) 9757 2181
- Declared Plants (weeds) – phone (08) 9368 3760, or (08) 9780 6221
- Exotic plant pest and disease hotline – phone 1800 084 881

APPENDIX 2

AGRICULTURE AND RELATED RESOURCES PROTECTION ACT 1976

Agriculture Protection Board

South Perth

Date: 13 March 2006

LIST OF DECLARED ANIMALS

Pursuant to Section 37 of the *Agriculture and Related Resources Protection Act 1976*, the Agriculture Protection Board hereby lists the classes of animals that are for the time being the subject of a declaration made under Section 35 of that Act, together with the matters specified pursuant to subsection (2) of that Section in relation to each class.

The following applies to the list below:

- If a species does not appear in this list and is not an indigenous animal or a fish (Class Pisces), it and hybrids thereof are prohibited as declared animals in categories A1, A2, A3. The meanings of those categories are summarised below. Of these species some (marked *) have been assessed for entry into the state and have been rejected, so they remain prohibited. Prohibited species should be immediately reported.
- Unless otherwise specified, declarations cover the entire State of Western Australia.
- Bird species declared in categories A1, A2, A3 are not to be held in private, public or research facilities outside the statutory zoo except by government departments permitted for that purpose by the Board.
- If a species does not appear in this list and is an indigenous species, it is not regulated under the *Agriculture and Related Resources Protection Act 1976*, but may be regulated under other legislation.
- It is an offence to liberate or attempt to liberate declared animals or to fail to prevent them being at large.
- Conditions for introduction and keeping of declared animals are specified in the Declared Animals regulations or by Board decision and documentation is available showing requirements for each species.
- Of the species not subject to declaration that are exempt, some (marked #) occur in a commensal or feral state and advice may be obtained from the Agriculture Protection Board on control or management of problems which they may occasionally cause.

Declaration categories under the *Agriculture and Related Resources Protection Act 1976*

A1 Entry prohibited.

A2 Subject to eradication in the wild.

A3 Keeping prohibited.

A4 Entry subject to Department of Agriculture permits and/or conditions.

A5 Numbers will be reduced/controlled.

A6 Keeping subject to Department of Agriculture permits and/or conditions.

A7 A management programme for each species outlines the area and conditions under which controls may be applied. Programmes are for the whole of the State or as indicated for each species.

Chris Richardson

Chairman

Agriculture Protection Board

MAMMALS, BIRDS, REPTILES AND AMPHIBIANS

Common Name	***Scientific Name***	**Categories and Other Notes**
Alpaca	*Lama pacos*	Exempt from declaration.
Amazon, Blue-fronted; Blue-fronted Parrot	*Amazona aestiva*	A1, A2, A3*
Amazon, Double yellow-headed; Yellow-headed Parrot	*Amazona ochrocephala oratrix*	A1, A2, A3*
Amazon, Yellow-naped; Yellow-naped Parrot	*Amazona ochrocephala auropalliata*	A1, A2, A3*
Axolotl; Mexican Walking Fish	*Ambystoma mexicanum*	Exempt from declaration.
Bison, American (including hybrids thereof, but excluding Beefalo cattle and all animals of 37.5% and less bison genetic material)	*Bison bison*	A1, A2, A3
Beefalo cattle breed and all animals of 37.5% and less bison genetic material	*Bison bison x Bos taurus* (37.5% or less bison genetic material)	Exempt from declaration.
Blackbird; English Blackbird	*Turdus merula*	A1, A2, A3
Blackbuck	*Antilope cervicapra*	A4, A5, A6
Buffalo	*Bubalus bubalis*	A1, A2, A3 north of 20° parallel of latitude, A5, A6 for remainder of state.
Bulbul, Red-vented	*Pycnonotus cafer*	A1, A2, A3
Bulbul, Red-whiskered	*Pycnonotus jocosus*	A1, A2, A3
Bullfinch; Eurasian Bullfinch	*Pyrrhula pyrrhula*	A1, A2, A3
Caique, Black-headed; Black-headed Parrot	*Pionites melanocephala*	A2, A4, A6
Caique, White-bellied; White-bellied Parrot	*Pionites leucogaster*	A2, A4, A6
Camel, Domestic	*Camelus dromedarius*	Exempt from declaration.
Camel, Feral	*Camelus dromedarius*	A4, A5, A6
Canary, Common	*Serinus canaria*	Exempt from declaration.
Canary, Yellow-fronted; Green Singing Finch	*Serinus mozambicus*	A2, A4, A6
Cardinal, Red-crested	*Paroaria coronata*	Exempt from declaration.
Cat	*Felis catus*	Exempt from declaration. (Feral Cat #)
Cattle	*Bos taurus* *B. indicus*	Exempt from declaration.
Cattle, Banteng	*Bos javanicus*	A4, A5, A6
Chaffinch	*Fringilla coelebs*	A4, A5, A6
Chicken; Domestic Fowl; all bantams; Red Jungle Fowl	*Gallus gallus*	Exempt from declaration.

Cockatoo, Baudin's; Long-billed Black Cockatoo	*Calyptorhynchus baudinii*	A7 The municipal districts within the Perth Metropolitan Region and City of Albany and the Shires of Denmark, Plantagenet, Cranbrook, Gnowangerup, Tambellup, Broomehill, Kojonup, Woodanilling, West Arthur, Wagin, Katanning, Dumbleyung, Williams, Narrogin, Wickepin, Boddington, Wandering, Brookton, Pingelly, Cuballing, Corrigin, Serpentine Jarrahdale, Murray, Waroona, Harvey, Collie, Dardanup, Capel, Donnybrook/Balingup, Busselton, August/Margaret River, Nannup, Bridgetown/Greenbushes, Boyup Brook, Manjimup.
Cockatoo, Sulphur-crested	*Cacatua galerita*	A4, A6 (whole of state), A2 (where at large in areas south of the 20° parallel of latitude)
Condor, Andean	*Vultur gryphus*	A1, A2, A3 *
Conure, Golden-capped	*Aratinga auricapilla*	A2, A4, A6
Conure, Blue-throated	*Pyrrhura cruentata*	A1, A2, A3
Conure, Golden	*Aratinga guarouba*	A1, A2, A3
Conure, Pearly	*Pyrrhura lepida*	A1, A2, A3
Conure, Black-capped	*Pyrrhura rupicola*	A1, A2, A3
Conure, Green-cheeked	*Pyrrhura molinae*	A1, A2, A3*
Conure, Green-cheeked	*Pyrrhura molinae restricta*	A1, A2, A3*
Conure, Jandaya	*Aratinga jandaya*	A2, A4, A6
Conure, Crimson-bellied	*Pyrrhura rhodogaster*	A1, A2, A3*
Conure, Nanday	*Nandayus nenday*	A1, A2, A3*
Conure, Peach-fronted; Golden-crowned Conure	*Aratinga aurea*	A2, A4, A6
Conure, Sun	*Aratinga solstitialis*	A2, A4, A6
Cordon-bleu, Blue-breasted; Blue-breasted Waxbill	*Uraeginthus angolensis*	A2, A4, A6
Cordon-bleu, Blue-capped	*Uraeginthus cyanocephala*	A2, A4, A6
Cordon-bleu, Red-cheeked	*Uraeginthus bengalus*	A2, A4, A6
Corella, Little (Kimberley subspecies)	*Cacatua sanguinea sanguinea*	A7 Shires of Wyndham-East Kimberley and Derby-West Kimberley.
Corella, Little (Pilbara-Murchison and northern wheatbelt subspecies)	*Cacatua sanguinea westralensis*	A7 Shires of Carnarvon, Greenough, Irwin, Mingenew, Perenjori and Three Springs.
Corella, Western (Lake Muir subspecies)	*Cacatua pastinator pastinator*	A7 Shires of Boyup Brook, Cranbrook and Manjimup.
Corella, Western (northern and central wheatbelt subspecies)	*Cacatua pastinator butleri*	A7 Shires of Irwin, Mingenew, Morawa, Mullewa, Perenjori and Three Springs.
Crow, House; Indian or Ceylon Crow	*Corvus splendens*	A1, A2, A3

Deer, Fallow	*Dama dama*	A5, A6
Deer, Red; Wapiti; Elk	*Cervus elaphus*	A5, A6
Deer, species within the family Cervidae other than Red and Fallow Deer	Family *Cervidae* (other than *Dama dama* and *Cervus elaphus)*	A1, A2, A3
Dingo	*Canis familiaris dingo*	A7
Dingo-dog hybrids	*Canis familiaris dingo* x *Canis familiaris familiaris*	A5
Dog, Domestic	*Canis familiaris familiaris*	A5 (when running wild in agricultural and pastoral areas)
Donkey, Domestic	*Equus asinus*	Exempt from declaration.
Donkey, Feral	*Equus asinus*	A4, A5, A6
Dove, Collared; Collared Turtle-dove; Indian Ring Dove; Barbary Dove (fawn or white variations)	*Streptopelia decaocto*	A1, A2, A6
Dove, Namaqua; Cape Dove	*Oena capensis*	A2, A4, A6
Dove, Ruddy Ground; Talpacoti	*Columbina talpacoti*	A2, A4, A6
Duck, Australian Wood; Maned Goose	*Chenonetta jubata*	A7 South-west and Eucla Divisions excluding those municipal districts within the Perth Metropolitan Region.
Duck, domestic breeds only	*Anas spp.*	Exempt from declaration.
Duck, Mallard; Mallard	*Anas platyrhynchos*	Exempt from declaration.
Duck, Mandarin	*Aix galericulata*	A2, A4, A6
Duck, Muscovy	*Cairina moschata*	Exempt from declaration.
Emu	*Dromaius novaehollandiae*	A7
Euro	*Macropus robustus*	A7
Ferret, Domestic	*Mustela putorius furo*	Exempt from declaration.
Finch, Bamboo Parrot; Tawny-breasted Parrot Finch	*Erythrura hyperythra*	A2, A4, A6
Finch, Green-faced Parrot	*Erythrura viridifacies*	A1, A2, A3*
Finch, House	*Carpodacus mexicanus*	A1, A2, A3
Finch, Pin-tailed Parrot	*Erythrura prasina*	A1, A2, A3*
Finch, Red-billed Fire	*Lagonosticta senegala*	Exempt from declaration.
Finch, Red-headed Parrot	*Erythrura cyaneovirens*	A2, A4, A6
Finch, Red-throated Parrot; Red-faced Parrot Finch	*Erythrura psittacea*	Exempt from declaration.
Finch, Tri-coloured Parrot; Three-coloured Parrot Finch; Tanimbar Parrot Finch	*Erythrura tricolor*	A2, A4, A6
Fody, Madagascan Red; Madagascar Weaver	*Foudia madagascariensis*	A2, A4, A6
Fox; Red Fox	*Vulpes vulpes*	A5
Galah	*Cacatua roseicapilla*	A7
Goat, Domestic	*Capra hircus*.	Exempt from declaration
Goat, Feral	*Capra hircus*	A4, A5, A6
Goldfinch; Eurasian Goldfinch	*Carduelis carduelis*	Exempt from declaration.

Goose, Canada	*Branta canadensis*	A1, A2, A3*
Goose, Egyptian	*Alopochen aegyptiacus*	A2, A4, A6
Goose, Greylag and All Domestic Strains	*Anser anser*	Exempt from declaration.
Goose, Swan; Chinese Goose	*Anser cygnoides*	Exempt from declaration
Grassquit, Blue-black; Jacarini Finch	*Volatinia jacarina*	Exempt from declaration.
Grassquit, Cuban; Cuban Finch	*Tiaris canora*	Exempt from declaration.
Greenfinch Himalayan; Black-headed Greenfinch; Yellow-breasted Greenfinch	*Carduelis spinoides*	A1, A2, A3*
Greenfinch, Oriental	*Carduelis sinica*	A2, A4, A6
Greenfinch; European Greenfinch	*Carduelis chloris*	A1, A4, A6
Grenadier, Purple; Purple Grenadier Waxbill	*Uraeginthus ianthinogaster*	A1, A2, A3*
Guinea Pig, Domestic	*Cavia porcellus*	Exempt from declaration.
Guineafowl, Helmeted	*Numida meleagris*	Exempt from declaration.
Horse	*Equus caballus*	A5 (when running wild in agricultural and pastoral areas)
Kangaroo, Red	*Macropus rufus*	A7
Kangaroo, Western Grey	*Macropus fuliginosus*	A7
Llama	*Lama glama*	Exempt from declaration.
Lorikeet, Rainbow	*Trichoglossus haematodus*	A2 (where at large in areas south of the 20° parallel of latitude excluding the Perth Metropolitan area)
Lory, Black-capped	*Lorius lory*	A1, A2, A3*
Lory, Chattering	*Lorius garrulus*	A1, A2, A3*
Lory, Dusky	*Pseudeos fuscata*	A2, A4, A6
Lory, Red	*Eos bornea*	A1, A2, A3*
Lory, Yellow-bibbed	*Lorius chlorocercus*	A1, A2, A3*
Lovebird species hybrids	*Agapornis spp.*	A2, A4, A6
Lovebird, Black-cheeked	*Agapornis nigrigenis*	A2, A4, A6
Lovebird, Fischer's	*Agapornis fischeri*	A2, A4, A6
Lovebird, Masked	*Agapornis personatus*	A2, A4, A6
Lovebird, Nyasa	*Agapornis lilianae*	A2, A4, A6
Lovebird, Peach-faced	*Agapornis roseicollis*	A2, A4, A6
Macaw, Blue and Yellow; Blue and Gold Macaw	*Ara ararauna*	A2, A4, A6
Macaw, Green-winged	*Ara chloropterus*	A2, A4, A6
Macaw, Red-fronted	*Ara rubrogenys*	A2, A4, A6
Macaw, Red-shouldered; Hahn's Macaw	*Ara nobilis* *Diopsittaca nobilis*	A1, A2, A3*
Macaw, Hyacinth	*Anodorhynchus hyacinthinus*	A2, A4, A6
Macaw, Scarlet	*Ara macao*	A2, A4, A6
Mannikin, Bronze-winged; Bronze Mannikin; Hooded Weaver	*Lonchura cucullata*	A2, A4, A6

Mannikin, Chestnut; Tri-coloured Mannikin; Black-headed Munia; Black-headed Nun	*Lonchura malacca*	A1, A2, A6
Mannikin, Nutmeg; Spice Finch; Spotted Munia; Scaly-breasted Munia	*Lonchura punctulata*	A1, A2, A6
Mannikin, Rufous-backed; Rufous-backed Munia; Red-backed Mannikin; Chestnut Munia; Brown-backed Munia	*Lonchura bicolour nigriceps*	A1, A2, A3*
Mesia, Silver-eared	*Leiothrix argentauris*	A1, A2, A3*
Mouse, House	*Mus musculus*	Exempt from declaration. #
Munia, White-headed	*Lonchura maja*	A2, A4, A6
Munia, White-rumped; Bengalese Mannikin	*Lonchura striata*	A2, A4, A6
Myna, Common; Indian Myna(h); Indian House Myna(h)	*Acridotheres tristis*	A1, A2, A3
Ostrich	*Struthio camelus*	A5 (when running wild in agricultural and pastoral areas)
Parakeet, Alexandrine	*Psittacula eupatria*	A2, A4, A6
Parakeet, Blossom-headed	*Psittacula roseata*	A1, A2, A3
Parakeet, Derbyan	*Psittacula derbiana*	A2, A4, A6
Parakeet, Malabar	*Psittacula columboides*	A2, A4, A6
Parakeet, Moustached	*Psittacula alexandri*	A2, A4, A6
Parakeet, Plum-headed	*Psittacula cyanocephala*	A2, A4, A6
Parakeet, Red-fronted; Red-fronted Kakariki	*Cyanoramphus novaezelandiae*	A2, A4, A6
Parakeet, Rose-ringed; Indian or African Ringneck Parrot or Parakeet	*Psittacula krameri*	A2, A4, A6
Parakeet, Yellow-fronted; Yellow-fronted Kakariki	*Cyanoramphus auriceps*	A2, A4, A6
Parrot, Grey; African Grey Parrot	*Psittacus erithacus*	A1, A2, A3*
Parrot, Meyer's; Brown Parrot	*Poicephalus meyeri*	A2, A4, A6
Parrot, Red-bellied	*Poicephalus rufiventris*	A1, A2, A3*
Parrot, Red-capped; WA King Parrot	*Purpureicephalus spurius*	A7 Municipal districts of the Shires of Bridgetown-Greenbushes, Capel, Chittering, Donnybrook-Balingup, Harvey, Kalamunda, Manjimup, Mundaring, Murray, Plantagenet, Serpentine-Jarrahdale, Swan, and the City of Armadale.
Parrot, Red-fronted; Jardine's Parrot	*Poicephalus gulielmi*	A1, A2, A3*
Parrot, Senegal	*Poicephalus senegalus*	A1, A2, A3*
Parrot, Western Grey; African Grey Parrot	*Psittacus erithacus timneh*	A1, A2, A3*
Partridge, Chukar; Chukor or Chukka Partridge	*Alectoris chukar*	A2, A4, A6
Peafowl, Common	*Pavo cristatus*	Exempt from declaration.

Peafowl, Green	*Pavo muticus*	Exempt from declaration.
Pheasant, Golden	*Chrysolophus pictus*	Exempt from declaration.
Pheasant, Himalayan Monal; Impeyan Pheasant	*Lophophorus impejanus*	Exempt from declaration.
Pheasant, Kalij	*Lophura leucomelanos*	Exempt from declaration.
Pheasant, Lady Amherst's	*Chrysolophus amherstiae*	Exempt from declaration.
Pheasant, Reeves'	*Syrmaticus reevesii*	Exempt from declaration.
Pheasant, Ring-necked	*Phasianus colchicus*	A2, A4, A6
Pheasant, Siamese Fireback	*Lophura diardi*	Exempt from declaration.
Pheasant, Silver	*Lophura nycthemera*	A2, A4, A6
Pheasant, Swinhoe's	*Lophura swinhoii*	Exempt from declaration.
Pig, Domestic	*Sus scrofa*	Exempt from declaration.
Pig, Feral	*Sus scrofa*	A4, A5, A6
Pigeon, Domestic; Rock Pigeon	*Columba livia*	Exempt from declaration. #
Pigeon, Luzon Bleeding Heart	*Gallicolumba luzonica*	Exempt from declaration.
Pigeon, White-breasted Ground; Jobi Island Dove	*Gallicolumba jobiensis*	Exempt from declaration.
Pytilia, Crimson-winged; Aurora Finch	*Pytilia phoenicoptera*	Exempt from declaration.
Pytilia, Green-winged; Melba Finch	*Pytilia melba*	Exempt from declaration.
Quail, Bobwhite; Northern Bobwhite	*Colinus virginianus*	A1, A2, A3*
Quail, California	*Lophortyx californica*	A1, A2, A3
Quail, Japanese	*Coturnix japonica*	A2, A4, A6
Quelea, Red-billed; Red-billed Weaver; Dioch	*Quelea quelea*	A1, A2, A3
Rabbit, domestic and commercial breeds NOT EUROPEAN WILD RABBIT	*Oryctolagus cuniculus*	A5 (running wild)
Rabbit, European Wild	*Oryctolagus cuniculus*	A1, A3, A5
Rat, Black	*Rattus rattus*	Exempt from declaration. #
Rat, Brown	*Rattus norvegicus*	Exempt from declaration. #
Rat, Long-haired	*Rattus villosissimus*	A7 Municipal district of the Shire of Wyndham - East Kimberley.
Raven, Australian	*Corvus coronoides*	A7 Eucla and South-west Divisions, excluding those municipal districts within the Perth Metropolitan Region.
Redpoll	*Carduelis flammea*	A4, A5, A6
Rhea, Greater	*Rhea americana*	A4, A5, A6
Ringneck, Australian; Port Lincoln Ringneck; Twenty-eight Parrot	*Barnardius zonarius*	A7 South-west Division, excluding those municipal districts within the Perth Metropolitan Region and the Cities of Albany, Bunbury and Mandurah.
Robin, Pekin	*Leiothrix lutea*	A1, A2, A3*
Scaup, New Zealand	*Aythya novaeseelandiae*	A2, A4, A6
Seedeater, White-rumped; Grey Singing Finch	*Serinus leucopygius*	A1, A2, A3*

Seedeater Yellow-rumped; Angolan Singing Finch	*Serinus atrogularis*	A1, A2, A3*
Sheep	*Ovis aries*	Exempt from declaration.
Shelduck, Australian; Mountain Duck	*Tadorna tadornoides*	A7 South-west and Eucla Divisions excluding those municipal districts within the Perth Metropolitan Region.
Shelduck, Paradise	*Tadorna variegata*	A2, A4, A6
Shelduck, Ruddy	*Tadorna ferruginea*	A1, A2, A3
Silverbill, African	*Lonchura cantans*	A1, A2, A3*
Silverbill, Indian; White-throated Munia; Common Silverbill	*Lonchura malabarica*	A2, A4, A6
Silvereye	*Zosterops lateralis*	A7 South-west Division.
Siskin, European; Spruce Siskin	*Carduelis spinus*	A2, A4, A6
Siskin, Hooded; Yellow Siskin; Black-hooded Yellow	*Carduelis magellanica*	A2, A4, A6
Siskin, Red; Venezuelan Siskin; Black-hooded Red Siskin	*Carduelis cucullata*	A2, A4, A6
Sparrow, House	*Passer domesticus*	A1, A2, A3
Sparrow, Java; Paddy Finch	*Padda oryzivora*	A4, A5, A6 (In areas south of 260 parallel of latitude) A1, A2, A3 (rest of state)
Sparrow, Paradise; Aberdeen Finch; Red-headed Amadina	*Amadina erythrocephala*	A2, A4, A6
Sparrow, Tree; Eurasian Tree Sparrow	*Passer montanus*	A1, A2, A3
Squirrel, Indian Palm	*Funambulus pennanti*	A1, A3, A5
Starling, Common	*Sturnus vulgaris*	A1, A2, A3
Strawberry Finch, Green; Green Munia; Green Avadavat	*Amandava formosa*	A2, A4, A6
Strawberry Finch, Red; Red Munia; Red or Indian Avadavat; Tiger Finch; Red Waxbill	*Amandava amandava*	A2, A4, A6
Swan, Mute; White Swan	*Cygnus olor*	Exempt from declaration.
Thrush, Song; English Song Thrush	*Turdus philomelos*	A1, A2, A3
Toad, African	*Xenopus laevis*	A1, A2, A3
Toad, Cane; Giant Toad	*Bufo marinus*	A1, A2, A3
Turkey, Common	*Meleagris gallopavo*	Exempt from declaration.
Turtle-Dove, Laughing	*Streptopelia senegalensis*	Exempt from declaration. #
Turtle-Dove, Spotted	*Streptopelia chinensis*	Exempt from declaration. #
Twin-spot, Dybowski's	*Euschistospiza dybowskii*	A2, A4, A6
Twin-spot, Peters'	*Hypargos niveoguttatus*	A1, A2, A3*
Wallaby, Agile	*Macropus agilis*	A7 Municipal districts of the Shires of Wyndham-East Kimberley, West Kimberley, Halls Creek and Broome.

Waxbill, Black-rumped; Red-eared Waxbill	*Estrilda troglodytes*	A2, A4, A6
Waxbill, Common; St Helena Waxbill	*Estrilda astrild*	A2, A4, A6
Waxbill, Lavender; Lavender Finch	*Estrilda caerulescens*	Exempt from declaration.
Waxbill, Orange-cheeked	*Estrilda melpoda*	A2, A4, A6
Waxbill, Violet-eared; Common Grenadier	*Uraeginthus granatina*	A1, A2, A3*
Waxbill, Zebra; Golden-breasted Waxbill; Orange-breasted Waxbill	*Amandava subflava*	Exempt from declaration.
Weaver, Cut-throat; Cut-throat Finch; Ribbon Finch	*Amadina fasciata*	A2, A4, A6
Weaver, Grenadier; Red Bishop; Orange Bishop Weaver; Northern Red Bishop Weaver	*Euplectes orix*	A4, A5, A6
Yellowhammer	*Emberiza citrinella*	A4, A5, A6

INSECTS AND MOLLUSCS

Common Name	***Scientific Name***	**Categories and Other Notes**
Ant, Argentine	*Iridomyrmex humilis*	A1, A5
Beetle, Confused Flour	*Tribolium confusum*	A1, A5
Beetle, Flat Grain	*Cryptolestes spp*	A1, A5
Beetle, Khapra	*Trogoderma granarium*	A1, A5
Beetle, Rust-red Flour	*Tribolium castaneum*	A1, A5
Beetle, Sawtooth Grain	*Oryzaephilus surinamensis*	A1, A5
Beetle, Warehouse	*Trogoderma variabile*	A1, A5
Borer Boxwood	*Heterobostrychus brunneus* Murr	A1, A2, A3
Borer, European House	*Hylotrupes bajulus*	A2,A3 for those areas of the State constituted to be Priority Management Zones under the *ARRPA EHB Regulations* A1,A3 for remainder of State
Borer, Lesser Grain	*Rhyzopertha dominica*	A1, A5
Drywood termite	*Cryptotermes domesticus* (Haviland)	A1, A2, A3
Fly, Mediterranean Fruit	*Ceratitus capitata*	A1, A2
Fly, Queensland Fruit	*Bactrocera tryoni*	A1, A2
Grasshopper, Small Plague	*Austroicetes cruciata*	A5
Lesser auger beetle	*Heterobostrychus aequalis* (Waterhouse)	A1, A2, A3
Locust, Australian Plague	*Chortoicetes terminifera*	A5
Moth, Angoumois Grain	*Sitotroga cerealella*	A1, A5
Moth, Codling	*Cydia pomonella*	A1, A2
Moth, Indian Meal	*Plodia interpunctella*	A1, A5
Moth, Warehouse	*Ephestia spp*	A1, A5

Snail, Green	*Helix aperta*	A1, A2, A3
Snail, Liver-fluke; Lymnaea Snail	*Lymnaea viridis*	A1, A3, A5
Snail, Liver-fluke; Lymnaea Snail	*Lymnaea auricularia*	A1, A3, A5
Snail, Liver-fluke; Lymnaea Snail	*Lymnaea peregra*	A1, A3, A5
Snail, Liver-fluke; Lymnaea Snail	*Austropeplea tomentosa*	A1, A3, A5
Snail, Liver-fluke; Lymnaea Snail; American Ribbed Fluke Snail	*Pseudosuccinia columella*	A1, A3, A5
Termite, Giant	*Mastotermes darwiniensis*	A1, A5
Trogoderma	*Trogoderma spp.*	A1, A5
Wasp, European	*Vespula germanica*	A1, A2, A3
Weevil, Granary	*Sitophilus granarius*	A1, A5
Weevil, Rice	*Sitophilus oryzae*	A1, A5
West Indian drywood termite	*Cryptotermes brevis*	A1, A2, A3
Western drywood termite	*Incisitermes minor* (Hagen)	A1, A2, A3

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1. Christidis, L., and Boles, W. E. (1994). The Taxonomy and Species of Birds of Australia and its Territories. Royal Australasian Ornithologists Union, Monograph 2. RAOU, Melbourne.

2. Barrett, G., Silcocks, A., Barry, S., Cunningham, R., and Poulter, R. (2003). 'The New Atlas of Australian Birds' Birds Australia. Royal Australasian Ornithologists Union.

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APPENDIX 3

LAND FOR WILDLIFE

Wildlife Notes

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT No. 4 September 1997
Information Notes for the *Land for Wildlife* Scheme in Western Australia

Seed collection from native plants

Keywords:	seed, selection, picking, seed types, storage, wildflowers.
Location:	South-west WA
Authors:	Keith Bradby & Vicky Morris

Each picking situation presents its own challenges. Once you have learnt the basic principles, you then have to start using your own ingenuity. Be observant and adaptable, as virtually every plant will require some modification to the general technique of collection. A good guiding principle to seed collection is firstly to obtain the correct license for picking, and secondly to ensure that your actions will not harm the plant from which you are taking the seed, and that the seed you harvest will be usable for your purposes.

SEED SELECTION

You first need to identify the species of flora that you require seed from. This may be through literature or matching up soil types. You then must locate a suitable population of the plant species you are after. This will need to have sufficient seed for your purposes, and be in an area that you can legally pick from. Ideally, collection should be from a decent-sized area of bush if possible with no roadside collection.

The seed needs to be checked for ripeness and for the level of insect attack. For ripeness, cut a fruit capsule or pod open and check the seed for `firmness', much as you would a grain crop. The level of insect attack will vary, but in many areas where there are few small birds, it is not unusual for most seed to be full of small grubs. This can make it impossible to collect large quantities of viable seed. It maybe worthwhile to note that the most accessible seed is not necessarily the best.

To preserve a broad genetic base in your future plantings, it is important that you get your seed from more than one plant, and pick from as many as possible. It is also important to bear in mind the end purpose of the seed. If it is to rehabilitate a salty area, pick your seed from those plants that are closest to the salt, as they may carry increased salt tolerance. If it is for a garden, some of the plants you are picking from may have a special feature such as a more attractive "weeping" habit than others, or unusual flower colours. Keep in mind that approximately


Hakea cristata
Snail hakea

80% of the resulting plants will take after the seed-bearing plant rather than the pollen-producing plant, especially if collecting from gardens.

If your purpose is to rehabilitate an area of local bushland, remember that in Western Australia the regional variation within plant species can be considerable, so it is important to pick your seed from similar habitat as close as possible to the area you are intending to replant.

EQUIPMENT

Depending on the nature of the plant you are collecting seed from and the type of collection method you intend to use, there are a few basic tools which will be necessary. A first-aid kit is a must with any activity in case of emergency (for example, some people are allergic to certain types of plants; some plants are very prickly and could cause injury). A container to transport the collected seed will be required, as well as some form of labeling the species collected and the date and area of collection (many species produce similar looking seed). Eye protection, a sieve, a pair of secateurs or pruning saw and perhaps a ladder may be useful when collecting seed-bearing stems. The best results are obtained when the equipment for collection is kept scrupulously clean and serviced, which also helps prevent spreading any infections from one seed source to another. Blunt and dirty secateurs will be more likely to cut you than the plant!

PICKING

Fruit types

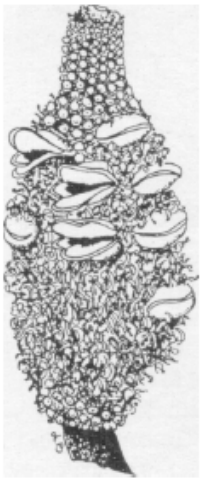
The seed `container' in the bush has a variety of forms, ranging from large woody fruits (eg. *Hakeas, Banksias),* smaller 'nuts'(eg. *Eucalyptus,* sheoak), pods (eg. wattles), or tiny swollen ovaries (eg. *Calytrix)* at the base of shrivelled flower parts.

Successful seed picking generally tries to mimic the natural mechanisms used by the plant to release the seeds from their containers, with the seed ending up where we want it, not where the plant would otherwise spread it.

Based on how they release their seed, most plants fit into one of three main groups:

1. Fire openers - these store the seed for various periods (often several years), only releasing it after the plant is burnt in a bush fire, eg. *most Banksias, Xylomelum spp*, and some *Hakeas*.
2. Drying openers - these can hold the ripe seed for extended periods, but eventually the fruit dries out and the seed falls, eg. *Eucalyptus spp, Melaleuca* spp.
3. Once-a-season producers - these drop their seed (or sometimes throw it!) once the seed has ripened after flowering, eg. *Anigozanthus* (Kangaroo Paws), *Acacias, Kennedias.*

1. FIRE OPENERS



Winged Seed

Banksia attenuata
Slender Banksia

The most obvious of these is the *Banksias,* which have a woody cone with numerous follicles (the woody seed-containing `eyes') which, when cracked by heat, open to release two winged seeds and a central woody separator. The seeds are ripe about twelve months after flowering - look for fruits where the follicles are hard and brown.

The easiest way of collecting the seed from fire openers is to follow a fire, picking the fruits (cones) as soon as possible after the fire has passed. This method is not generally recommended for the average casual picker as hazards in the form of ash beds do occur! It is generally best to get the seed within 24 to 48 hours, depending on weather conditions. (It will drop faster in higher temperatures). Care should be taken, however, to ensure sufficient fruit are retained on the plants for regeneration after the fire. It is recommended that only 1 in 10 fruit are harvested after fire.

Banksia fruit can also be piled into a heap (1-2 bags per heap) and soaked with approximately 3-5 litres of mixed kerosene and sump oil and set alight to create the heat required to open the follicles. When alight the heap should be turned with a rake. It must be noted, however, that temperatures over 60 degrees Celsius are destructive to seed, so as soon as you notice the follicles start to open remove the cones from the heat.

The aim is to evenly subject each nut to intense flash heat. Have a hose handy to thoroughly wet the nuts after the follicles have cracked. And be careful, singed eyebrows regrow reasonably fast, but singed skin is painful and the scars can be permanent!

Whether collected burnt, or burnt after collection, only a certain amount of seed falls out straight away. The fruits generally require a period of successive wetting and drying before they drop all their seed.

As long as the weather is not too cold or wet (ie. for more than two days), the best method is to place the fruits outside on a well drained surface which will hold the seed. Most seed should be out within 3-4 weeks - the rest probably isn't worth bothering about. Possibly the best surface for drying on is shade cloth as it lets the moisture, dust, and ash, but not the seeds, through.

During wet periods the nuts could be spread in the warmest part of your shed, and shifted out into the rain for a day every few weeks.

It is also possible to remove seed in a microwave oven, but it is easy to `cook' and so kill them, therefore this method is not recommended.

Other bushes burnt to collect the seed include *Dryandras, Petrophiles and Isopogons.* Fruiting heads can be laid on the ground and given a thin spray of petrol. The leaves often provide much of the heat once they are started, and you need to wet them down before the fire affects the seed.

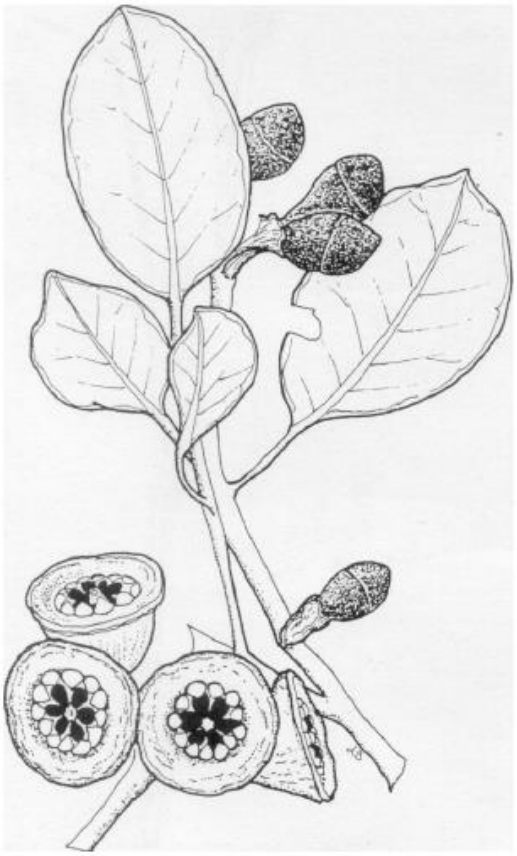
2. DRYING OPENERS

The main types of these are the smaller woody fruits that open from central valves to release a much finer seed, such as *Eucalyptus spp, Allocasuarina spp* and *Melaleuca* spp, and the woody fruits which split to release two seeds, such as *Hakeas*.

They generally ripen about 12 months after flowering, although some species can take 2 - 3 years to mature, such as *Callistemon phoeniceus,* which may contain several years' seeds along their stems. The fruit hardens, generally loses its green colour, and the valves, or join, becomes clearly defined. The seed can be checked for dryness and good colour by cutting through the "nut".

To release seed, place stems and branchlets holding ripe fruit on a tarpaulin in a warm dry place. If drying the fruit outside, the use of fine weed mesh is good insurance because if it rains, the moisture will drain away. The seed will drop within 3-4 days in summer, longer in cooler weather. Ensure that strong winds cannot blow away the released seed. Note that no heat treatment is required for this group, which also includes *Kunzeas, Grevilleas* and *Hardenbergias*.

Remember to leave at least two thirds of the fruits on each plant for natural regeneration.



Eucalyptus preissiana
Bell-fruited mallee

Melaleuca brevifolia
Dwarf salt honey-myrtle

3. ONCE-A-SEASON PRODUCERS

These are often the very hardest to collect seed from. Most of these plants makeup the spring profusion of flower and drop their seed between the middle of October and the middle or end of January. Although there are many, many different types of fruit and seed release mechanisms involved, which you can never completely work out, the basic principles are reasonably simple.

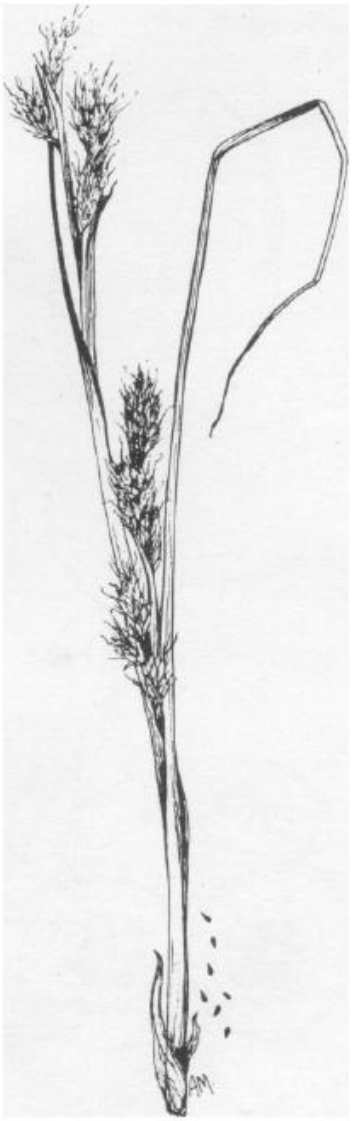
You generally have to try to assess when the seed will be ripe. This requires regular checks on the ripening progress. It's a skill you will only get better at with experience.

Generally cool weather means seed will ripen slowly, but beware of those few hot days toward the end of December and the New Year, particularly if it's also windy.

The seed can go from green, to pickable, to lying on the ground faster than you thought possible, and generally all the species you are trying to pick will choose the same hot spell to ripen.

Even under reasonable conditions, patches of a species will often ripen unevenly. On the same plant seed can be ripe, ripening and green. You have to make a judgment on the best time, but generally 'later' is better. Early ripened seed is often unviable. Green seed should be left on the bush for regeneration of the species irrespective of the ripeness, some seed should be left on each plant that is harvested from.

Kennedia prostrata
Running postman



Gahnia trifida
Coast saw-edge or cutting grass

The main picking methods are:

Tarping

Many seeds and pods can be shaken off the bush when ripe. Spread tarps underneath, and either shake the bush or hit the pods with a stick or a piece of flexible pipe. A garden rake is often useful for combing the pods off. Depending on the species, tarping can generally only be done after the morning dew has dried off and, with the larger trees, before a breeze or a wind comes up. This is quite often difficult to do, as the wind often blows away the seed or the tarp! A few heavy rocks may help keep the tarp in place.

Binning

Smaller bushes can often be stripped by hand into large plastic rubbish bins.

Stem cutting

Often wattles and similar plants grow too close to the ground for tarping. In this case, stems holding ripe seed need to be cut and laid on a mesh, where the seed can be threshed off by walloping them with a pitchfork. Note that only seed bearing stem ends should be cut, and some leaves left on the plant below the cut to assist regrowth. No more than a total of 3 0% should be removed from any one plant. This ensures that sufficient stems with leaves remain on the plants to enable them to recover.

Some plants, such as *Kennedias,* ripen very unevenly. When some pods are ripe the stems can be cut and laid in a cool place (often under shade cloth) and many of the remainder will ripen by drawing on the moisture in the stems. Seeds that `pinch out' are unviable and can generally be winnowed out.

Stem cutting is often also the most effective way to collect small fruit. Occasionally, as with kangaroo paws, the seed pod is collected when it starts to open, but then `freezes' and won't open to release all the seed. The fruits need to be dried thoroughly, and then crushed to free the seed. This can be done by hand, by placing the pods on a concrete floor and walking over them, or by running them through a small thresher.

Desperate measures

If you got to your patch too late, then don't despair. With wattles and other plants with large hard seeds it is sometimes possible to sweep or shovel the seed off the ground, so that the dirt and leaf litter can be sieved out. Small battery-operated vacuum cleaners may prove useful for this task.

DRYING, CLEANING AND STORING

For much of the year drying can be done outside, and moisture from any rain or dew helps the fruit `work' the seed out. Any clean surface will do to dry your seed on. The most effective is the rolls of woven polythene weed mesh, which retains the finest seed, but lets any rain or moisture through (plastic bags are NOT appropriate).

The stems or pods should be spread reasonably thinly on the mesh or tarpaulins, and turned every few days. Extreme care should be taken to ensure that the mesh or tarp is secured down against strong winds, and that sand and dust will not be blown or walked onto tarps holding fine seeds. Some pods, such as *Kennedias,* need shade cloth or fly wire over them to stop the seed `pinging' everywhere as the pods explode open.

Even when it is on your tarp there can be a bit of competition for the seed. Ants are often very appreciative of your effort in bringing so much seed to a convenient point for them, and you may need to shift the seed, or spread an ant deterrent, or spray a surface insecticide around the tarp. Occasionally some birds will browse over your pods, but these are rarely a cause for concern, unless it is a mallee fowl on a tarp of its favourite wattle.

Once the stems or pods have been removed, the remaining material can be hand sieved, which generally requires a number of different sized sieves. Light material can generally be winnowed out *(a la* peasant grain cleaning techniques). With a number of species, such as *Banksias* and *Dryandras,* the seed will sink if placed in water, and much of the other material can be skimmed from the top of the water.

If the seed is for a local revegetation project using the direct seeding method it does not need to be very clean, unless you want to know the weight to use per hectare. However, be warned that seed mixed with other material soon becomes bug infested. Producing a perfectly clean seed sample can be quite laborious, and is only really necessary if you want to sell the seed, or store it for an extended period.

Before storing seed, even if only for a short period, make sure that it is perfectly dry. If possible, spread a thin layer over a tarp or metal tray and leave in a warm position for a day or two.

Clean seed will keep for varying lengths of time if stored properly and regularly checked. Many species will last quite a few seasons, however some species *of Grevillea* will not. Store seed in a rodent-proof, dry, almost airtight container in a cool, dark and dry place (even your fridge). A small piece of Shelltox pest strip, renewed every six months or so, will kill any bugs that may appear.

If you are selling seed (for which you will need a license) it needs to be perfectly clean. Some seeds clean relatively easily, others need machine cleaning or even picking through by hand. If selling to a seed firm, discuss this with them, as they can probably arrange the final cleaning for you.

Cleaning up

Using the simple approaches outlined in this leaflet, it is possible to collect quite large quantities of seed. In doing so, you will also collect a much greater amount of stems or pods. Even after you have taken most of the seed away, these will still contain seed, and can be quite useful for regeneration.

If tarping on site, the residue should always be spread thinly over the site, so that it does not become a fire hazard. Wherever possible, the residue (and your screenings) should be spread over the area you are regenerating, as it will provide useful ground cover, and organic matter, as well as adding some extra seed.

RULES AND REGULATIONS

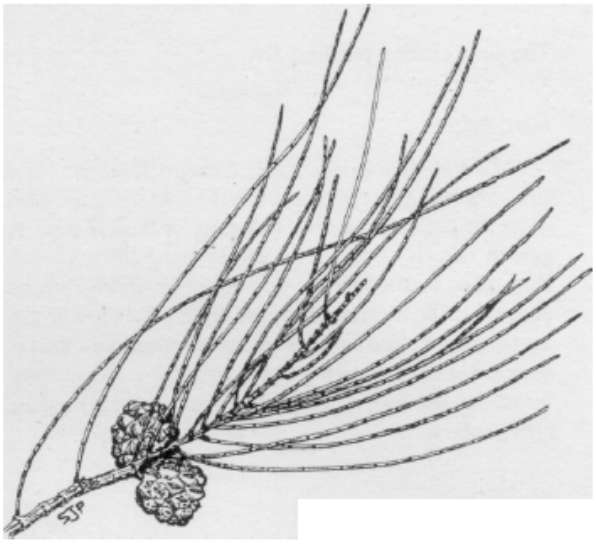
by Sarah McEvoy

The laws governing flora conservation are contained in the Wildlife Conservation Act and its regulations, which are administered by the Department of Conservation and Land Management.

Flora native to Western Australia is protected under this Act, which means that regulations exist regarding the harvest of that flora. Certain flora that is considered to be threatened with extinction is declared as rare flora under the Act, and such flora is given special protection, and may not be harvested without the permission of the Minister for the Environment, on any lands.

Protected flora other than declared rare flora may be harvested for seed as specified below. On Crown land seed can only be taken where the person taking the seed holds a license issued by CALM. There are two types of Crown land licenses which may apply to people wishing to harvest seed. A Commercial Purposes license is required if the flora is to be taken for a commercial purpose (which would include minesite rehabilitation, or any circumstance where the seed picker obtains any gain, either direct or indirect, from disposing of the seed). The fee for this license is $100.00 per annum.

Where the harvesting of seed is for non-commercial propagation, such as local rehabilitation by a community group, a Scientific or Other Prescribed Purposes license can be obtained. The fee for this license is $10.00 per annum.



Allocasuarina fraseriana
Common sheoak

Even when a license is held, all pickers must obtain the permission of the land manager before picking in any vested Crown land (eg, State Forest, Water Reserves, etc). Both the Commercial Purposes license and the Scientific or Other Prescribed Purposes license generally preclude the taking of flora from the conservation estate - ie, National Parks and Nature Reserves.

On private land, protected flora can only be taken by the owner or occupier of the land, or by a person who has the owner or occupier's consent to take the flora. If the flora is to be sold, the owner or occupier must hold a Commercial Producer's or Nurseryman's license. The fee for this license is $25.00.

Further specific conditions are attached to each license and are designed to ensure that sustainable harvesting occurs. For further information about licensing contact CALM's Wildlife Branch on (08) 9334 0455.

About the Authors

Keith Bradby and Vicki Morris have collected seed commercially and for use in revegetation projects for many years.

Sarah McEvoy is a consultant ecologist, who formerly worked for CALM as Flora Industry Botanist.

Diagrams by
Anne Miles from What Seed is That, Greening Australia (South Australia)
Louise Burch from Banksias of the Wellstead District and Eucalypts of the Wellstead District, Wellstead Land Conservation District Committee. Margaret Pieroni and Sue Patrick from 'Leaf and Branch', Trees and Tall Shrubs of Perth, CALM. Used with permission.

Published by the Department of Conservation and Land Management, Perth.
All correspondence should be addressed to: The Editor 'Wildlife Notes', CALM Wildlife Branch, Locked Bag 104, Bentley Delivery Centre, WA 6983. Phone: (08) 9334 0530, Fax (08) 9334 0278

Attachment 3: Conservation Covenant (Restrictive) Lot 341 Balmoral Road, Jarrahdale

FORM B2

APPROVAL NO. B1863

COPY

WESTERN AUSTRALIA
TRANSFER OF LAND ACT 1893 AS AMENDED

BLANK INSTRUMENT FORM

RESTRICTIVE COVENANT

(Note 1)

DESCRIPTION	**DEED OF COVENANT FOR THE CONSERVATION OF LAND.** Restrictive Covenant, pursuant to section 129BA of the Transfer of Land Act 1893, benefiting a public authority.
Date	**THIS RESTRICTIVE COVENANT** is made the 8th day of January, two thousand and ~~three~~ four (2004).
Owner, the registered proprietor of the burdened land	**BETWEEN** Antonia Frances Bagshawe of Department of Medicine, PO Box 50110, Lusaka, Zambia ("the Owner") **AND**
Benefiting public authority, name and description	The Executive Director of the Department of Conservation and Land Management ("the Department") of Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
Land	That portion of Lot 341 on Deposited Plan 249521 being part of the land comprised in Certificate of Title Volume 1825 Folio 68, and shown hatched in the sketch annexed hereto ("the Land")
RECITALS	**WHEREAS**
Covenant runs with the land	A. This Restrictive Covenant binds the Owner, and persons deriving title from them.
Limitations, Interests, Encumbrances and Notifications	B. Nil
Intention of the Owner and the Department	C. It is the intention of the Owner and the Department that certain activities on the Land be restricted in order to protect its natural values, and in particular the special natural values listed in Recital D.

Special natural values	D. The special natural values of the Land are: • good to very good quality jarrah and marri forest, with pockets of bull banksia, grasstrees, thickets of mirbelia, scattered common sheoak, scattered bullich and swamp banksia, and a permanent fresh water waterhole; • presence of white-tailed black cockatoos (Schedule 1), western brush wallaby (Priority 4), and red-tailed black cockatoos (possibly the Priority 4 forest sub-species); and • suitable habitat for a wide diversity of flora and fauna, with linkages to State Forest.
LEGAL RELATIONSHIPS	**NOW THIS AGREEMENT WITNESSES:**
Owner's covenants	1. The Owner with the intention of binding so far as is possible all registered proprietors or other persons having an estate or interest in the Land to ensure compliance with the restrictions set out herein, HEREBY COVENANTS with the Department that the Owner shall not, except with the prior written consent of the Department or in accordance with Management Guidelines mutually agreed by the Owner and the Department, do or permit to be done any act or thing upon the Land which in the reasonable opinion of the Department is prejudicial to the natural values of the Land, and in particular the Owner shall not: a) subdivide or permit subdivision of the Land; b) place or permit to be placed any structure or dwelling on the Land, save for the existing transmission line; c) destroy or remove or permit the destruction or removal of any local indigenous flora or any indigenous fauna or their related habitats on or from the Land, save for: i) seeds and other plant material, in accordance with the mutually agreed Management Guidelines referred to in Clause 2; ii) timber, in accordance with the mutually agreed Management Guidelines referred to in Clause 2; and iii) the purpose of carrying out maintenance of the existing tracks, fences, and transmission line, in accordance with the mutually agreed Management Guidelines referred to in Clause 2; d) plant any flora other than local indigenous flora on the Land; e) destroy or do or permit (unless required by law) any act that would result in the deterioration in the natural state or in the flow, supply, quantity or quality of any body of water on the Land, save for the existing waterholes and drains; f) cause, introduce or permit the introduction of domestic stock or other non-indigenous fauna to enter or remain upon the Land, save for: i) emergency shelter within a designated area, in accordance with the mutually agreed Management Guidelines referred to in Clause 2; ii) beehives brought onto the Land in accordance with the mutually agreed Management Guidelines referred to in Clause 2; and

Page 2 of 5

Special natural values	D. The special natural values of the Land are: • good to very good quality jarrah and marri forest, with pockets of bull banksia, grasstrees, thickets of mirbelia, scattered common sheoak, scattered bullich and swamp banksia, and a permanent fresh water waterhole; • presence of white-tailed black cockatoos (Schedule 1), western brush wallaby (Priority 4), and red-tailed black cockatoos (possibly the Priority 4 forest sub-species); and • suitable habitat for a wide diversity of flora and fauna, with linkages to State Forest.
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	iii) save for domestic dogs in accordance with the relevant local government authority's regulations, which must be under control (as defined in the mutually agreed Management Guidelines referred to in Clause 2) at all times; g) conduct, permit or consent to any investigation or exploration for, or the mining, extraction, removal or production of gas, petroleum, minerals, soil, stones, sand, rock, gravel, clay or other substances on the Land; h) permit or consent to (unless required by law) the construction, erection or establishment of any transmission lines or other services or works on the Land; i) carry out or permit on the Land the operation of any trade, industry or business, nor the use of vehicles including but not limited to trail bikes or four wheel drive vehicles or farm machinery other than when required for the proper management and protection of the Land, nor the storage of rubbish or garden refuse or materials, nor any activities inconsistent or incompatible with the conservation of the vegetation and fauna on the Land; j) erect or permit to be erected any fence on the Land, save for a perimeter fence around the Land; k) introduce or permit the introduction upon the Land of any rocks, soil, gravel, sand or other basic raw materials except from external sources first approved in writing by the Department as being free of weeds and known plant pathogens including *Phytophthora* Dieback disease, nor use or permit the use of earth moving machinery on the Land unless it has been first cleaned offsite and/or where appropriate precautions have been taken to reduce the risk of introduction or further spread of weeds and plant pathogens; and l) use or permit the use on the Land of guns, hunting weapons, animal traps or poisons, save for the purposes specified in the mutually agreed Management Guidelines referred to in Clause 2.
Department's Covenants	2. THE DEPARTMENT HEREBY WAIVES the restrictions referred to in Clause 1 to the extent necessary for the implementation of mutually agreed Management Guidelines which may include provisions for reasonable fire protection including carrying out controlled rotational fuel reduction measures subject to express agreement between the Department and the Owner in writing prior to the Land being deliberately burnt.
Mutual Covenants	3. IT IS HEREBY MUTUALLY AGREED by the Owner and the Department that the covenants and restrictions expressed herein shall run with and bind the Land and shall enure for the benefit of the Department.
Variation of Covenants	4. If the Owner seeks a variation of this covenant, then provided that the natural values identified by the Department are not significantly compromised, and an appropriate variation can be made to address such alteration, the Department may at its discretion agree to the variation.

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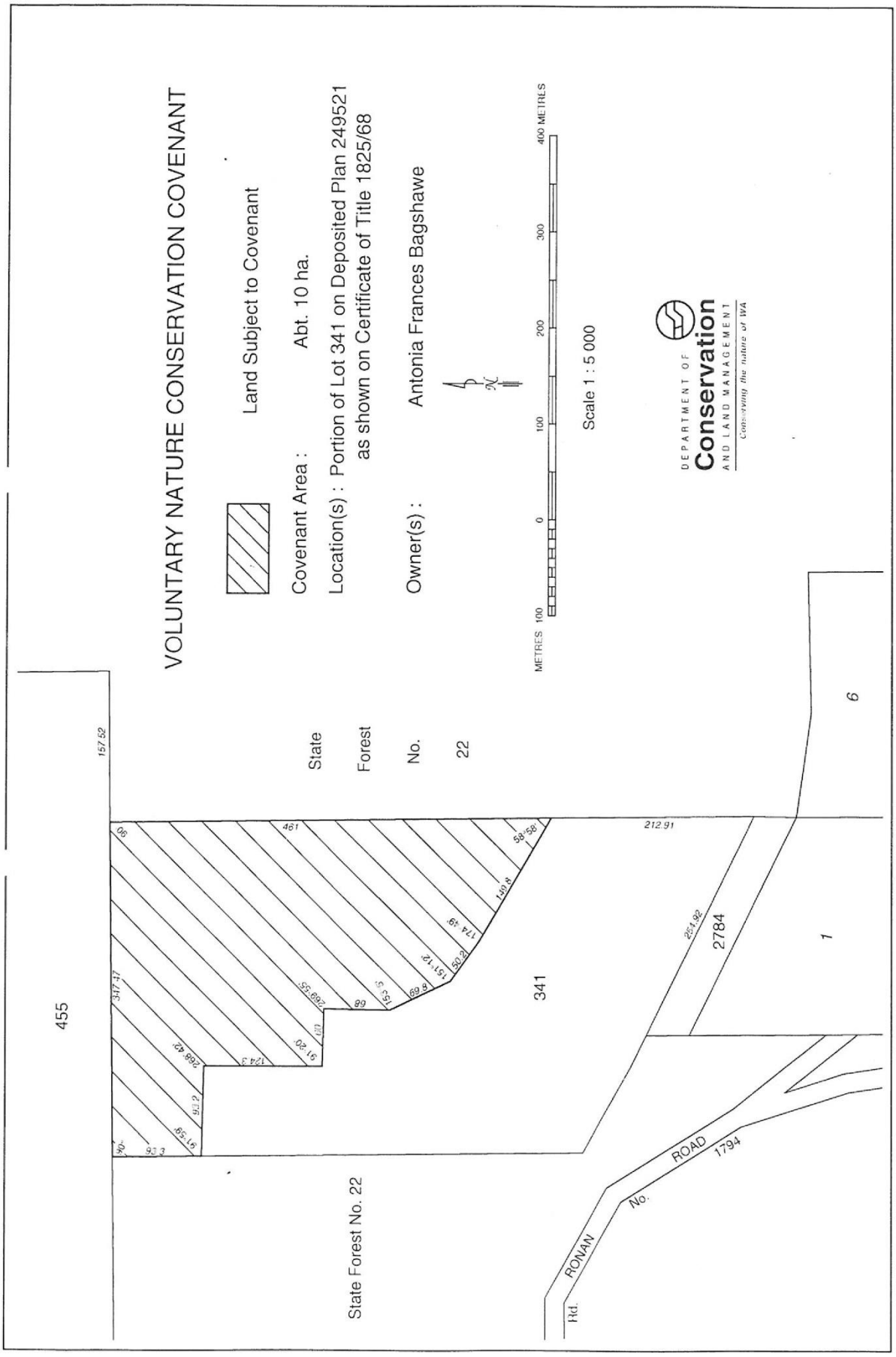

VOLUNTARY NATURE CONSERVATION COVENANT
Land Subject to Covenant
Covenant Area : Abt. 10 ha.
Location(s) : Portion of Lot 341 on Deposited Plan 249521 as shown on Certificate of Title 1825/68
Owner(s) : Antonia Frances Bagshawe
State Forest No. 22
Scale 1 : 5 000
METRES 100 0 100 200 300 400 METRES
DEPARTMENT OF Conservation AND LAND MANAGEMENT
Conserving the nature of WA
455
341
2784
1
6
RONAN Rd.
No. 1794 ROAD
157.52
212.91
254.92

132

INSTRUCTIONS

1. This form may be used only when a "Box Type" form is not provided or is unsuitable. It may be completed in narrative style.
2. If insufficient space hereon Additional Sheet Form B1 should be used.
3. Additional Sheets shall be numbered consecutively and bound to this document by staples along the left margin prior to execution by the parties.
4. No alteration should be made by erasure. The words rejected should be scored through and those substituted typed or written above them, the alteration being initialled by the persons signing this document and their witnesses.

NOTES

1. Insert document type.
2. A separate attestation is required for every person signing this document. Each signature should be separately witnessed by an Adult Person. The address and occupation of the witness must be stated.

EXAMINED

OFFICE USE ONLY

LODGED BY	Department of Conservation and Land Management
ADDRESS	Locked Bag 104 Bentley Delivery Centre BENTLEY WA 6983
PHONE No.	(08) 9334 0477
FAX No.	(08) 9334 0199
REFERENCE No.	
ISSUING BOX No.	888

PREPARED BY	Department of Conservation and Land Management
ADDRESS	Locked Bag 104 Bentley Delivery Centre BENTLEY WA 6983
PHONE No.	(08) 9334 0477
FAX No.	(08) 9334 0199

INSTRUCT IF ANY DOCUMENTS ARE TO ISSUE TO OTHER THAN LODGING PARTY

TITLES, LEASES, DECLARATIONS, ETC, LODGED HEREWITH

1. CT 1825/068 Received Items Nos.
2. .....
3. .....
4. .....
5. ..... Receiving Clerk
6. .....

Registered pursuant to the provisions of the TRANSFER OF LAND ACT 1893 as amended on the day and time shown above and particulars entered in the Register.

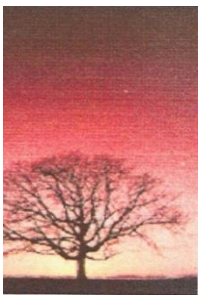
Attachment 4: Fire Management Plan

BUSHFIRE MANAGEMENT PLAN

Lot 341 Balmoral Road

Jarrahdale

Shire of Serpentine Jarrahdale



FirePlan WA

August 2014

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Bushfire Management Plan Lot 341 Balmoral Road Jarrahdale

Prepared For

Antonia Bagshawe
Lot 341 Balmoral Road
Jarrahdale WA 6122

Prepared By
FirePlan WA
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T: 94931692 F: 94930330 E: firepla@bigpond.net.au

Document Status

Version	Comment	Reviewer	Review Date
Version 1		BWH	20.08.2014

1.0 INTRODUCTION

The purpose of this Bushfire Management Plan is to detail the fire management methods and requirements that will be implemented for the rezoning of Lot 341 Balmoral Road Jarrahdale refer Figure 1: Location Plan.

This Bushfire Management Plan (BMP) satisfies the requirements of the Shire of Serpentine Jarrahdale and the Western Australian Planning Commission (WAPC) via Planning for Bush Fire Protection Guidelines Edition 2 (WAPC and DFES 2010) referred to in this document as the Guidelines.

This Bushfire Management Plan complies with the acceptable solutions detailed in Appendix 2 of *Planning for Bush Fire Protection* Edition 2 2010 and as summarised in 'Compliance Checklist for Performance Criteria and Acceptable Solutions' at the end of this Bushfire Management Plan (Section 8).

This Bushfire Management Plan will likewise outline the responsibility and timing for implementing and maintaining the fire protection measures and strategies contained within, allocating these responsibilities between individual land owners, the developers and the Shire of Serpentine Jarrahdale.

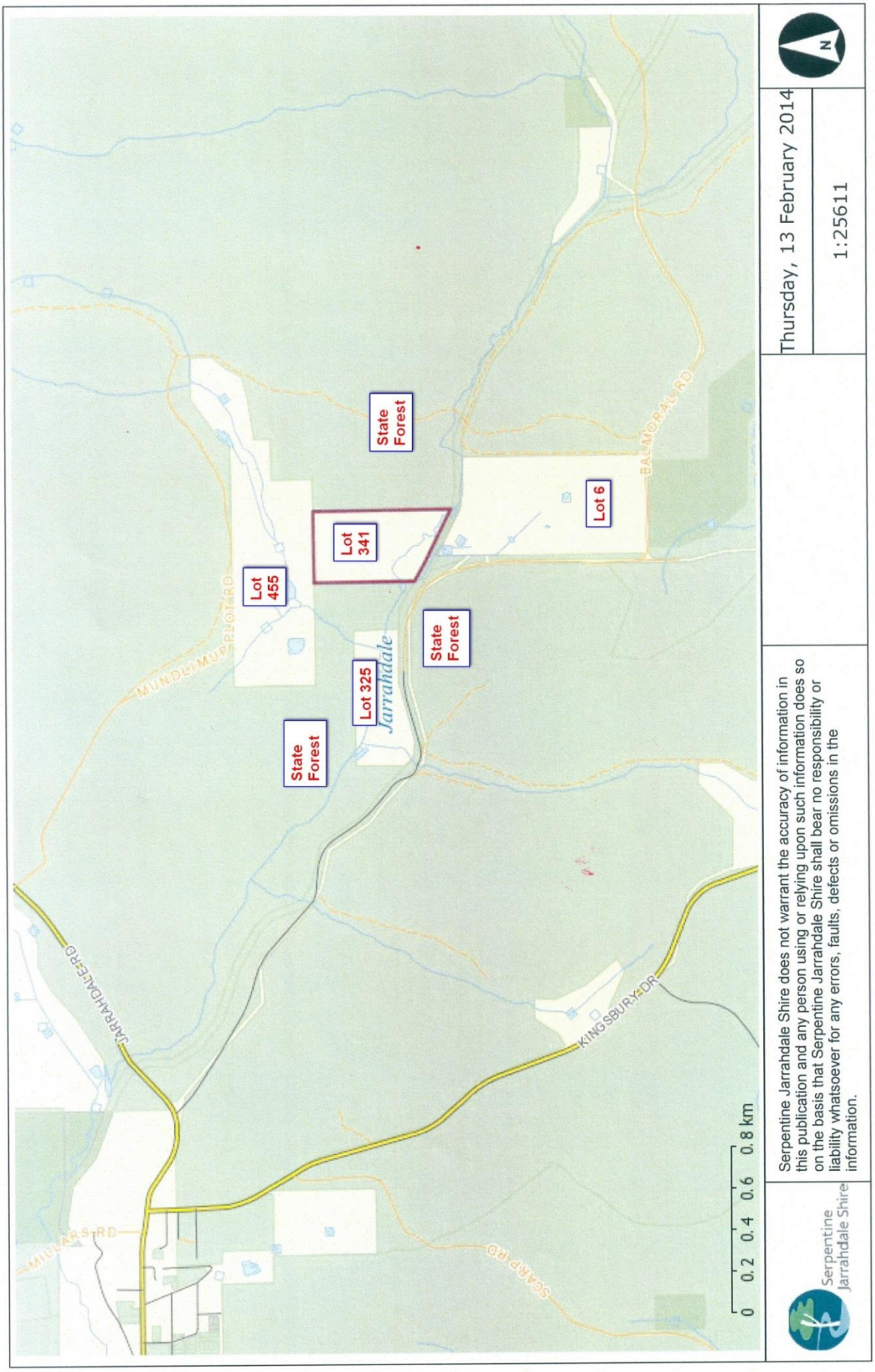
As fire management strategies may require altering to meet changing weather, environment and land use needs, it must be advised that the provisions of the *Bush Fires Act 1954* may still be enforced, in addition to this Bushfire Management Plan.

The Shire of Serpentine Jarrahdale will be responsible for initiating a review of this Bushfire Management Plan as it may deem necessary to do so.

In the event of large bushfires it is essential that landowners understand that fire appliances may not be available to protect each dwelling/building so it is in the landowners best interest to provide adequate fire protection to their assets, the minimum requirements are determined in this BMP.

In the Foreword of AS 3959- 2009 it states that "It should be borne in mind that the measures contained in this standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behavior of fire and extreme weather conditions." This Bushfire Management Plan has been prepared in accordance with the acceptable solutions detailed in *Planning for Bush Fire Protection Edition 2 (2010).*

Figure 1 Development Locality



2.0 AIM

The aim of the Bushfire Management Plan is to reduce the occurrence of and minimise the impact of bush fires thereby reducing the threat to life, property and the environment.

The Bushfire Management Plan sets out to reduce this threat by:

- Identifying the objectives of this Bushfire Management Plan (Section 3)
- Describing the site's description, topography, cultural features and land use (Section 4);
- Identifying the site's potential bush fire issues (Section 5); and
- Outlining the fire mitigation strategies for the site that will reduce the risk of bush fires impacting on the proposed subdivision including the potential threat and impact of bushfire to residents, fire fighters and environmental values, including identifying the parties responsible for undertaking these fire mitigation strategies (Section 6).
- Allow easy access and egress of fire fighters and residents if a fire does occur.

The Shire of Serpentine Jarrahdale has the responsibility and powers under the Town Planning Scheme and the *Bush Fires Act 1954* to ensure that this Bushfire Management Plan, Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Reduction Notice and any Special orders issued under the *Bush Fires Act 1954* are complied with.

3.0 OBJECTIVES

The objectives of this Bushfire Management Plan are to:-

- Identify bushfire hazards and propose bush fire prevention measures for the site;
- Identify access and egress for firefighting operations and residents;
- Define the building construction standards where lots interface with vegetation within the site;
- Identify current and future landowner, developer and Shire of Serpentine Jarrahdale responsibilities for various components of this Bushfire Management Plan; and
- Document in the Appendices section of this Bushfire Management Plan, the acceptable solutions adopted for the subdivision of Lot 341 Balmoral Road Jarrahdale.

4.0 DESCRIPTION OF THE AREA

4.1 GENERAL

This Bushfire Management Plan applies to Lot 341 Balmoral Road Jarrahdale which is to be rezoned from "Rural Zone" to "Conservation Zone" under the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2.

Lot 341 Balmoral Road Jarrahdale (*Site*) is located on the Darling Plateau east of the Jarrahdale townsite and approximately 3 kilometres south east of the junction of Jarrahdale and Balmoral Roads.

The *Site* is 20.3ha including Jarrah/Marri forest, wetlands, grassland (pasture) and a residence near the western boundary and is surrounded to the west, south west and east by State Forest.

Figure 2 Proposed Lot for Rezoning

4.2 CLIMATE

The Mediterranean climate experienced by this area is characterized by hot dry summers and mild wet winters with the majority of rain falling in late autumn through to late spring. This rainfall supports substantial vegetation growth which dries off in Summer/Autumn.

In summer the area has strong easterly winds in the morning that ease off around midday and in the afternoon on most days a southwesterly wind occurs in the afternoon reducing the temperature by as much as ten degrees.

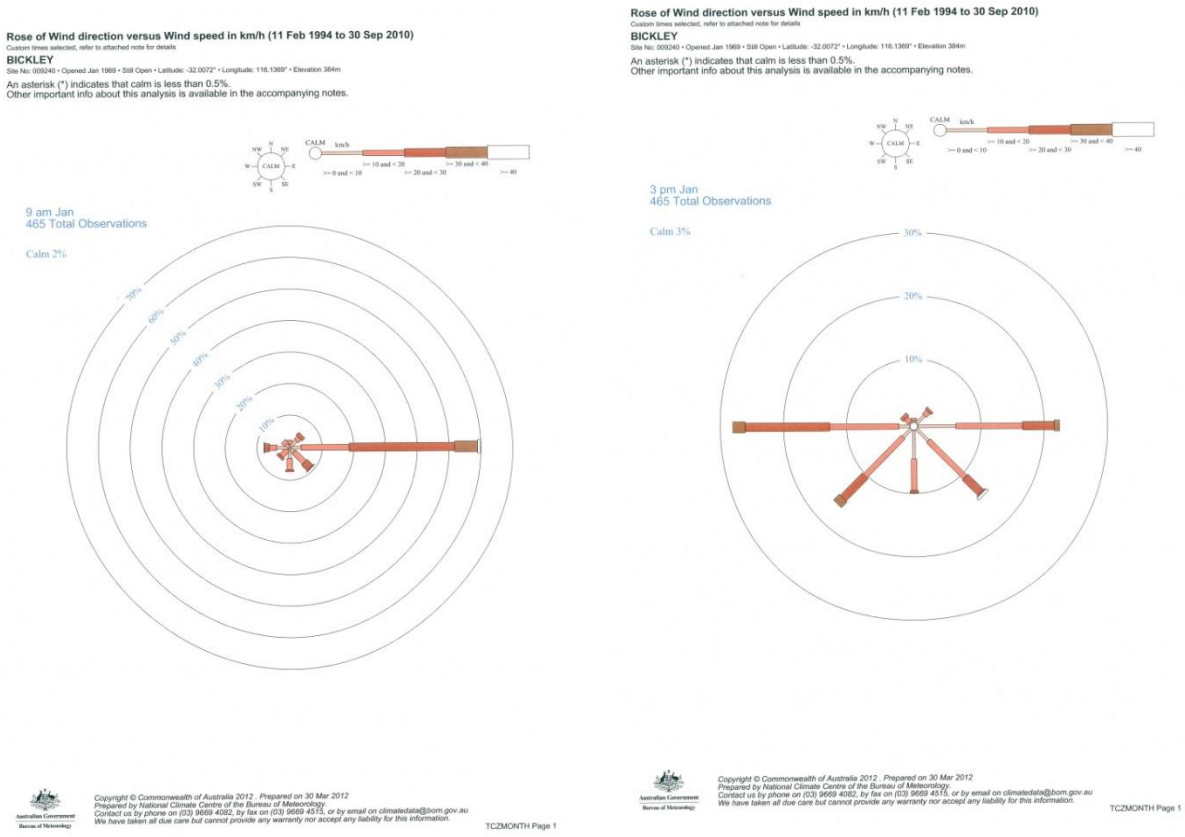
The bush fire season is generally from October to the following May, but is subject to seasonal changes and drought conditions.

The Bickley weather statistics below area indicative of the weather conditions at this site.

Table 1 Weather Data for Bickley – 1994-2012 (BOM Website October 2012)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Max Temperature (°C)	30.6	30.6	28.2	23.5	19.5	16.0	15.1	15.9	17.4	21.0	24.8	27.9	
Mean 3pm Temperature (°C)	29.1	29.1	26.6	22.2	18.4	14.9	13.9	14.6	16.1	19.5	23.1	26.3	
Mean 9am Relative Humidity (%)	57	59	63	71	79	85	86	83	77	67	61	57	
Mean 3pm Relative Humidity (%)	35	34	39	49	58	67	68	65	60	51	44	38	
Mean Monthly Rainfall (mm)	18.1	20.1	24.1	56.2	128.7	205.6	217.5	169.6	123.6	67.2	41.9	13.2	1097.1

Figure 3. Sample Wind Roses showing Wind direction and Strength for January at Bickley.



4.3 TOPOGRAPHY

The site is considered to be 0°-5° (to south) for the purposes of determining the construction standards in accordance with AS 3959.

4.4 BUSH FIRE FUELS

The vegetation on the *Site* consists of Grassland Class G (2-4 tonnes/ha) and Jarrah/Marri Open Forest Class A (25-35 tonnes/ha).

The adjoining State Forest is managed by the Department of Parks and Wildlife (DPaW) and the land is part of a Master Burning Plan implemented by DPaW for the purpose of Hazard reduction within the State Forest and for protection of the environment and private landowners.

4.5 LAND USE

The lot the subject of this Bushfire Management Plan will be used for "Conservation of the Environment" values of the *Site*.

4.6 ASSETS

The rural area, dwellings, sheds, fences, stock, roads and power lines.

4.7 ACCESS

Access to Lot 341 is via a public road along the western boundary of the Site within State Forest and links into Balmoral Road in the south west corner of Lot 341. Balmoral Rd provides access from Jarrahdale SE to Albany Highway through Forestry roads.

4.8 WATER SUPPLIES

4.8.1 Water for Fire Fighting

Mains water will not be supplied.

There is a dam located near the northern boundary of the Site and a bore is located near the existing house.

4.8.2 Domestic Water Supply

There being no scheme water available each landowner is to supply their own domestic water supply (minimum 120,000L or to the standards of the Shire of Serpentine Jarrahdale) each landowner shall at all times store a minimum of 10,000L of water for firefighting purposes.

A notification pursuant to section 70A of the Transfer of Land Act 1893 is to be placed on the certificate(s) of title of the proposed lot(s). Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows;
'A mains potable water supply is not available to the lot' Serpentine Jarrahdale Shire'

See details in Section 7.2.4 of this Bushfire Management Plan.

5.0 BUSH FIRE ASSESSMENT

5.1 BUSH FIRE HISTORY

There have been no fires recorded on this site since the current landowners have owned on the site. Bush fires do occur in the general Jarrahdale area every 5-10 years generally as a result of arson.

5.2 BUSH FIRE RISK

As private land in the general area is used for agricultural purposes, there is a risk that the use agricultural machinery, vehicles in paddocks and stationary motors on dams may cause a fire to start.

Weather patterns in the summer months bring thunderstorms across the Hills area of the Darling Plateau so there is a risk that fires may start from lightening.

In general the rural landowners are responsible for complying with the Shire of Serpentine Jarrahdale Firebreak Notice & Fuel Hazard Notice and relevant Bushfire Management Plans. The Shire of Serpentine Jarrahdale has the powers under Section 33 of the Bush Fires Act to issue Special Orders requiring landowners to reduce bush fires fuels to levels detailed in the Special Order.

As a result of a bush fire in this general area (including adjoining land) ember attack may cause damage to dwellings and out buildings, power poles may be burnt down cutting power supplies to some areas, trees/vegetation may fall across roads causing temporary road closures. During a bushfire fighting operations access to roads may be restricted.

There is a risk that buildings which have evaporative air conditioners installed without effective screening around the roof mounted unit have an increased risk of a building catching on fire due to embers starting a fire in the air conditioning unit.

5.3 BUSH FIRE HAZARD

In *Planning for Bush Fire Protection* Appendix 1 the methodology for classifying bush fire levels is detailed. The methodology rates bush fire hazard using vegetation type. The methodology is also based on the underlying assumption that land in Western Australia is predominantly undulating. The methodology specifies three bush fire hazard levels "Low", "Moderate" and "Extreme".

This methodology has been used in this Bushfire Management Plan.

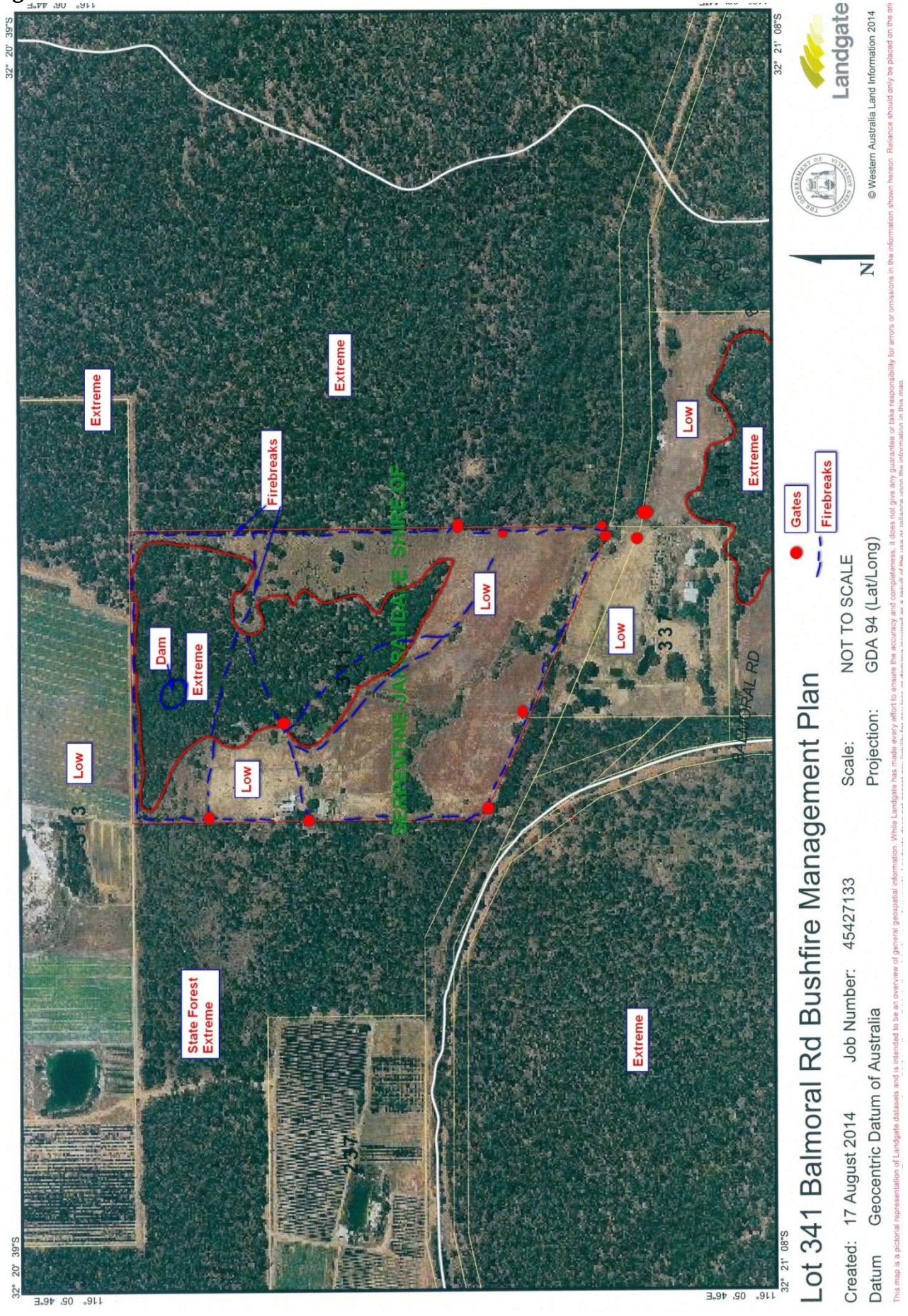
The assessment of fire risk takes into account existing site conditions which include:

- Topography with particular reference to ground slopes and accessibility;
- Vegetation cover – both remnant and likely revegetation; and
- Relationship to surrounding development.

The Bush Fire Hazard for the Site is:-

Grassland	-	Low
Open Jarrah/Marri Forest	-	Extreme
State Forest	-	Extreme
Other Private Property	-	Low

Figure 4 Bush Fire Hazard Assessment



5.4 BUSH FIRE THREAT

A bushfire that occurs in the State Forest or on the *Site* may cause damage to the existing dwelling, sheds and power lines along the western boundary (to the house) and a main power line along the eastern boundary of its site.

The current owner has a sprinkler system around the existing dwelling and sheds to wet down the grassland for an area of 20-30 metres.

Stock are grazed in the cleared areas and along with kangaroos, grass is kept to approximately 2 tonnes/ha or less as summer progresses.

With all landowners within the *Site* and in adjoining areas complying with their relevant Bushfire Management Plans and the Shire of Serpentine Jarrahdale Firebreak Notice and Hazard Reduction Notice the threat of bush fires will be reduced.

5.5 SUMMARY OF BUSH FIRE POTENTIAL ISSUES

The potential bush fire issues that have been identified for this site are:-

- Bush fires do occur in the general Jarrahdale area.
- A Bushfire within or adjoining the site will cause a threat to established dwellings, property and environmental values as well as possibly cause damage to power poles, vegetation may fall across road, roads may be closed due to smoke and debris from the fires and dwellings may catch on fire from ember attack.
- The protection of future buildings will be enhanced by maintaining fuel reduction of grassland to comply with the Building Protection Zones standards,
- It is not proposed to construct additional dwellings on the site in the near future, however any accommodation or new dwelling would have to comply with AS 3959.

The Shire of Serpentine Jarrahdale Firebreak Notice and Hazard Reduction Notice and Bushfire Management Plans are to be enforced in areas outside the development site.

6.0 FIRE MITIGATION

6.1 HAZARD MANAGEMENT

Hazard Management on the lots will be controlled by:-

- Building Protection Zone (BPZ) will be installed around existing and proposed habitable buildings and maintained in perpetuity by the landowner.
- Future dwellings and accommodation are to be compliant with current version of AS 3959.
- Compliance with the annual Firebreak Notice and Fuel Hazard Reduction Notice, which will be a landowner responsibility

6.2 BUSH FIRE RISK MANAGEMENT

6.2.1 Total Fire Ban Days

A Total Fire Ban is declared because of the extreme weather conditions or when fires are seriously stretching fire fighting resources. A Total Fire Ban is declared by DFES following consultation with Local Governments.

When a Total Fire Ban is declared it prohibits the lighting of any fires in the open air and any activities that might start a fire. The ban includes all open fires for the purpose of cooking or camping. It also includes incinerators, welding, grinding, soldering and gas cutting.

The Department of Fire and Emergency Services and the Shire of Serpentine Jarrahdale are to continue to educate the public on what a Total Fire Ban means and what actions the public need to take.

6.2.2 Public Education Program

The Shire of Serpentine Jarrahdale is to continue to provide the community with advice on bush fire prevention and preparedness through brochures, newspaper articles, the Firebreak Notice issued to rate payers and on their web site.

The developer is to provide a copy of the current Shire of Serpentine Jarrahdale Firebreak Order and Fuel Hazard Reduction and Fuel Hazard Reduction Notice, *The Homeowners Survival Manual* and *Prepare Act Survive* brochure and this Bushfire Management Plan at the time of sale of a Lot. It is essential that the Real Estate agent handling the sale of Lots on behalf of the Developer advises potential landowners that a Bushfire Management Plan exists, the modification of vegetation to improve fire safety around habitable buildings and ongoing fuel reduction will be required within this development.

Other Public Safety and Community information on Bush Fires is available on the Fire and Emergency Services Authority web site www.dfes.wa.gov.au and the Shire of Serpentine Jarrahdale website www.sjshire.wa.gov.au

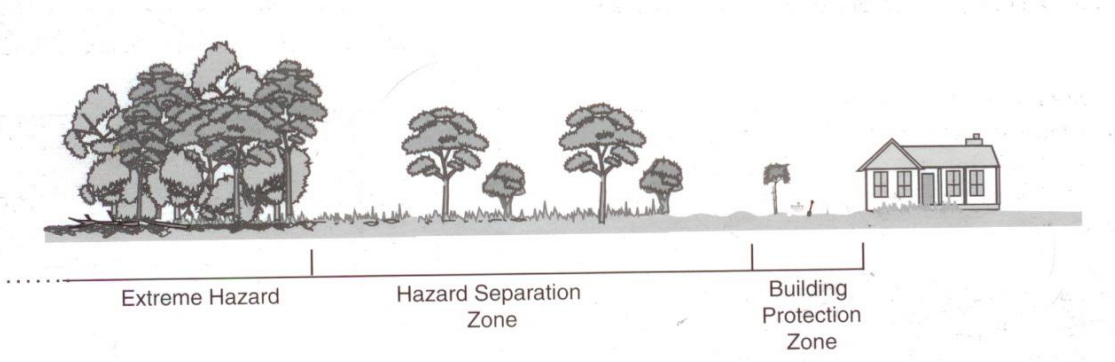
6.3 FUTURE DEVELOPMENT

This Bushfire Management Plan has been prepared on the basis of the site being developed in accordance with the subdivision plan layout detailed in Figure 2.

6.3.1 Declared Bush Fire Prone Area

Due to the Open Forest type of vegetation being located within and adjoining the *Site*, the *Site* is considered to be a Bush Fire Prone Area and as such AS3959 *Construction of Buildings within a Bush Fire Prone Area* will apply to all new habitable buildings as defined in the Building Code of Australia and /or State Planning Policy 3.7 or revised *Planning for Bush Fire Protection* guidelines.

6.3.2 Building Protection Zone



The aim of the Building Protection Zone (BPZ) is to reduce bush fire intensity close to buildings, and to minimise the likelihood of flame contact with buildings.

The Building Protection Zone is a low fuel area immediately surrounding a building complying with *Planning for Bush Fire Protection* Acceptable Solution A4.3.

A 30 metre Building Protection Zone is to apply around the existing and any new accommodation or dwelling and must fulfil the following conditions:

- The minimum width of the BPZ is to be 30 metres measured from any external wall of the building or asset.
- The location of the BPZ should generally be contained within an individual Lot. In areas where this cannot be achieved it may be possible to create BPZ across Lot boundaries including across roads adjoining or within the development site.
- Loose flammable material within the BPZ should be removed to reduce the fuel load to less than 2 tonnes per hectare and this is to be maintained to this level.
- All grasses within the BPZ are to be maintained to a height of a maximum 25mm.
- The crowns of trees within the BPZ should be separated where practical such that there is a clear separation distance between adjoining tree crowns.
- Prune lower branches of trees within the BPZ (up to 2 metres off the ground) to stop a surface fire spreading to the canopy of the trees.
- There are to be no tree crowns or branches overhanging the building or asset and a minimum horizontal clearance of 2 metres is required between tree branches and buildings or assets.
- Do not clump shrubs close to building. Ensure that there is a gap of at least 3 times the height (at maturity) of the shrub away from the building.
- Trees or shrubs in the BPZ are to be cleared of any dead material.
- Fences, sheds and structures within the BPZ should be constructed of non-flammable material and be clear of trees and shrubs as per building requirements.
- Gas Cylinders should be isolated from the Flame Zone and should be stored in an area that is clear of all flammable material. Gas vent valves should face away from the building and anything flammable. Gas cylinders should be securely tethered with non-flammable fastenings to prevent toppling over.
- Fire wood storage should be at least 20 metres from the building unless contained in sealed nonflammable container.
- Driveways and access ways must allow for the safe passage of a fire appliance1 to all buildings and assets on the land.
- Roof gutters should be free of leaves and other combustible material.
- Roof mounted evaporative air coolers should be fitted with ember proof screens to the filter media to reduce the possibility of bushfire embers igniting the air cooler.

It is further recommended that property owners, where possible and practical, further extend the width of the defendable space around assets by reducing fuel loads and fire hazards.

NOTE:

- The purpose of the BPZ is to reduce flammable fuel in the immediate vicinity of structures and other assets to reduce the bushfire attack level in accord with Australian Standard AS3959 Section 2.
- The requirements for BPZ within Western Australia for new buildings are specified in "*Planning for Bushfire Protection guidelines edition 2" Element 4.*
- Maintained gardens are not classed as flammable for the defendable space.
- Areas such as pathways, drives, lawn, vegetable gardens, pools etc. all serve to reduce fire intensity and will form an integral part of any BPZ. The effectiveness of these in reducing the risk of fire damage to a building is enhanced if these areas are close to the building.

Landowners are also required to install BPZ as part of Site works when constructing a dwelling on a Lot and maintain building protection zones in perpetuity in accordance with this Bushfire Management Plan.

6.3.3 Building Construction

Individual dwellings on the lot shall be designed and built to conform with:

- The Building Code of Australia; and
- AS 3959 *Construction of Buildings in a Bushfire Prone Area*;

When the Bush Fire Prone Areas are declared for this site the minimum distance of 100 metres (from vegetation rated 'Moderate' or 'Extreme') may be reduced in compliance with AS 3959. Under AS 3959 as the distance from the vegetation is reduced, the construction standard must be increased. Table 2.4.3 AS 3959 sets out this relationship and Section 2 of AS 3959 details the methodology of determining the Bushfire Attack Level (BAL).

BAL (Bushfire Attack Level) Determination Using Methodology from Section 2.2.1 of current adopted AS 3959- 2009 and Table 2.4.3 which applies to this development:

Table 3 Summary of Determination of BAL using Fire Danger Index 80

Vegetation Class	Setback from Vegetation (meters)	Slope	BAL	Construction Standard AS 3959-2009	BPZ (metres)	HSZ (metres)
Open Forest A	37-50	0º-5º	19	S 3	30	10

All new habitable buildings in proposed Lot 341 are to be setback a minimum of 40 metres from Lot boundaries to achieve the 30 metre BPZ and 10 metre HSZ in compliance with BAL 19. New habitable buildings in proposed Lot 341 will be constructed to the current approved AS 3959 BAL 19.
A shed or other out buildings are not to be located closer than 6 metres from a habitable building otherwise the shed or out building is to be constructed to the same standard as the habitable building

As a result of ember attack evaporative air conditioners can be the cause of a fire starting in a building. It is a requirement that the roof unit of an evaporative air conditioner is enclosed in a suitable external ember protection screen. More information is available at www.dfes.wa.gov.au and in AS 3959.

6.4. ACCESS AND FIREBREAKS

6.4.1 Road System

The current road system will remain as the Site is only being rezoned from "rural" to "conservation".

6.4.2 Internal Firebreaks

Notwithstanding the provisions of this Bushfire Management Plan, the lot within the site must comply with the requirements of the Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Reduction Notice, as published annually under the provisions of Section 33 of the Bush Fires Act 1954.

Firebreaks and gates are located on the site as shown in Figure 4.

6.5 FIRE SAFER AREAS

In the event of a bush fire, the Incident Controller of Fire Fighting operations will advise if an evacuation is necessary and, in conjunction with the Shire of Serpentine Jarrahdale Emergency Services, direct residents to Safer Refuge Areas.

6.6 ASSESSMENT OF FIRE MANAGEMENT STRATEGIES

All the actions and recommendations in this Bushfire Management Plan, meet the Bushfires Act 1954 and the associated Regulations and *Planning for Bush Fire Protection* Edition 2 2010 and are sound, measurable and practical having been used and proven over time. These recommendations take into account the various costs, alternatives available, benefits for protection of residents and the wider community, the environment and biodiversity protection.

It will be the responsibility of the developer to implement the provisions of this Bushfire Management Plan (detailed in Section 6.7.2) in order to seek clearance of those conditions of subdivision that stipulate creation of this Bushfire Management Plan.

Likewise it is the responsibility of the Shire of Serpentine Jarrahdale to ensure that all standards required in this Bushfire Management Plan are met by the developer prior to clearing any conditions of subdivision relating to this Bushfire Management Plan.

After any major fires that may occur during or once this development has been completed, the Shire of Serpentine Jarrahdale may conduct a Post Incident Analysis of the fire, which may include identifying and implementing any changes that may be needed to improve the performance of fire prevention strategies.

6.7 IMPLEMENTATION OF THE BUSHFIRE MANAGEMENT PLAN.

This Bushfire Management Plan becomes operational as a condition of subdivision.
In implementing this Bushfire Management Plan, the following responsibilities have been determined.

6.7.1 Property Owner's Responsibilities

To maintain the reduced level of risk and threat of fire, the owners/occupiers of all lots created by this proposal will be responsible for undertaking, complying and implementing measures protecting their own assets from the threat and risk of bush fire:

- Maintaining the property in good order to minimize potential bushfire fuels to mitigate the risk of fire on the property;
- Ensuring that the lot complies with the Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Hazard Reduction Notice (to be carried out annually);
- Maintain fuel reduction around any dwellings constructed the lot to the Building Protection Zone. Refer to Table 3 and standards detailed in Section 6.3.
- Maintaining a 30 metre Building Protection Zone standard and 10 metre Hazard Separation Zone in perpetuity;
- Carrying out hazard management works as detailed in Section 6.1 of this Bushfire Management Plan;
- Ensuring that habitable buildings are constructed to AS 3959;

- Complying with the instructions of DFES Fire Services, the Shire of Serpentine Jarrahdale and/or volunteer fire services in maintaining the property or during the event of a bushfire;
- Install domestic water supply as detailed in Sections 4.8.2 and 7.2.4, check fire service outlet annually;

- Ensuring that in the event an evaporative air conditioner is installed at the property, suitable external ember screens are installed to roof mounted units and that they comply with AS 3959, and are checked annually.

6.7.2 Developer's Responsibilities – Current Landowner

As a condition of subdivision the developer shall be required to carry out works described in Section 6 of this Bushfire Management Plan to the satisfaction of the Shire of Serpentine Jarrahdale and the Western Australian Planning Commission:

- Install firebreaks and comply with the Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Reduction Notice as published annually prior to the sale of a Lot;

- A notification pursuant to section 70A of the Transfer of Land Act 1893 is to be placed on the certificate(s) of title of the proposed lot(s). Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows;
  '*A mains potable water supply is not available to the lot'* Serpentine Jarrahdale Shire'

- A notification pursuant to section 70A of the Transfer of Land Act 1893 is to be placed on the certificate(s) of title of the proposed lot(s). Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows;
  '*The lots are subject to a Bushfire Management Plan'* Serpentine Jarrahdale Shire'; and

6.7.3 Shire of Serpentine Jarrahdale

The responsibility for compliance with the law rests with individual property owners and occupiers and the following conditions are not intended to unnecessarily transfer these responsibilities to the Shire of Serpentine Jarrahdale.

The Shire of Serpentine Jarrahdale shall be responsible for:

- Ensuring compliance with the current adopted AS3959, of any habitable structure, renovation or extension to existing dwellings on proposed Lots that is required to have an increased construction standards, is undertaken at the time of issuing a Building Permit;
- Enforcing the requisitions contained in any Firebreak Notice and Fuel Reduction Notice issued under Section 33 of the Bush Fires Act 1954;
- Providing fire prevention and preparedness advice to landowners upon request; and
- Ensuring compliance with this Bushfire Management Plan prior to clearance of conditions of subdivision.

Attachments to Appendix 4

7.1 WORKS PROGRAM

The works detailed in Section 6.7.2 in this Bushfire Management Plan must be implemented by the developer to achieve a clearance of conditions of subdivision.

Landowners will be responsible for the annual maintenance required in any Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Hazard Reduction Notice issued under Section 33 of the Bush Fires Act 1954, annual works associated with maintaining Private Driveways, Gates and Building Protection Zones/ Hazard Separation Zone as detailed in this Bushfire Management Plan.

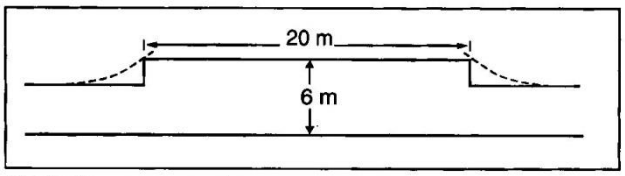
7.2 GUIDELINES SPECIFICATIONS AND MINIMUM STANDARDS

The following section outlines the required specifications and minimum development standards that are required under this Bushfire Management Plan.

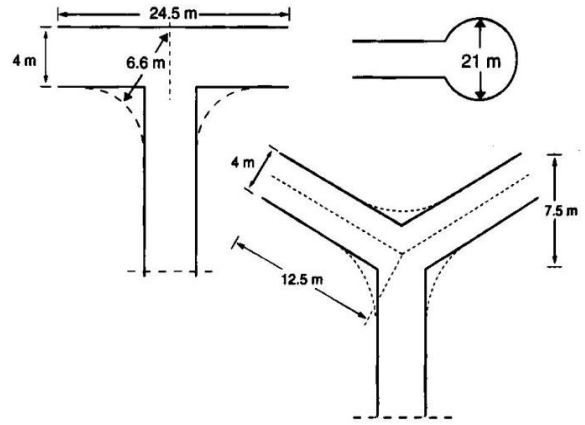
7.2.1 Access – Maintain current access to Existing Residence

Private Driveways A2.5
Constructed private driveways meet the following requirements:

- required where the house site is more than 50 metres from a public road;
- Minimum trafficable surface: 6 metres;
- Horizontal clearance: 6 metres;
- Vertical clearance: unlimited vertical clearance;
- Maximum grades: 1 in 8;
- Maximum grade over less than 50 metres: 1 in 5
- Maximum average grade:1 in 7;
- Minimum weight: 15 tonnes;
- Maximum crossfall: 1 in 33
- Curves minimum inner radius: 12 metres
- Turn around areas designed to accommodate 3.4 fire appliances and to enable them to turn around safely every 500 metres and within 50 metres of a house;
- For long driveways, passing bays are to be included every 200 metres with a minimum length of 20 metres and minimum width of 6 metres.



Passing bay measurements.



Turn around area measurements.

Firebreaks A2.9

Comply with Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Reduction Notice as published annually.

7.2.3 Domestic Water Supply

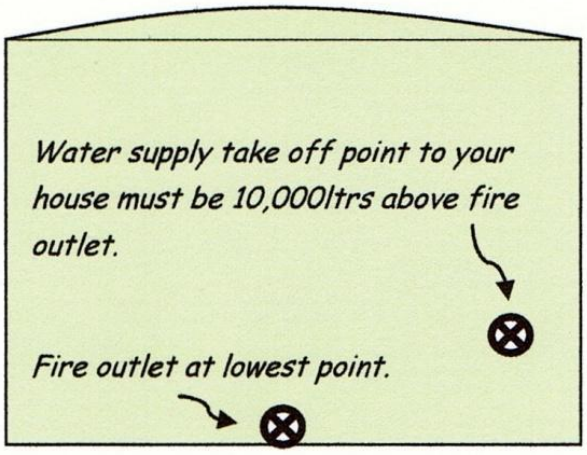
Each landowner is to supply their domestic water (minimum 120,000 litre tank).

Each property shall at all times store a minimum of 10,000 litres of water for fire fighting purposes and each owner shall be responsible to replenish water used by fire fighters at the property owner's cost.

To enable standardisation of access to this supply, each private domestic vessel shall be fitted with a minimum 50mm Gate Valve and a 50 mm male camlock fitting with a blanking cap. This coupling and valve shall be installed and maintained in a correct operating condition at all times at the property owner's expense. The fire fighting outlet is to be placed at the bottom of the tank and the domestic outlet above to bottom of the tank so that 10,000 litres of water remain in the tank at all times. See Diagram Below

The domestic vessel shall be located in an area that will enable fire appliances to backup onto hardstand area to within 6 metres from the tank. Access is to be suitable for a large 15 tonne fire appliance with a 21 metre turning circle or as shown in the diagram in Section 6.2.4.

Figure 5 Domestic Water Supply fittings.



7.3 GLOSSARY

Acceptable Solution
A statement describing an acceptable means of complying with the requirements of corresponding performance criteria**.**

Appliance or Fire Appliance
A fire fighting appliance (vehicle) with structural, grass and bush fire fighting capabilities, with either a 2000 litres water capacity (2.4 appliance) or a 3000 litre water capacity (3.4 appliance) and four (4) wheel drive.

BAL – (abb) Bushfire Attack Level.

Bushfire Attack Level – an assessed rating of a site's risk to a bushfire, based on vegetation type, slope of the land and its proximity to buildings.

Building Construction Standard Buffer - An area 100 metres wide Including a Building Protection Zone in which an increase in building construction standard in accordance with AS3959 will apply.

Building Protection Zone (BPZ)
Low fuel area immediately surrounding buildings. Minimum width 20 metres, increasing with slope. 5m from buildings to be clear of all flammable material. All log and tree debris removed. Trees 15m apart with all branches which may fall on buildings removed. Wood heaps, storage of paints, petrol and other solvents to be be more than 10m from buildings. Grass maximum height of 25mm. Minor outbuildings permitted. Established and maintained by the landowner.

Bush
Under the Bush Fires Act 1954 the term "bush" is defined to include trees, bushes, plants, stubble, scrub and undergrowth of any kind whatsoever whether dead or alive and whether standing or not standing.

Bush Fire or Wildfire
A general term used to describe fire in vegetation that is not under control.

Bush Fire Hazard.
The flammability, arrangement and quantity of vegetation, dead or alive, that can be burnt in a bush fire. Development is to be avoided in extreme bush fire hazard designated areas.

Bush fire prone area - for the purposes of this Bushfire Management Plan, a bush fire prone area is an area that has been declared as such by the relevant local government responsible for an area. Once an area is declared bush fire prone, then AS 3959 applies to new residential development in it.

Bush Fire Risk
The chance of a bush fire starting that will have harmful consequences on life and property. It is measured in terms of consequences and likelihood and arises from the interaction of hazards, communities and the environment.

Development Application
An application for approval to carry out a development under either a local planning scheme or regional planning scheme.

DFES
The Department of Fire and Emergency Services of Western Australia formally Fire and Emergency Services Authority.

Dwelling setback – the horizontal distance between a wall of the dwelling at any point, and an adjacent lot boundary, measured at right angles (90 degrees) to the boundary.

Emergency Access Way
Road not normally open but available to the public (using two wheel drive vehicles) for evacuation during a bush fire emergency.

Fire Break or Firebreak
Any natural or constructed discontinuity in a fuel bed used to segregate, stop and control the spread of a bush fire or to provide a fire line from which to suppress a bush fire. This is an area cleared to reduce the risk of bush fire damage.

FDI- Fire Danger Index
The chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long and short- term drought effects.

Fire Protection
A generic term used to describe the range of services and systems used to mitigate the impact of fire on the community. It encompasses both fire prevention and emergency response.

Bushfire Management Plan
Ongoing, dynamic document that sets out the medium to long term mitigation strategies for fire hazards and risks in particular developments within local government areas.

Fire Services Access Route
Accessible by heavy four wheel drive fire fighting vehicles.

Fuel Reduction also Hazard Reduction
Removal and modification of bush fire fuel, or increase in building construction standards or a combination of the two.

Hazard Separation Zone (HSZ)
The fuel reduction area between an area bush fire hazard and the buildings (and associated building protection zones) of a development and 30m in width (or to the boundary of the lot) measured from the building protection zone. Bushfire fuel load to be reduced to 4 to 6 tonnes per hectare. Established and maintained by the landowner.

Low Fuel Area
An area 100 metres wide of reduced bush fire fuels that is required to surround a Stage of land release and negates the need to increase the standard of dwelling construction on the edge of the Stage of land release. It complies with the Building Protection Zone standards and is temporary until the next stage of land is cleared for release.

Performance Criteria.
Statement which specifies the outcomes required for the protection of life and property from bush fires.

Structural Fire
A fire in a building.

8.0 BUSHFIRE MANAGEMENT PLAN COMPLIANCE CHECKLIST FOR PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS

PROPERTY DETAILS: Lot 341 Balmoral Road, Jarrahdale
Local Government: Shire of Serpentine Jarrahdale

Element 1: Location

Does the proposal comply with the performance criteria by applying acceptable solution A1.1? **Yes** ☑ **No** ☐
Increased building construction and appropriate BPZ

Element 2: Vehicular Access

Does the proposal comply with the performance criteria by applying acceptable solution A2.1? **Yes** ☑ **No** ☐

Does the proposal comply with performance criteria by applying acceptable solution A2.2? **Yes** ☑ **No** ☐

Does the proposal comply with the performance criteria by applying acceptable solution A2.3? **Yes** ☐ **No** ☐
Not Applicable

Does the proposal comply with the performance criteria by applying acceptable solution A2.4? **Yes** ☐ **No** ☐
Not applicable

Does the proposal comply with the performance criteria by applying acceptable solution A2.5? **Yes** ☑ **No** ☐

Does the proposal comply with the performance criteria by applying acceptable solution A2.6? **Yes** ☐ **No** ☐
Not Applicable

Does the proposal comply with the performance criteria by applying acceptable solution A2.7? **Yes** ☐ **No** ☐
Not Applicable

Does the proposal comply with the performance criteria by applying acceptable solution A2.8? **Yes** ☐ **No** ☐
Not applicable.

Does the proposal comply with the performance criteria by applying acceptable solution A2.9? **Yes** ☑ **No** ☐

Complying with Shire of Serpentine Jarrahdale Firebreak Notice and Fuel Reduction Notice.

Does the proposal comply with the performance criteria by applying acceptable solution A2.10? **Yes** ☐ **No** ☐
Not Applicable

Element 3: Water
Does the proposal comply with the performance criteria by applying acceptable solution A3.1? **Yes** ☐ **No** ☐
Not applicable

Does the proposal comply with the performance criteria by applying acceptable solution A3.2? **Yes** ✓ **No**
Domestic Water includes 10,000 litres for fire fighting

Does the proposal comply with the performance criteria by applying acceptable solution A3.3? **Yes** ✓ **No**

Element 4: Siting of Development
Does the proposal comply with the performance criteria by applying acceptable solution A4.1? **Yes** **No**
Not Applicable

Does the proposal comply with the performance criteria by applying acceptable solution A4.2? **Yes** ✓ **No**
BPZ and increased dwelling construction

Does the proposal comply with the performance criteria by applying acceptable solution A4.3? **Yes** ✓ **No**

Does the proposal comply with the performance criteria by applying acceptable solution A4.4? **Yes** ✓ **No**

Does the proposal comply with the performance criteria by applying acceptable solution A4.5? **Yes** **No**
Not Applicable

Element 5: Design of Development
Does the proposal comply with the performance criteria by applying acceptable solution A5.1? **Yes** ✓ **No**

The development uses acceptable solutions as appropriate to meet the requirements under performance criterion P5.

Does the proposal comply with the performance criteria by applying acceptable solution A5.2? **Yes** **No**
Not Applicable

Applicant Declaration:

I declare that the information provided is true and correct to the best of my knowledge.

Name of Person Preparing the Bushfire Management Plan:

Full Name: B.W. Harris *for* FirePlan WA **Date:** 20/08/2014

Developer:

Full Name: _____ **Signature:** _____

Date: