GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

Forest Products Commission WESTERN AUSTRALIA

The Forest Management System in Western Australia: **An Overview (2018)**

Government of Western Australia
March 2019

Published by:

Western Australian Department of Biodiversity, Conservation and Attractions

Title: The Forest Management System in Western Australia: An Overview (2018)

Completed December 2018

First published March 2019

ISBN 978-1-921703-91-1

More information

Questions regarding the use of this material should be directed to:

Conservation and Ecosystem Management, Parks and Wildlife Service

Department of Biodiversity, Conservation and Attractions

Locked Bag 104

Bentley Delivery Centre WA 6983

Phone: 08 9219 9000

Email: enquiries@dbca.wa.gov.au

www.wa.gov.au

Acknowledgments

Department of Agriculture and Water Resources (Australian Government)

Department of the Environment and Energy (Australian Government)

Department of Biodiversity, Conservation and Attractions (Western Australia)

Forest Products Commission (Western Australia)

Table of contents

Abbreviations

AFS	Australian Forestry Standard
Alcoa	Alcoa of Australia Limited
BC Act	Biodiversity Conservation Act 2016
BDTA	Bindoon Defence Training Area
CALM Act	*Conservation and Land Management Act 1984* (WA)
CAR	Comprehensive, adequate and representative (reserve system)
CAWS Act	Country Areas Water Supply Act 1947
CPC	Conservation and Parks Commission (WA)
CPR	Condition-pressure-response
CPL	Commercial Producers Licence
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth (of Australia)
DAS	Disturbance Approval System
DBCA	Department of Biodiversity, Conservation and Attractions (WA)
Defence	Department of Defence
Defence EMS	Defence Environmental Management System
DFES	Department of Fire and Emergency Services
DJTSI	Department of Jobs, Tourism, Science and Innovation
DMIRS	Department of Mines, Industry Regulation and Safety
DPIRD	Department of Primary Industries and Regional Development (WA)
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EMS	Environmental Management System
EPA	Environmental Protection Authority (WA)
EP Act	*Environmental Protection Act 1986* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ESFM	Ecologically sustainable forest management
FHZ	Fauna habitat zone
FIFWA	Forest Industries Federation of Western Australia

FMP	Forest Management Plan
FMS	Forest Management System
FP Act	*Forest Products Act 2000* (WA)
FPC	Forest Products Commission
GIS	Geographic Information Systems
ILUA	Indigenous land use agreement
JANIS	Joint ANZECC/MCFFA National Forest Policy Implementation Sub-committee
KPI	Key Performance Indicator
MI	Municipal Inventories
MNES	Commonwealth Matters of National Environmental Significance
MOU	Memorandum of Understanding
m^3	Cubic Metres
NFPS	National Forest Policy Statement (1992)
PEFC	Program for the Endorsement of Forestry Certification
RFA	Regional Forest Agreement
RFA Act	*Regional Forest Agreements Act 2002* (Cth)
RFMP	Regional Fuel Management Plans
SAA	State Agreement Acts
SWALSC	South West Aboriginal Land and Sea Council
VRM	Visitor Risk Management
WABSI	Western Australian Biodiversity Science Institute
WAMSI	Western Australian Marine Science Institute
WA RFA	Regional Forest Agreement for the South-West Forest Region of Western Australia
WC Act	*Wildlife Conservation Act 1950* (WA)

Summary

The Forest Management System (FMS) in Western Australia (WA) is the State's suite of legislation, policies, codes of practice, procedures, plans and management processes for forest management. It is designed to achieve ecologically sustainable forest management (ESFM) across both public and private land tenures within the State's south-west.

The FMS has a hierarchy of integrated components, commencing with an overarching legislative (both Commonwealth and State) framework, supported by national and state policies, and underpinned by the planning and operations management systems that guide forestry activities.

The system has the following features:

Legislation and policy

State legislation (*Biodiversity Conservation Act 2016, Conservation and Land Management Act 1984, Environmental Protection Act 1986*, and *Forest Products Act 2000*) forms the core of the system, and supporting legislation influences how the forest management system delivers ESFM. These influences include the need to protect biodiversity and matters of national environmental significance (such as Ramsar wetlands, National Heritage places, threatened species and communities, or migratory species); the need to provide for multiple or specific benefits from the forests (such as provision for water, mining access, tourism or other benefits); and recognition of Aboriginal connection and traditional ownership of lands and country.

Strategic planning

Strategic through to operational planning processes are conducted to integrate the various objectives for forest management and guide activities on the ground.

The WA Regional Forest Agreement (RFA) provides a strategic framework for delivering ESFM, through the establishment of a Comprehensive, Adequate and Representative (CAR) reserve system to ensure the long-term conservation and protection of forest biodiversity, old-growth forest and wilderness values; the management of multiple-use forests outside reserves for the range of conservation and production uses, including timber production on a sustained yield basis; and supporting the sustainable development of forest-based industries.

The WA *Forest Management Plan 2014-2023* (FMP) provides the policy and planning framework for managing public forests in the south-west and gives effect to the RFA objectives and commitments. Specific area management plans may also be prepared for conservation reserves, including national parks and nature reserves.

Management controls

Subsidiary guidelines, manuals, codes of practice, procedures and operational prescriptions established under the FMP guide and control activities involving on-ground disturbance and conservation management in public forest (such as prescribed burning, timber harvesting, infrastructure development, and invasive species control).

Private forests

Forests on private land contribute to environmental, social and economic outcomes. Sustainable management is approached through regulation to control native vegetation clearing or harvest, protection of indigenous flora and fauna, and the implementation of voluntary conservation mechanisms.

Adaptive and responsive

The overall system incorporates adaptive management and continuous improvement processes to respond to evolving environmental, social and economic factors. Research findings, feedback from monitoring, compliance, certification and enforcement systems, and stakeholder engagement are used to inform periodic review processes.

1. Introduction

The FMS in WA is a comprehensive system for delivering ESFM across all land tenures. The system comprises an overarching legislative and policy framework, and associated planning and operational systems. It is complemented by an adaptive management and continuous improvement process incorporating research findings and feedback processes associated with compliance and enforcement systems, stakeholder engagement and monitoring and review mechanisms.

The WA RFA defines 'Forest Management Systems' as the State's suite of legislation, policies, codes of practice, plans and management processes for forest management as amended periodically by WA. Through the signing of the WA RFA in 1999, the Commonwealth of Australia accredited the WA forest management system as providing for ESFM.

This document provides an overview of the FMS in WA as at December 2018, including its various components and the legislation that regulates it. The document addresses the management of forests on both private and public land (which includes forest reserves and multiple-use State forests). This includes how Commonwealth Matters of National Environmental Significance (MNES) are addressed in forest management.

The objective of forest management in WA is ESFM, consistent with the *Conservation and Land Management Act 1984* (WA) (CALM Act) and the criteria developed under the Montréal Process. The basis of the approach is that the economic and social values derived from the use of the natural forested areas should be provided through a management system that is based on consideration of its impacts on biodiversity and is precautionary in nature. The FMP adopts the Montréal Process Criteria as the framework within which to set goals and proposed operations (management activities) in line with ESFM principles.

Section 19(2) of the CALM Act describes the five principles of ESFM as follows:

a) the decision-making process should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
b) if there are threats of serious or irreversible environmental damage, the lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
c) the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making; and
e) improved valuation, pricing and incentive mechanisms should be promoted.

The *Forest Products Act 2000* (WA) (FP Act) (Section 12(1)) also requires the Forest Products Commission (FPC) to ensure that these same principles of ESFM are applied in the management of forest products from native forests located on public land.

The FMS in WA encompasses Commonwealth and State legislation (Appendix 1), administered by various government departments, agencies and authorities, applied to public and private land tenure. The primary legislative framework and some of the key outputs arising from the

legislation including plans, assessments and approvals is summarised in Figure 1. Implementation of forest management is guided by a hierarchy of controlling documents that cascade from legislation, through policy statements and manuals to operational prescriptions. This hierarchy is set out in Appendix 2 with key documents listed in Appendix 3.

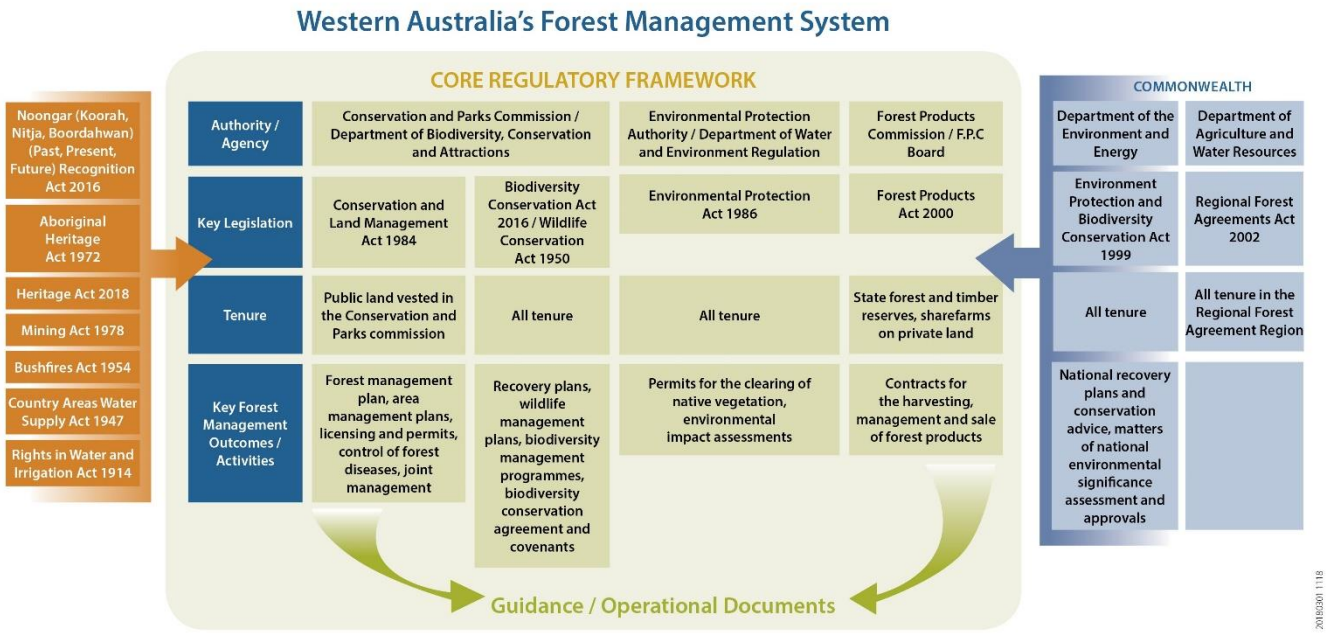

Figure 1: Overview of primary legislative framework for forest management in WA

2. International and national policy context

Australia is a signatory to several international treaties and agreements which are considered in managing WA's forests. These include the 1971 Convention on Wetlands of International Importance (Ramsar Convention), the 1972 World Heritage Convention and the 1992 Convention on Biological Diversity.

The United Nations Food and Agriculture Organisation has defined sustainable forest management as: "The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems."

Australia's *National Forest Policy Statement 1992* (NFPS) sets out a nationally shared vision for the ecologically sustainable management of Australia's forests. In the NFPS, Australian, state and territory governments accepted that:
"the public and private native forest estate will be managed for the broad range of commercial and non-commercial benefits and values it can provide for present and future generations. Efficiently and sustainably managed public and private forests will provide the basis for nature conservation and maintaining forest biological diversity, and for regional economic

development and employment opportunities in a wide range of sectors, including wood production from native and plantation forests, tourism and recreation, water supply, grazing and the pharmaceutical industry" (NFPS 1992, page 6).

RFAs are an outcome of the NFPS. RFAs are afforded a legislative context by the *Regional Forest Agreements Act 2002* (Cth) (RFA Act). The key objectives of the RFA Act, relevant to WA's forest management system, are:

- to give effect to certain obligations of the Commonwealth under RFAs; and
- to give effect to certain aspects of the NFPS.

The WA RFA is a long-term bilateral agreement between the WA and Australian Governments signed on 4 May 1999. It is a framework document that is underpinned by the FMS in WA. The RFA's key principles are:

- ecologically sustainable forest management (the management of forest on all land tenures to maintain the overall capacity of forests to provide goods; protect biodiversity, and protect the full suite of forest values at the regional level);
- certainty for conservation of the environment and heritage values (through the establishment and maintenance of a CAR reserve system); and
- certainty of resource access for the forestry industry.

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), is the Australian Government's central piece of environmental legislation. This Act encapsulates the principles of ecologically sustainable development, which are actively promoted under the legislation's objectives.

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are referred to as MNES. Specifically, the EPBC Act protects the following nine MNES:

- World Heritage properties;
- National Heritage places;
- wetlands of international importance (Ramsar wetlands);
- listed threatened species and communities;
- listed migratory species;
- nuclear actions;
- Great Barrier Reef Marine Park;
- Commonwealth marine areas; and
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act also provides protection for the environment where actions proposed are on, or will affect, Commonwealth land and the environment; and Commonwealth agencies are proposing to take an action. In accordance with the EPBC Act, a proposed action that will or is likely to have a significant impact on a MNES requires approval from the Commonwealth Minister for the Environment and Energy.

In the WA RFA region, the Commonwealth and State Governments have agreed that the CAR reserve system developed through the RFA and WA's FMS for delivering ecologically sustainable

forest management meet requirements of the EPBC Act for the protection of threatened flora, fauna and ecological communities. Therefore, the provisions of the EPBC Act (Part 3) for environmental assessment and approval of actions that will (or are likely to have) significant impact on these MNES are not triggered for forestry operations undertaken in accordance with the RFA (such as timber harvesting and prescribed burning) within the WA RFA region. The exception is for any forestry operations in World Heritage properties or Ramsar wetland sites. Hence the RFA provides a framework for MNES to be protected and managed through WA's FMS, including its reserves, and avoids duplication of environmental regulation.

3. Land tenures in the Western Australia RFA region

This section describes the types of land tenure and their relative composition within the WA RFA region. The different land tenure categories, the State legislation under which they are established and the responsible management agency are shown in Table 1.

Table 1: Key land tenure categories in WA, their establishing legislation and the primary managing agency

Tenure / class	**Establishing legislation**	**Primary purpose**[1]	**Managing agency/entity**
State forest	*Conservation and Land Management Act 1984*	The management objectives for indigenous State forest shall include one or more of the following purposes, as specified in a management plan for that forest: • conservation; • recreation; • timber production on a Sustained Yield basis; • water catchment protection; or • other purpose being a purpose prescribed by the regulations e.g. beekeeping, commercial wildflower picking. Management of State Forest or timber reserves planted with exotic species is to achieve the optimum yield in production consistent with the satisfaction of long-term social and economic needs.	Department of Biodiversity, Conservation and Attractions

Tenure / class	Establishing legislation	Primary purpose[1]	Managing agency/entity
State forest - Section 62 Forest Conservation Zones	Land classifications under section 62 of the *Conservation and Land Management Act 1984*	In conformity with an existing management plan, or where there is no plan, the management objectives of land under section 56. The objectives for areas of State forest classified under section 62 of the CALM Act as Forest Conservation Zones prohibit timber production.	Department of Biodiversity, Conservation and Attractions
Timber reserve	*Land Act 1933, Land Administration Act 1997*, *Conservation and Land Management Act 1984*	The term 'timber reserve' refers to a specific Crown reserve created under the CALM Act, whereas reserves for 'timber' or 'timber for settlers' have been historically created under the Land Act or Land Administration Act. Both reserves refer to a management intention to set aside the land for utilisation of the timber resource. The management objectives for indigenous 'timber reserves' and timber reserves planted with exotic species are identical to those for State forest.	Department of Biodiversity, Conservation and Attractions

Tenure / class	Establishing legislation	Primary purpose[1]	Managing agency/entity
National park	*Land Act 1933, Land Administration Act 1997, Conservation and Land Management Act 1984*	Originally a Crown reserve with the purpose of 'national park' was created under the Land Act to refer to recreation and appreciation of natural and landscapes. When the CALM Act came into operation, the meaning 'national park' was interpreted to mean conservation, protection of natural and cultural landscapes and recreation. National parks are now only expected to be vested under the CALM Act and not in any other management body. Many also had dual purposes with 'national park and water' being the most common. National parks are to: • fulfil the demand for recreation which is consistent with conservation of natural values; • maintain and restore the natural environment, including protection of water catchments and rivers; • protect indigenous flora and fauna; and • preserve features of archaeological, historic or scientific interest (including Aboriginal heritage sites).	National parks with vesting through the CALM Act are managed by the Department of Biodiversity, Conservation and Attractions
Conservation park	*Land Administration Act 1997, Conservation and Land Management Act 1984*	Conservation parks are a land category created by the CALM Act. All have the words 'conservation park' in their reserve purpose and five reserves also include reference to *the Alumina Refinery Agreement Act 1961* in their purpose. Conservation parks have the same management objectives as national parks and are managed identically to national parks.	Department of Biodiversity, Conservation and Attractions

Tenure / class	Establishing legislation	Primary purpose[1]	Managing agency/entity
Nature reserve	*Land Administration Act 1997, Conservation and Land Management Act 1984*	Nature reserves have the purpose 'conservation of flora and fauna', 'conservation of flora', 'conservation of fauna', with some using terms such as 'protection' instead of 'conservation'. Nature reserves with a dual purpose of 'conservation of flora and fauna and water' are moderately common. Nature reserves are to: • maintain and restore the natural environment; • protect, care for and promote the study of indigenous flora and fauna; and • preserve any feature of archaeological, historic or scientific interest, including Aboriginal heritage sites. Fulfilment of a demand for recreation is not a management objective for nature reserves. Passive enjoyment, appreciation and study of natural values is allowable on nature reserves.	Department of Biodiversity, Conservation and Attractions
Section 5(1)(g) and 5(1)(h) reserves	*Land Act 1933, Land Administration Act 1997, Conservation and Land Management Act 1984*	No set purpose applies but 'recreation or conservation' is a common purpose applied to several section 5(1)(g) or 5(1)(h) reserves that reflect management for these purposes. Management objectives are written for each reserve depending on their purpose e.g. promotion of recreation and conservation of natural values.	Department of Biodiversity, Conservation and Attractions

Tenure / class	Establishing legislation	Primary purpose[1]	Managing agency/entity
Freehold land held in the name of the CALM Act CEO	*Transfer of Land Act 1893*	No formal purpose is required with freehold. Management objectives will depend on the use to which the land is put. Much of the freehold land is specified in section 131 of the CALM Act as previously held by the Conservator of Forests. Predominantly this land has been used to grow exotic tree species, largely pine. Whilst not bound by any management objectives in the CALM Act, DBCA manages the plantation freehold land in association with the FPC for the optimum yield in production similar to the State forest and timber reserves planted with exotic species.	Department of Biodiversity, Conservation and Attractions
Unallocated Crown Land	*Land Administration Act 1997*	No formally assigned management purpose. Land not specifically allocated to a Government department.	Department of Planning, Lands and Heritage
Land in which water agencies have an interest	*Land Act 1933, Land Administration Act 1997, Rights in Water and Irrigation Act 1914, Country Areas Water Supply Act 1947, Metropolitan Water Supply Sewerage and Drainage Act 1909*	Includes freehold land, land vested under the Land Act or Land Administration Act where water is listed as a purpose, catchment reserves coincident with State forest, and areas declared under the main water supply acts.	Department of Water and Environmental Regulation
Private freehold land	*Transfer of Land Act 1893*	Private use at landowners' discretion (subject to other legislative constraints) – may be primary production and/or non-production.	Landowner

1. Management plans prepared for any lands managed under the CALM Act must include the objective of protecting and conserving the value of the land to the culture and heritage of Aboriginal persons.

The relative composition of the tenure categories within the WA RFA region, and the proportion of each category which is forested is presented in Table 2.

Table 2: The proportion of forested area within each land tenure category in the WA RFA region

Tenure category (existing and proposed) at June 2018	**Area (hectares)**	**Proportion of total RFA region (per cent)**	**Forested[5] area (hectares)**	**Proportion of total forested area (per cent)**
National park	903,330	21.2	615,025	26.9
Nature reserve	119,515	2.8	89,682	3.9
Conservation park	98,894	2.3	96,301	4.2
Section 5(1)(g/h) reserve - conservation	16,464	0.4	14,027	0.6
Section 62 Forest Conservation Area	41,224	1.0	30,307	1.3
Conservation reserve[1]	4,548	0.1	1,920	0.1
Regional park[2]	8,196	0.2	5,537	0.2
Sub-total conservation	1,192,171	28.0	852,798	37.3
State forest	1,102,412	25.9	1,011,139	44.2
Timber reserve	44,417	1.0	39,991	1.7
Section 5(1)(g/h) reserve - other	347	0.0	226	0.0
Sub-total production[3]	1,147,176	27.0	1,051,356	46.0
Freehold land[4]	1,782,390	41.9	306,150	13.4
Commonwealth land	16,571	0.4	14,903	0.7
Other public land	113,385	2.7	60,933	2.7
Sub-total other	1,912,346	45.0	381,985	16.7
TOTAL	4,251,693		2,286,139	

[1] The specific proposed tenure and class will be subject to government consideration and determination.

[2] Regional parks included as proposed reserves are Banyowla, Mundy, Wooroloo, and Wungong.

[3] Informal reserves and fauna habitat zones in these tenures are not available for timber production.

[4] Includes Section 34A freehold land held in the name of the CALM Act executive body.

[5] Forested area includes Jarrah, Karri, Wandoo, Whicher Scarp and Bullich and Yate forest ecosystems. Calculation for freehold land is based on historic forest types intersected with 2018 remnant vegetation dataset.

Different elements of the FMS may apply on all land tenures or to specific land tenures. However, as Table 2 indicates, over 90 per cent of the extant forested ecosystems within the WA RFA region are located on public lands, managed primarily by the single agency Department of Biodiversity, Conservation and Attractions (DBCA). On lands managed by DBCA the RFA commitments are given effect through the Forest Management Plans prepared under the CALM Act. As the WA RFA region is a subset of the area covered by the Forest Management Plans, the

area and reservation statistics presented in this document will differ to figures published in those Plans.

4. The Forest Management System in Western Australia

The FMS in WA encompasses a range of legislation administered by various State Government and Commonwealth agencies and authorities and applies to both public and private land tenures. A full list of WA and Commonwealth legislation relevant to the FMS is provided at Appendix 1.

The key WA and Commonwealth legislation which underpins the forest management system are:

- the *Conservation and Land Management Act 1984, Conservation and Land Management Regulations 2002*, and *Forest Management Regulations 1993* which provide for a CAR reserve system and sustainable forest management associated with the growing and harvesting of forests on public land;
- the *Wildlife Conservation Act 1950* (WC Act), replaced from 1 January 2019 by the *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulations 2018* which provides for the conservation and protection of biodiversity and biodiversity components and the ecologically sustainable use of biodiversity components in WA;
- the *Environmental Protection Act 1986* (EP Act) which provides for an Environmental Protection Authority (EPA), along with the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* that provide for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing;
- the *Forest Products Act 2000* (FP Act) which provides for the establishment of the FPC and outlines the functions undertaken by the FPC, including performing commercial functions of growing, harvesting and selling forest products; supporting industry development; and advising the Minister on forestry matters;
- the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) relating to the protection of the environment and the conservation of biodiversity, and for related purposes; and
- the *Regional Forest Agreement Act 2002* (RFA Act) to give effect to the obligations under RFAs and to give effect to certain aspects of the NFPS.

The FMS in WA has, at its core, three primary elements:

- a CAR reserve system that securely protects forest conservation values;
- multiple use State forest and timber reserves where timber production on a sustained yield basis is one of several purposes; and
- a system for managing forests outside reserves in a manner that contributes to sustainable environmental, social and economic outcomes.

Each of these elements is described in more detail in the following sections. Specific reference is made, where applicable, to how the FMS provides for the protection and management of MNES as defined in the EPBC Act.

The implementation of the WA RFA and the process of adaptive management and continuous improvement built into WA's FMS deliver ecologically sustainable forest management. As processes and knowledge evolve, the structure and delivery mechanisms within WA's FMS will continue to evolve to meet community expectations. As a framework agreement, the WA RFA can accommodate this continuous improvement and adaptive management, without requiring continual updates to the Agreement itself.

4.1 Governance framework and forest management agencies

WA's national parks, conservation parks, nature reserves, State forests and timber reserves are vested in the Conservation and Parks Commission (CPC). The Commission is an independent authority that oversees the administration of these lands by DBCA, and is the proponent for the purposes of assessment of a FMP (which is prepared through DBCA). The FMP is a key document guiding management of the CAR reserve system, and State forest and timber reserves for multiple purposes including wood production. DBCA manages many activities and disturbance across all the tenures it has responsibility for, as described below in section 4.2. Figure 2 shows the governance framework for preparation and implementation of a FMP.

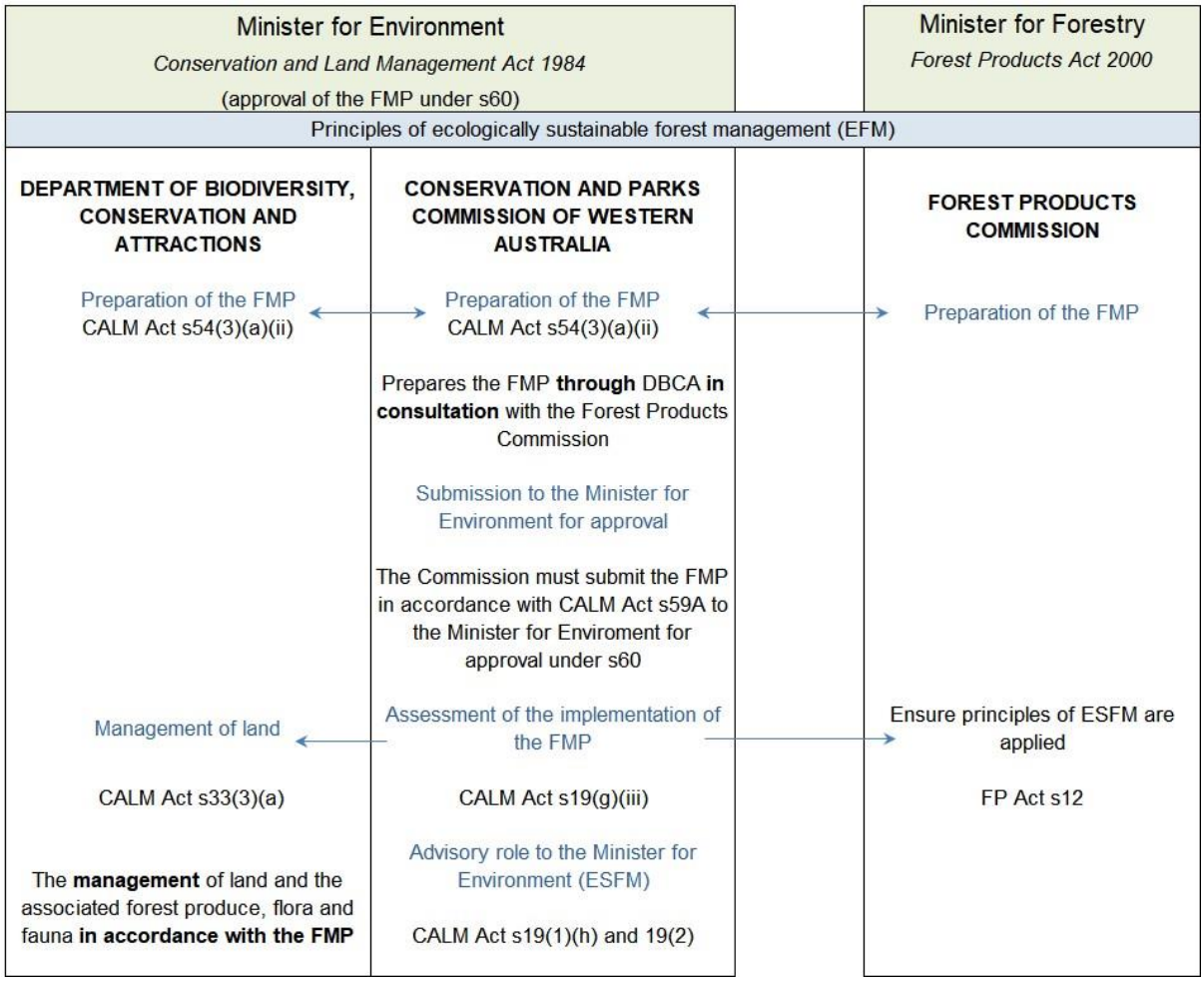

Figure 2: Governance framework for the FMP

Under the CALM Act the period of a forest management plan must not exceed 10 years, and the FP Act requires the availability of timber to be consistent with the relevant FMP. The process to

prepare a plan includes preparation of a draft FMP for public comment under both the CALM Act and EP Act. Following the public review process, a proposed FMP is prepared and forwarded by the CPC to the EPA for assessment. Following EPA assessment and the completion of an appeals process if necessary, a revised proposed FMP is finalised and submitted to the WA Environment Minister for approval. DBCA has the lead responsibility for preparing and implementing the FMP. This involves assessing, approving and monitoring key activities that may disturb the environment, and regulating and overseeing timber harvesting as guided by the framework set in the FMP.

Under the BC Act, DBCA also has responsibility for the protection of indigenous flora and fauna across all land tenures in WA.

The FPC is responsible for harvesting and regenerating native forest and plantations in State forests and timber reserves, and for the sale of wood and forest products and some associated industry matters. Other departments with administrative responsibilities include:

- the Department of Water and Environmental Regulation (DWER) responsible for environmental assessments and the administration of the Priority Areas and Protection Zones, Water Allocation Plans, harvest (or clearing) of private native forest and Source Protection Plans;
- the Department of Jobs, Tourism, Science and Innovation (DJTSI) overseeing major mining projects operating under State Agreement Acts, and administration of State Agreement Acts for wood supply including the *Dardanup Pine Log Sawmill Agreement Act 1992*, the *Wood Processing (WESFI) Agreement Act 2000* and the *Wood Processing (Wesbeam) Agreement Act 2002*;
- the Department of Fire and Emergency Services (DFES) coordinating emergency services for a range of natural disasters including bushfires and emergency incidents threatening life and property; and
- the Department of Mines, Industry Regulation and Safety (DMIRS) managing the exploration for and exploitation of mineral resources and petroleum under the *Mining Act 1978* and *Petroleum and Geothermal Energy Resources Act 1967*.

These departments are consulted and assist in the preparation of the FMP prior to its release for public comment under the public review process.

Aside from the Department of Defence, Commonwealth agencies do not have direct land management responsibilities on lands within the WA RFA Region. The Department of the Environment and Energy administers the EPBC Act, which provides protection of MNES through environmental assessment of referred proposals and conditions for approval. The Department of Agriculture and Water Resources administers the RFAs and undertakes periodic reporting on national and international obligations through the State of the Forests report series. The RFAs are administered by the *Regional Forest Agreement Act 2002* which gives effect to certain obligations of the Commonwealth under RFAs.

4.2 Management of key disturbance activities and threatening processes across lands managed by the Department of Biodiversity, Conservation and Attractions

Different types of disturbance activities have different impacts, varying in scale and duration. Key disturbances within the RFA region with potential impacts on CAR values and ESFM are

mining and exploration activities, infrastructure development and maintenance, prescribed fire and timber harvesting. Key threatening processes across all lands within the RFA region include the predation of native fauna by introduced foxes and feral cats, the impact on native vegetation by the introduced *Phytophthora* dieback disease, and the effects of invasive weed species and pest animals on ecosystems. Prescribed fire, mining, infrastructure development and key threatening processes are managed across all lands managed by DBCA (including State forest and conservation reserves) and the FMS applied is described below in sections 4.2.1, 4.2.2, 4.2.3 and 4.2.4. Section 4.3 outlines the approach to managing those MNES that occur within the WA RFA region.

A range of other activities that are also managed across all lands managed by DBCA but have a particular focus on biodiversity conservation or appreciation of wildlife and parks and are described below in section 4.4 on management of the CAR reserve system, even though this management system is also applied to State forest. All activities are managed within a risk management framework in accordance with DBCA policy (*Risk Management*, *Corporate Policy Statement No 56, Parks and Wildlife, 2015*). Timber harvesting is addressed in section 4.5.

The FMP 2014-2023 has a key goal of integrating biodiversity management across lands managed by DBCA. The objectives are to:

- maintain the net area and connectivity of native vegetation and reduce the impact of mineral and petroleum operations, State development and infrastructure projects on biodiversity and land;
- maintain habitat elements and vegetation diversity across spatial and temporal scales; and
- protect, and assist the recovery of, threatened and priority species of flora and fauna and ecological communities.

This goal is achieved through a range of actions including:

- making submissions in relation to development proposals, with a view to:
    - seeking to minimise the permanent loss of native vegetation and/or impacts on its integrity;
    - seeking to offset losses of native ecosystems in line with the *WA Environmental Offsets Policy;*
- promoting the construction of infrastructure such as roads, pipelines and other utilities at common locations, while minimising construction in sensitive areas;
- liaising with other State government departments and companies in relation to land management and encouraging them to act in a manner that is consistent with the FMP, seeking to minimise the impact on important areas, providing advice and assistance in relation to the effects on native ecosystems, the means by which those effects may be reduced and the appropriate rehabilitation of native vegetation;
- maintaining a list identifying threatened and priority species of flora and fauna, and threatened and priority ecological communities;
- developing, reviewing and implementing recovery plans for priority threatened species and ecological communities;
- undertaking prescribed burning having regard to the *Fauna Distribution Information System;*

- seeking to maintain a broad range of forest ages, structures and compositional diversity to provide resilience, flexibility to respond through adaptive management and a basis for the expression of variable and relative impacts of climate-related changes;
- conducting operations having regard to draft *Goals for Understorey Structural Diversity*;
- identifying and implementing management strategies that are designed to promote the adaptation of forest ecosystems, processes and individual biota to climate-related changes;
- reviewing the conservation reserve system, as necessary, to seek to ensure ongoing comprehensiveness, adequacy and representativeness, depending on the extent of any further significant changes to, or fragmentation of, forest ecosystems;
- revising relevant documents pertaining to fire management to seek to ensure that where practicable, its prescribed burning and bushfire operations consider appropriate measures to minimise loss of legacy habitat elements; and
- finalising the location of fauna habitat zones having regard to the *Guidelines for Selection of Fauna Habitat Zones* and conduct operations having regard to the *Guidelines for Protection of the Values of Informal Reserves and Fauna Habitat Zones*.

4.2.1 Prescribed fire

The application of prescribed fire on lands managed by the DBCA is undertaken for the purposes of:

- bushfire risk management;
- biodiversity management;
- vegetation management;
- water catchment management;
- silviculture (including forest regeneration); and
- research.

Prescribed burning is undertaken in accordance with the following key documents:

- *Prescribed Burning, Corporate Policy Statement No 88, Department of Parks and Wildlife, 2015;*
- *Fire Management, Corporate Policy Statement No 19, Department of Parks and Wildlife, 2015;* and
- *Fire Management Strategy 2017-2021, Department of Parks and Wildlife*.

Further detail and background is provided in Regional Fuel Management Plans (RFMP), manuals, fire management information notes, fire management guidelines, standard operating procedures, and technical guides.

While bushfire risk management is an outcome in most cases (since fuel is reduced), an individual prescribed burn is usually undertaken for a combination of purposes. The relative importance among the burn purposes will vary across the forest estate. However, burns conducted for the purposes of bushfire risk management and biodiversity management are prominent in the prescribed burning program.

Achieving successful fire management outcomes (including for longer-term biodiversity conservation purposes) requires the ongoing application of planned fire with carefully considered temporal and spatial dimensions. This is addressed through the development of a

prescribed burning program and plans for individual prescribed burns. Both the overall burn program and burn-specific plans integrate the various land and risk management objectives of the Department, consistent with the international standard for risk management, ISO 31000. This includes ensuring that the planning, approval and monitoring of each prescribed burn is undertaken by appropriately experienced and authorised personnel.

The prescribed burning program aims to manage biodiversity at a range of spatial scales and considers landscape, regional and local requirements. Burn program development facilitates this by applying a consistent process to prepare an indicative three-year burn program and an indicative annual burn program that reflect the objectives and priorities set out in RFMPs. This process is undertaken annually to ensure an indicative three-year plan is always available to support long-term planning and the scheduling of preparatory work. The indicative annual burn program enables detailed planning and burn implementation work to be undertaken (Figure 3). Knowledge and experience acquired through the process contributes to adaptive management (such as adjustment of burn timing and pattern in a warming and drier climate) and continuous improvement.

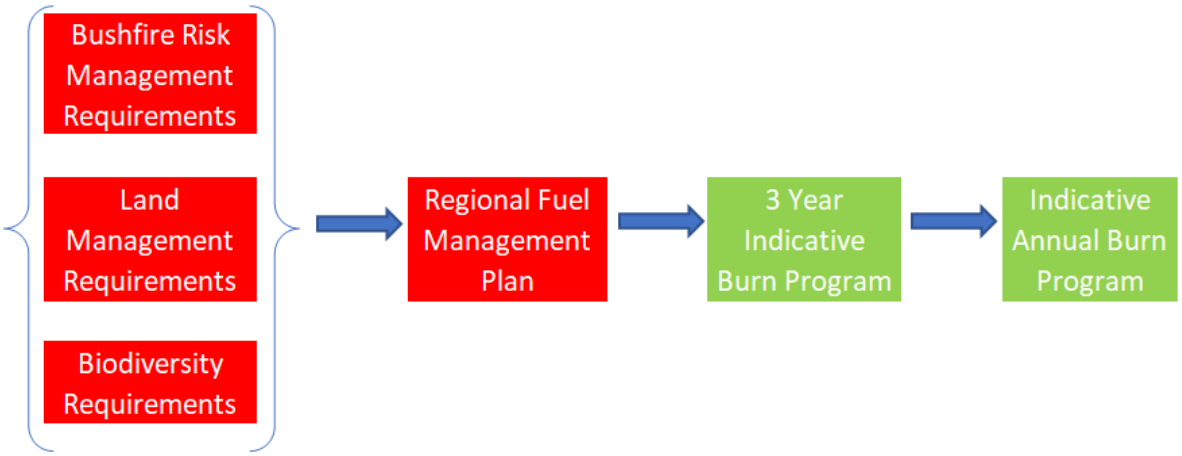

Figure 3: Broad outline of the approach to planning of the prescribed burn program

The RFMPs are key guidance documents for planning the application of prescribed fire. RFMPs seek to integrate land use, biodiversity conservation, strategic fire protection and community engagement considerations within a Departmental region to establish landscape-scale objectives, strategies and success criteria. The RFMPs provide important inputs to burn program planning, which develops a continuous program of planned burning to achieve these regional objectives. RFMPs have a five-year planning horizon and are reviewed through adaptive management.

Table 3 outlines the key steps involved in planning the prescribed burn program.

Table 3: Key steps involved in planning the prescribed burn program

Planning step
Identify fire management areas in the RFMPs based on asset distribution, fuel type and bushfire risk management zone and identify criteria for acceptable levels of bushfire risk for each.
Review the previous season's burning program.
Identify the 'conditional burning areas' in the region which, for various reasons, will have fire excluded from them during the planning period.
Compare the criteria set in the RFMPs to the current landscape risk and identify where risk treatment is required.
Identify where prescribed burning is required to achieve other land management outcomes, including biodiversity management.
Work collaboratively with stakeholders (local government, Department of Fire and Emergency Services, local community, industry) to identify any requirements for prescribed burning to address industry, research or community concerns.
Determine whether prescribed burns that were planned for, but not completed, last season, will be continued.
Based on the steps above, draft an indicative program of prescribed burning that addresses the requirements for bushfire risk management, biodiversity management, managing vegetation and habitats, managing water catchments, silviculture, research and community interest outcomes.
Regional burn program meeting to combine the draft district programs to a draft regional program and identify issues to be addressed when planning individual burns.
Develop burn purpose statements, preliminary risk assessment and priority for each prescribed burn.
Approval of regional program by the Regional Manager.
Collate the proposed regional programs to formulate a State program.
The three-year indicative prescribed burn program and annual prescribed burn program are published on the Department's public website and communicated to key stakeholders.

4.2.2 Mining

Each year, about 1,000 hectares of mostly State forests and timber reserves are subject to mining operations that include clearing, principally for extraction of bauxite, coal and gold. While most mined areas are rehabilitated with native species, there are enduring impacts on habitat and biodiversity, soils, water, carbon, production of wood and other forest produce, and recreation values. Given the potential cumulative, long-term impacts on conservation values from mining, a number of approaches are used to mitigate these impacts.

Exploration, extraction and rehabilitation activities are approved and largely governed by processes managed by other government agencies under legislation such as the Mining Act, Petroleum and Geothermal Energy Resources Act, State Agreement Acts, as well as the EP Act in the case of environmentally significant proposals (see Appendix 1). However, there is still considerable input from DBCA and the CPC through statutory consultation processes associated with approvals, input to management of current operations, agreement to rehabilitation requirements and outcomes and post hand-back management of rehabilitated sites. The goals and key actions that are applied to minimise the impact of mining are outlined in section 4.2.2.

Mining and other extractive industry proposals determined to be environmentally significant undergo environmental impact assessment under Part IV of the EP Act. The referral of resource development proposals on State forests by DMIRS is undertaken on the basis of the *Memorandum of Understanding (MoU) for Collaborative Arrangements between the Office of the Environmental Protection Authority and the Department of Mines and Petroleum* (February 2016)[1].

Where resource development related proposals are referred to the EPA for possible environmental impact assessment, advice is routinely sought from DBCA, prior to the EPA's assessment decision, in relation to potential impacts on the values of State forests and reserves affected and how such impacts may be addressed. Advice is also provided by DBCA during any formal impact assessment processes that are required, to assist with the EPA's evaluation of impacts and the development of suitable environmental conditions. Arrangements for the provision of DBCA input to formal impact assessments for mining and industrial development proposals are set out in a MoU between the former Department of Parks and Wildlife and the Office of the Environmental Protection Authority.

Mining and State Agreement legislation takes precedence over the CALM Act, but for all public reserves managed by the DBCA, including the areas covered by the WA RFA, statutory consultation with the WA Environment Minister (and in some cases the CPC) is required prior to the Minister for Mines and Petroleum giving consent for mining activities regulated under the Mining Act to proceed. A similar process applies to consent for entering CALM Act 'reserves' for petroleum exploration or development activities. DBCA provides support to the statutory consultation processes relating to consent for mining which are set out in section 24 of the Mining Act and also for a similar process for consent to undertake petroleum related activities, which is provided for under section 15A of the Petroleum and Geothermal Energy Resources Act. This role includes early discussions with the regulator agency and the tenement holders or applicants to assist in development of environmental management plans at the petroleum extraction phase or development proposals at the mining or petroleum extraction stage. In the case of mining under the Mining Act, this is preparatory to the provision of formal ministerial advice about possible consent for the proposed activities from the Minister for Environment (as Minister responsible for the CALM Act) to the Minister for Mines and Petroleum (in the form of either recommendations or concurrence for consent). In the case of petroleum activities, the Minister for Environment has the role of providing recommendations on whether and how consent for access to CALM Act-managed reserve lands may be granted.

In addition, all mining and associated development projects are required by the relevant State Government regulatory agencies to undergo processes to assess impacts on heritage and native title issues.

State Agreement Acts (SAA) are in force for the major mining projects operating within the WA RFA region (mostly State forest), covering the bauxite and alumina operations of Alcoa and Worsley[2], and coal mining operations of Griffin and Premier Coal. Specific and separate arrangements relating to environmental management, forest rehabilitation and payment of

1 Environmental Protection Authority and Department of Mines and Petroleum (2016). dmp.wa.gov.au/Documents/Environment/ENV-MEB-016.pdf

2 BHP Group Ltd

mining compensation exist for these operations, as set out in the relevant agreement (schedules to the Agreement Acts). State Agreements are currently administered by a separate government agency to the agency responsible for the Mining Act and operations under State Agreement Acts are not legally required to comply with the full regulatory provisions of the Mining Act. However, in general, they are assessed and managed in a manner consistent with the Act.

Extractive industry proposals other than those falling under the Mining Act are normally subject to approval by local government but may be determined to be environmentally significant and required to undergo environmental impact assessment under Part IV of the EP Act.

DBCA provides advice, including input into environmental approvals and rehabilitation standards, to proponents and decision-making authorities on a range of major resource and other development proposals. The aim is to guide the effective management of development projects and activities to maintain or improve biodiversity conservation outcomes for lands and waters managed under the CALM Act and species protected under the WC / BC Act, consistent with the FMP. This role extends to contributing feedback on the development and implementation of environmental conditions for mining development proposals and expansions of rail and other infrastructure by mining companies.

DBCA also fulfils various responsibilities relating to advice and decision making under the provisions of SAAs for resource development projects affecting lands managed by the Department. This includes bauxite mining and rehabilitation activities in State forests, coal mining and rehabilitation activities, and basic raw material extraction operations in State forest.

4.2.3 Infrastructure

There is a considerable network of roads, tracks and railways (some no longer in use), communications, water, power, gas and other utility structures and corridors throughout the RFA region. They service and support metropolitan and rural communities and a wide range of industries, provide access for people for tourism and recreation, and are critical for routine functioning of the economy. Many of these corridors are cleared and result in fragmentation of areas of native vegetation and habitat, and also provide opportunities for the spread of invasive species and disease-causing agents.

While some public infrastructure in in the region is located on adjacent non-CALM Act tenure (such as Shire road reserves), other infrastructure is subject to overlying easements or is authorised under water, public works or power utilities legislation applicable to Crown land. DBCA is often consulted and provides advice during planning of proposed public infrastructure in order to avoid or minimise impacts on CALM Act lands and associated values. When environmentally significant infrastructure proposals are identified, such proposals are required to be referred by the relevant decision maker to the EPA for a decision on whether formal environmental impacts assessment is required. DBCA then provides advice and information to assist the EPA's evaluation of the proposal prior to final consideration and the application of approval conditions under Part IV of the EP Act.

4.2.4 Key threatening processes

Key threatening processes across all forest ecosystems within the RFA region include the predation of native fauna by introduced foxes and feral cats, the impact on native vegetation by

the introduced *Phytophthora* dieback disease, and the effects of invasive weed species on ecosystems.

The introduced European fox (*Vulpes vulpes*) and feral cats (*Felis catus*) continue to have significant impacts on populations of native fauna in WA. DBCA conducts a broadscale annual baiting program, under its Western Shield fauna recovery program, using 1080 (sodium monoflouroacetate) across over 80 per cent of the DBCA lands in the RFA region to protect and improve the status of threatened species. The Western Shield program operates in partnership with industry and the community and also includes wildlife monitoring, recovery, translocation and research programs, which provide for continuous refinement and evaluation of priorities. This broadscale program is complemented by area-specific baiting following disturbance operations such as timber harvesting or major bushfires. Key control documents are *Management of Pest Animals, Corporate Policy Statement No 12, Department of Parks and Wildlife, 2015*, *Western Shield Plan 2017-2026;* and *Framework for Fauna Conservation, Department of Parks and Wildlife, 2016*.

***Phytophthora* dieback** is caused by the plant pathogen *Phytophthora cinnamomi,* which kills susceptible plants (including banksias, jarrah and grass trees) by attacking their root systems. More than 40 per cent of Western Australian native plants are susceptible to the disease, particularly those in the State's south-west. Planning and operations are supported by policy and guidelines including *Management of Phytophthora Disease, Corporate Policy Statement No 3, Department of Parks and Wildlife, 2015*; and *Phytophthora Dieback Management Manual, FEM079, Department of Biodiversity, Conservation and Attractions, 2017*. DBCA has an ongoing program of mapping the disease occurrence to inform all ground disturbance operations (such as roading or timber harvesting) or to manage access within reserves. As at December 2017, over 700,000 hectares of forest ecosystems within the RFA region had been intensively mapped for dieback to manage operations or inform priorities for weed management and other activities. The mapping provides the basis for hygiene management plans, which determine strategies to minimise the spread of the pathogen.

Weeds pose a serious threat to natural ecosystems and the native species they support. The presence of weeds may drive the loss of biodiversity through species competition and/or disruption to ecosystem processes. DBCA manages this threat in accordance with its policy (*Weed Management*, *Corporate Policy Statement No 14, Department of Parks and Wildlife, 2015*). A species-based prioritisation of weed species is used in each of the Department's regions, where weeds are assessed based on their invasiveness, impacts, potential and current distribution and feasibility of control, and regional lists identifying priority weed species and locations, a process that included consideration of biodiversity and other values at risk from these weeds. This process to maximise the efficiency and effectiveness of weed control actions allows for each region to apply appropriate management actions.

Altered hydrology and salinity is widespread in the south-west of WA largely as a result of land clearing for agriculture. This threat impacts DBCA managed lands, particularly where these intersect with areas cleared for agriculture along the inland margin of the WA RFA region. The focus of activity in addressing this threatening process is described in section 4.3.2 on "Wetlands conservation". Revegetation is used to mitigate the impacts of previous clearing. For example, DWER has plantings in the Wellington catchment that have successfully met salinity mitigation

objectives for the Wellington Reservoir. Requirements for phased harvesting and additional informal reserves apply in some forested areas of the south-west to manage the risk of groundwater levels temporarily rising (and hence salinity impacts) as a consequence of timber harvesting operations.

Climate change is a major threat to the range of forest values in the south-west. Over the last four decades a significant drying and warming trend has been observed, with substantial decreases recorded in rainfall, streamflow and in some catchments, groundwater levels. Adaptive management measures to enhance ecosystem resilience and adjust to reduced productive capacity were incorporated into the FMP. These included improved landscape connectivity of fauna habitat zones, reduced yield projections (and hence sustained yields) in the jarrah and karri forest ecosystems, revised guidelines for silviculture and prescribed burning, and expanded monitoring of forest health, weather patterns and hydrology implications.

4.3 Management of matters of national environmental significance across lands managed by the Department of Biodiversity, Conservation and Attractions

While there are nine MNES protected under the EPBC Act (see Section 2), within the WA RFA region MNES only include a National Heritage place, a Ramsar wetland, nationally threatened species and ecological communities, and migratory birds. The following briefly describes how these MNES are managed through the FMS. Other MNES are not discussed as they do not occur within the RFA region and are therefore not considered relevant to the forest management system in the south-west of WA.

4.3.1 National Heritage and Commonwealth Heritage places

Within the RFA region there is one place listed with National Heritage protection under the EPBC Act – the Goldfields Water Supply Scheme. This feature consists of an above ground water pipeline that extends over 560 kilometres, from Mundaring in the west to Kalgoorlie in the east. Opened in 1903, the pipeline (and associated pump installations) is listed to recognise the engineering accomplishment and for its role in opening up the south-western agricultural areas to development. There are 52 kilometres of the pipeline in the RFA region with approximately 13 kilometres traversing areas included in the CAR reserve system.

The pipeline remains critical infrastructure and continues to supply water to the Agricultural and Goldfields regions of WA. The pipeline corridor is recorded in the DBCA spatial datasets referenced during planning and disturbance approval processes. Activities such as the construction and maintenance of adjacent fire breaks and regular fuel reduction burning adjacent to the pipeline and associated pumping stations are undertaken to protect this listed National Heritage feature.

There are also two places listed on the Commonwealth Heritage list, the Bindoon Defence Training Area (BDTA) and the Cape Leeuwin Lighthouse. The Department of Defence manages the natural values of the BDTA as a CAR informal reserve for the protection of identified CAR values.

The Cape Leeuwin Lighthouse was listed in 2004 in recognition of its historical value. The lighthouse was built in 1896 from locally-quarried ashlar limestone, and is considered exceptionally important as its original lens array and rotation mechanism demonstrate the

earliest use of the mercury bath system in Australia (Department of the Environment and Energy, n.d.) The lighthouse remains operational and is actively managed as a popular tourist destination.

4.3.2 Wetlands of international importance (Ramsar wetlands)

The Ramsar Convention is an international convention on wetlands which takes its name from the Convention on Wetlands, signed in Ramsar, Iran, in 1971. Section 42 of the EPBC Act does not exempt forestry operations in Ramsar wetland sites from the controlled action provisions.

The Muir-Byenup System is the only listed Ramsar site within the WA RFA region. The System supports threatened species and ecological communities and comprises 10,631 hectares located in the southeast of the region. The site is a nature reserve managed by DBCA for the purposes of 'water and conservation of flora and fauna' and therefore is not available for timber harvesting operations. Any indirect or offsite activities that may impact the values of the area are managed through those elements of the FMS that address ecosystem health and vitality, soil and water conservation and climate change and carbon cycles.

There are other wetlands within the RFA region and DBCA plays a major role in wetland conservation in WA through:

- custodianship of a range of wetland data and mapping;
- coordinating the management of the State's most significant wetlands;
- providing advice to decision making authorities about the protection of wetlands;
- conducting research into wetlands;
- providing information on wetland restoration and management;
- assisting private landowners to manage high value wetlands; and
- being responsible at a State level for implementing international treaties that relate to the protection of migratory birds.

The key legislation and policies for wetlands in WA are documented in *A guide to managing and restoring wetlands in Western Australia (Chapter 5)*, while *Protecting our wetlands in Western Australia* provides a summary of State wetland protection mechanisms.

4.3.3 Threatened species and communities

Threatened species and ecological communities are protected by a suite of planning and operational controls within WA's FMS that operate across a range of scales. The framework to guide planning and decision-making reflect both the scale and direct effects of operations locally, and as a component of an integrated management system linked into broader scales of strategic planning over longer timeframes. Table 4 below outlines examples of these mechanisms and processes at the three scales of management recognised by the FMP 2014–2023.

Table 4: Examples of mechanisms in the WA FMS for the protection of nationally listed threatened species and ecological communities

Whole of forest	Landscape	Local
CAR reserve system	Flora and fauna databases and distribution models	Flora and fauna surveys and field inspections
Fauna habitat zones	Strategic planning initiatives	Licensing and permit systems
Three-year and annual timber harvest plans Silviculture guidelines Soil and water conservation guidelines	Coupe level harvest planning Silviculture prescriptions and standards Phased harvesting requirements for the management of salinity	Operational approvals and procedures specifying tactics and strategies for the protection of: • threatened or rare fauna • key habitat for listed threatened or specially protected species • fauna recovery translocation areas, release areas • areas with approved fauna management plans
Recovery plans, interim recovery plans and conservation advice	Regional conservation plans	Site specific recovery programs
Disease risk areas and identified protectable areas for *Phytophthora* disease risk management	Hygiene mapping, monitoring and risk assessment processes	Hygiene management plans
Invasive species management programs, threat abatement plans and risk assessments *Western Shield* fauna recovery plan	Regional and district pest and weed management strategies	District standard operating procedures and operational plans for shooting, trapping, baiting and weed management
Habitat and species-specific fire management guidelines	Regional fuel management plans	Conditional burning areas including no planned burn, temporary fire exclusion (habitat) or specified management regime
Three-year and annual prescribed burn program	Seasonal regional and district burn programs	Individual burn prescriptions

The FMS provides for the comprehensive detection and management of threatened species and communities. These values are detected through the *Disturbance Approval System* (DAS) (DBCA, 2018) and on-ground surveys conducted by FPC field staff, DBCA specialists or consultants.

Once a threatened species or community value has been detected, a combination of mechanisms as outlined above in Table 4 and specialist advice from DBCA staff are used to ensure sustainable management of the value. Sustainable management covers a range of responses, from complete avoidance of disturbance to mitigating potential impacts, informed by recovery plans, silviculture guidelines and other specialist advice. The indirect, or offsite, impacts arising from disturbance activities are also managed through the FMS, which has specific management requirements for the full range of ESFM values.

Any new listings of species or communities (or other MNES) are captured by WA's FMS through the adaptive capacity of the mechanisms outlined above in Table 4. This occurs through the continual review and updating of these mechanisms. For example, when new species are listed, or there is a change in the status of a species or ecological community (whether through State or Commonwealth processes), notification is provided within DBCA to custodians of the DAS, guidance documents, planning processes and regional staff responsible for flora or fauna conservation. Where necessary, review of guidance documents or procedures (such as prescribed fire or silviculture guidelines) is undertaken with DBCA specialists. Proposed changes to management actions will be endorsed through corporate approvals processes.

Recovery plans play a key role in planning for the management of biodiversity conservation values. DBCA's policy for recovery plans (*Conserving Threatened Species and Communities, Corporate Policy Statement No 35, Department of Parks and Wildlife, 2015*) guides activities to improve the conservation status of listed threatened species and listed threatened ecological communities, resolve the conservation status of poorly known species and ecological communities on priority lists, and manage processes threatening the persistence of species and ecological communities (threatening processes) to reduce their potential impact. Frameworks for flora and fauna conservation also provide guidance (*A Framework for Flora Conservation, Department of Parks and Wildlife, 2016*; *A Framework for Fauna Conservation, Department of Parks and Wildlife, 2016*).

Corporate guidelines assist for listing and recovery of threatened species and communities (*Listing and Recovery of Threatened Species and Ecological Communities, Corporate Guideline No 35, Department of Parks and Wildlife, 2015*) and for translocation and breeding (*Recovery of Threatened Species through Translocation and Captive Breeding or Propagation, Corporate Guideline No 36, Department of Parks and Wildlife, 2015*).

Key elements of the management system that support recovery planning are to: identify species and ecological communities eligible for listing as threatened or otherwise in need of special protection and implement administrative processes to list them; identify species and ecological communities that are eligible for placing on Priority lists and implement an administrative process to do so; identify processes that could lead to species and ecological communities becoming extinct (threatening processes) and, where feasible, implement programs to mitigate their potential impacts; implement recovery plans to conserve the widest possible genetic variation within a threatened species and the widest range of variability in distribution and species composition within a threatened ecological community, maintain the extent of occurrence of listed species and ecological communities, and improve the conservation status of threatened species and ecological communities; and undertake management actions to

reduce the risk to priority species and ecological communities from known threatening processes.

Appendix 4 provides case studies on the management of listed species to demonstrate how the system sustainably and adaptively manages a listed species (woylie, numbat, black cockatoos) or the effect of an activity on a group of listed species (prescribed fire and threatened flora).

4.3.4 Migratory species

Twenty-five listed migratory bird species have been recorded in the RFA region. Most of these are shore birds whose habitat is not impacted by forestry operations. The habitats frequented by these birds are protected as necessary during planned disturbance activities such as fuel reduction burning. For example, the timing, boundary or ignition pattern of prescribed burns may be modified to ensure the habitat remains intact and can accommodate the needs of the returning flocks.

4.4 Management of the CAR reserve system

Under the WA RFA, the WA and Australian Governments agreed to establish a CAR reserve system for forests, which meets the national agreed criteria to ensure the long-term conservation and protection of WA's forest biodiversity, old-growth forest and wilderness values.

WA's CAR reserve system comprises:

- Public land - formal reserves;
- Public land - CAR informal reserves;
- State-owned freehold land and Commonwealth land - lands with CAR values protected under secure management arrangement by the landholders or managing authority.

The RFA CAR reserve system was built on WA's pre-existing reserve network through the addition of new reserves. The reserve system has been further extended through:

- the WA Government decision following advice of the Ministerial Advisory Group on Karri and Tingle Management which increased reservation of old-growth karri forest and old-growth karri/yellow tingle forest;
- the *Protecting our old-growth forests* policy (2000) which was implemented through the FMP 2004–2013;
- additional reserves proposed through the FMP 2004–2013;
- additional reserves proposed through the FMP 2014–2023; and
- land acquisitions for addition to the reserve system.

The terrestrial reserve system extends over land, inland waters and estuaries and includes both public and private land. It provides protection for a wide range of WA's natural and cultural heritage values, including native forest and non-forest vegetation communities, geodiversity, biodiversity and water values, wilderness, old-growth forest, and historic and Indigenous heritage. The reserve system also provides opportunities for nature-based recreation and is a cornerstone of the tourism industry in the south-west of WA.

As at 30 June 2018, the CAR reserve system in the WA RFA region comprised 1.288 million hectares (of which 1.19 million hectares is formal reserve), 30 per cent of the land area and 61

per cent (926,990 hectares) of its native forests. This level of reservation meets or exceeds the levels of protection sought for the range of values (including old-growth forests and forest ecosystem representation) defined in the JANIS Reserve Criteria. Of the reserved public land, almost 95 per cent (1.23 million hectares) is managed by DBCA. There is a further 30,000 hectares of private land (not part of the CAR system) which are managed through conservation covenants or under the Land for Wildlife program to protect the native forest or biodiversity values. Figure 4 shows the extent of the WA CAR reserve system as at June 2018.

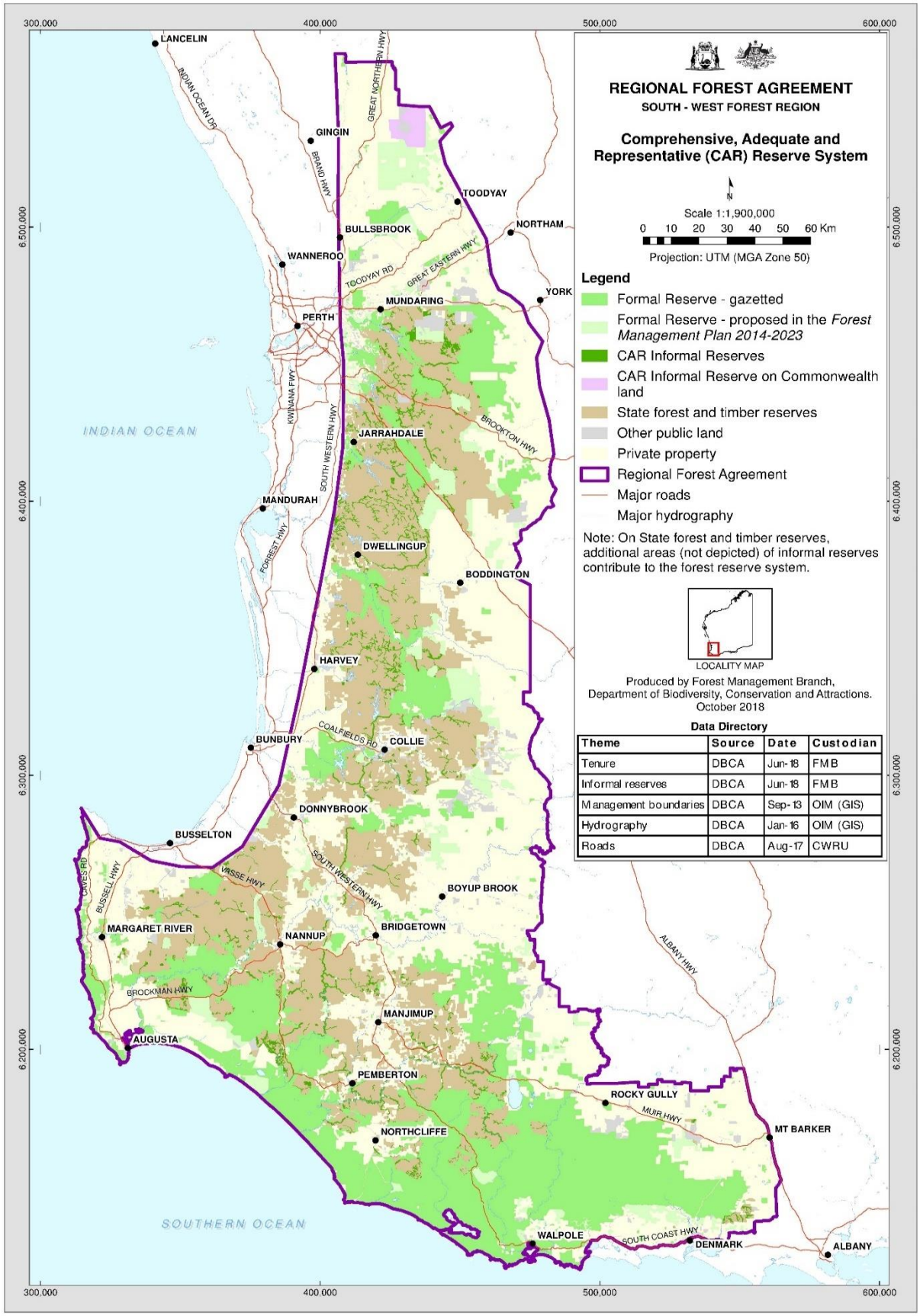

Figure 4: The RFA CAR reserve system in the Western Australia RFA region (at June 2018)

4.4.1 Reserve classification

The International Union for Conservation of Nature (IUCN) has developed management categories to classify protected areas according to their management objectives. This categorisation has broad international acceptance and the government has used it to categorise the State's reserve system based on the primary management objective, including national parks, conservation parks, nature reserves and other Crown reserves which are established under the *Land Act 1933* or the *Land Administration Act 1997* and State forest, timber reserves, marine parks, marine nature reserves and marine management areas established under the *Forests Act 1918* or the CALM Act. Reserves can also be established through Acts of Parliament, which occurred in the WA RFA region with three Reserves Acts that were passed in November and December 2004.

The RFA reserve system in WA includes the following elements on public and private land.

Formal reserves on public land. Formal reserves comprise the following reserve classes: national park, conservation park, nature reserve, CALM Act section 5(1)(g) and 5(1)(h) reserves, forest conservation areas in State forest, other Crown reserves, Walpole and Nornalup Inlets Marine Park and parts of the Swan Canning Riverpark. The processes of reserve creation are influenced by the tenure type, reserve class and governing legislation. Often formal reserves are created though actions by the Minister for Lands, proclamation by the Governor of Western Australia or by proclamation of an Act of Parliament. Tenure, reserve class and governing legislation also influence the process to revoke formal reserves.

Private freehold land: Where this is under State management it is considered part of the CAR reserve system if these lands are managed under s8A of the CALM Act through a joint management agreement. The agreement allows management of these lands as a national park, conservation park or nature reserve.

CAR Informal Reserves. Informal reserves are recognised under the RFA on the basis that they are set aside specifically for conservation purposes and meet the principles established in the JANIS Reserve Criteria. CAR informal reserves include:

a) stream reserves of a width equal to or greater than 150 metres;
b) those informal reserves and adjoining areas of land that were accredited by the Commonwealth Scientific Advisory Group for the Deferred Forest Agreement;
c) diverse ecotype zones of an area equal to or greater than 40 hectares;
d) 400 m wide travel route reserves in the area containing karri yellow tingle ecosystem; and
e) The Bibbulmun Track travel route reserve (400 metres wide).

In addition to the CAR reserves established under the RFA, there are a range of other informal reserves and other areas in State forests and timber reserves that are set aside from timber harvesting through FMPs. These areas protect conservation values and enhance the delivery of ESFM. Within the WA RFA region these additional areas total 249,000 hectares and comprise:

- other informal reserves (stream reserves of a width less than 150 metres, other travel route reserves, previously unmapped areas of old-growth forest, diverse ecotype zones less than 40 hectares); and

- fauna habitat zones, which are areas ranging in size from 50 to 200 hectares set aside from disturbance to facilitate the recovery of fauna populations in adjacent areas of forest.

4.4.2 Reserve estate spatial datasets

The maintenance of accurate spatial datasets for the RFA CAR and other reserves is an essential component of the FMS. These datasets define the base land tenure and purpose (as determined through legislation and the FMPs) upon which the range of vegetation, terrain, hydrology and other data is integrated.

Land tenure is maintained by the State's Landgate agency (custodian of the land titles system) while DBCA is the custodian of the other datasets defining proposed reserves, informal reserves and other management constraints on public lands in the RFA region. These corporate datasets are updated annually and made available for strategic and operational planning and the generation of reports (including the CAR reserve system statistics used in land assessments, the national State of the Forests reports and government annual reports). A separate register is also maintained of the progress toward gazettal of land parcels proposed for reservation or tenure change through the FMPs (and hence the RFA).

DBCA has maintained a comprehensive process since 1999 for authorising changes to the spatial datasets depicting the RFA CAR or other reserve boundaries. Changes can arise from field surveys conducted during planning for disturbance operations, such as when the spatial location of streams (and hence the associated informal reserve) varies from the original base data depiction. Changes to the corporate datasets are verified in the field and authorised at Branch Manager level when they may affect RFA statistics.

4.4.3 Public land reserve management

The management of nearly all formal reserves and all informal reserves is the responsibility of DBCA and subject to the CALM Act and associated Regulations. The CALM Act sets out the management objectives for each reserve class and this determines the broad categories of use and development for each class. This Act is the central legislation that regulates and guides the management of activities in reserves.

DBCA's policy for the conservation reserve system (*Conservation Reserve System, Corporate Policy Statement No 36, Department of Parks and Wildlife, 2017*) is to:

- establish and maintain a statewide conservation reserve system that is broadly representative of the State's natural ecosystems and habitats, contains viable populations of species and ecological communities, and protects areas of high conservation value and cultural and heritage significance
- manage conservation reserves to maintain or enhance biodiversity and ecological processes, including habitat and ecological conditions for priority and threatened species and communities, and to protect significant cultural and heritage values
- manage conservation reserves to enable use while minimising impacts to the conservation values by facilitating customary activities by traditional owners, providing opportunities for people to visit and enjoy the reserve system and enabling ecologically sustainable use of natural resources, where appropriate

- promote and undertake scientific research and monitoring to develop a knowledge base for effective reserve management
- undertake, coordinate and encourage education aimed at increasing public awareness, appreciation and understanding of biodiversity conservation, and the role of the conservation reserve system
- undertake periodic performance assessments to evaluate the effectiveness of the conservation reserve system in meeting goals and objectives for conservation of biodiversity and cultural values.

The following strategies are used to implement the Conservation Reserve System policy:

- establish conservation reserves based on strategic priorities and contribution to CAR targets
- establish new, or amend existing, conservation reserves in accordance with the requirements prescribed in the CALM Act and *Land Administration Act 1997* as appropriate for the current tenure and proposed reservation type, ensuring native title requirements are met
- prepare, implement and review management plans with clearly defined objectives for maintenance, sustainable use and, where necessary, restoration of identified conservation values
- establish and manage classified areas or management zones, as prescribed in section 62 of the CALM Act, within conservation reserves where necessary, to provide for priority use of these areas according to the level of protection to be provided and the degree and nature of use
- identify the key ecological, social and cultural values of the conservation reserves, the threats to these values, and undertake or support collaborative scientific ecological and social research targeted to improve knowledge and guide appropriate reserve management
- implement management actions, prioritising those actions that protect the greatest diversity of species, threatened and priority species and communities, and key ecological processes
- in consultation with traditional owners, identify and protect culturally important landscapes and places, and provide access for Aboriginal customary purposes
- develop joint management arrangements with traditional owners to collaboratively manage conservation reserves
- undertake, support and collaborate on robust long-term monitoring of species, communities and ecosystems, the pressures impacting them and the effectiveness of management responses, and use findings to inform and continuously improve reserve management
- promote increased community understanding and appreciation of the value of conservation reserves, and of implementing a range of conservation management measures to protect biodiversity and cultural values, through education, recreation and tourism opportunities, including developing and operating educational and interpretive facilities and programs, and disseminating information
- work cooperatively with neighbours to manage values and threats impacting on the reserves and adjoining properties. Encourage complementary land management practices, sustainable use and property planning taking a landscape-scale approach to build ecosystem resilience and protect key biodiversity values

- develop and maintain effective cooperative arrangements and collaboration with key stakeholders and partners for the purposes of acquiring, establishing, managing and monitoring conservation reserves.

The Department's management of the reserve system includes:

- management for both biodiversity conservation and visitor services for appreciation of nature and parks (see section 4.4.4 below), including
  - acquisition and administration
  - management planning
  - managing activities where no management plan is in place
  - approvals process for activities
  - relations with neighbours
  - volunteers and community involvement
  - compliance and enforcement
- management with a focus on biodiversity conservation (see section 4.4.4.1 below)
  - management of threatened species and communities
  - wetland conservation
  - threatening processes
  - sustainable use of native plants and animals
  - building knowledge of biodiversity conservation
  - regional conservation plans
- management with a focus on visitor services for appreciation of nature and parks (see section 4.4.4.2 below)
  - aboriginal liaison and customary activities
  - formal management arrangements with Aboriginal people
  - recreation facilities and access
  - enriching visitor experience
  - recreation activities and trails
  - commercial operations

Whilst many of these activities are managed across all lands managed by DBCA (including State forest and timber reserves) for convenience they are described below in the section on management of the CAR reserve system because there is a particular focus on biodiversity conservation or appreciation of nature and parks.

4.4.4 Planning and operations

WA's reserve system is managed within the context of WA and Commonwealth legislation, international treaties, government policies and best-practice principles, strategies and guidelines.

The Australian Government is a signatory to a number of cultural and environmental international Treaties and Agreements, which are considered in managing reserves (see section 2).

Acquisition and administration

DBCA undertakes a land acquisition function and prioritises for purchase areas containing ecosystems not adequately represented in existing conservation reserves, areas containing threatened species and ecological communities, or additions to existing reserves that would improve their diversity, connectivity or management. Other programs and processes can lead to the acquisition of lands suitable for inclusion in the conservation reserve system, including land ceded to the State as a condition of subdivision, land acquired from negotiated exchanges and reserves no longer required by other agencies and organisations. The implementation of tenure changes proposed in DBCA's management plans can be a lengthy process involving (i) resolution of native title (ii) DMIRS support for the tenure changes, and (iii) consideration of the rights of SAA mining lessees. Key control documents are *Conservation Reserve System, Corporate Policy Statement No 36, Department of Parks and Wildlife, 2017* and *Tenure Boundaries, Corporate Guideline No 18, Department of Parks and Wildlife, 2015*.

The CALM Act provides for permits to be issued for apiary sites, and permits are administered by DBCA. Apiary sites may be permitted on Crown land where this is in accordance with DBCA's apiary policy and guidelines (*Beekeeping on Crown Land*, *Corporate Policy Statement No 41, DBCA 2017*; *Beekeeping on Crown Land*, *Corporate Guideline No 25, DBCA 2017*). There are more than 3,500 apiary site permits across the whole of WA, of which nearly 2,000 are on DBCA managed lands, with approximately 60 per cent of these on State forest and timber reserves.

DBCA prepares, issues, administers and renews leases on CALM Act lands for a wide range of purposes including recreation, tourism accommodation, utilities and sawmills, and works with lessees to resolve any lease management issues in accordance with the corporate policy and guidelines *(Recreation, Tourism and Visitor Services, Corporate Policy Statement No 18; Recreation, Tourism and Visitor Services, Corporate Guideline No 32, DBCA 2017)*.

Management planning

DBCA undertakes both statutory and non-statutory management planning for the reserves it manages. Statutory management plans include area management plans under the CALM Act (including the FMP 2014-2023), recovery plans and wildlife or biodiversity management programmes under the WC and BC Acts and non-statutory plans including regional conservation plans (see section 4.4.4.1 below).

The FMP 2014-2023 provides the overarching planning framework for both State forest and conservation reserves in the WA RFA region. This is supplemented by specific area management plans prepared under Part 5 of the CALM Act. The Act requires a formal public notification of proposed management plans and consideration of public submissions. Proposed plans can be referred to the EPA for environmental impact assessment under the EP Act, as have the FMP 1994-2003, FMP 2004-2013 and FMP 2014-2023. A list of CALM Act management plans (to 30 June 2018) applicable to the WA RFA region is at Appendix 5.

The governance framework for development and implementation of a forest management plan is described above in section 4.1 and some of the goals and key actions of the FMP 2014-2023

are described in section 4.2. The FMP 2014-2023 includes a listing of 265 reserve proposals for the region, ranging in size from two to 38,050 hectares.

Management plans contain a statement of the policies or guidelines proposed to be followed and a summary of operations proposed to be undertaken, for a period not exceeding 10 years, though they can remain in operation until they are cancelled or replaced. Management planning is guided by the CPC's *The preparation of management plans for lands vested in the Conservation Commission under the Conservation and Land Management Act 1984 (Position Statement No 6, Conservation Commission of Western Australia)*.

The approach to management planning aims to provide for consistency in the structure and content of management plans and the integration of species and ecosystem conservation and cultural and heritage strategies. In general, management plans contain management directions for the following:

- key values and threats
- natural environment (physical and biological)
- cultural heritage
- visitor use
- managing resource use.

Managing activities where no management plan is in place

DBCA manages reserved land in accordance with management plans. Where there is no management plan, the Department manages:

- in the case of nature reserves and marine nature reserves, in such a manner that only necessary operations are undertaken; and
- in the case of national parks, conservation parks and other reserves in such a manner that only compatible operations are undertaken.

Necessary operations are those operations that are necessary for the preservation or protection of persons, property, land, waters, flora or fauna, or necessary for the preparation of a management plan (*Necessary Operations – A Guide for Managers, Management Guideline No 2, DBCA 2011*). Compatible operations include necessary operations and are operations approved by the Minister as being in his or her opinion compatible with the purposes for which the park or management area is managed, these are generally related to recreation.

Approval process for disturbance activities

DBCA approves and regulates activities and operations using the Disturbance Approval System (DAS) to check the environmental and heritage sensitivity of proposed operations, mitigate potential impacts and approve acceptable operations and activities prior to implementation.

On lands managed by DBCA within the RFA region, the DAS is used by proponents of such activities as timber harvesting (FPC), infrastructure works, road construction and site development (including by DBCA). Mining and prescribed burn activities presently have separate assessment and approvals systems.

The structure of the system is based on the Montreal criteria for ESFM. DAS is a web-based application designed to:

- assess the impact of disturbance activities to ensure that planning actions maintain values that might be affected by the activity;
- ensure compliance with the FMP and legislation requirements associated with managing DBCA lands and waters;
- provide an appropriate framework for monitoring activities; and
- ensure the process of planning has defined responsibilities and tracking systems for completion of action items.

The system guides a proponent through the planning actions to be completed before approval of a disturbance activity may be submitted for endorsement by DBCA Regional managers. Each of the sections within the system is linked to help text to guide the proponent to find relevant data, information, legislation and guidance documents. The system documents all supporting field surveys and information, together with decisions on the approval, rejection or conditions placed on the proposed disturbance activity.

Relations with neighbours

DBCA has a *Good Neighbour Policy (Corporate Policy No 65, Department of Environment and Conservation, 2007)* that guides the management of cross-boundary issues that affect the Department and its neighbours. In many cases, both parties have roles and responsibilities set out in legislation, and the Department aims to work to build good relations in its application of legislation, policies and actions. The policy recognises the following principles for effective good neighbour relations:

- a 'two way process' between both the Department and neighbours of lands managed by the Department;
- establishing and maintaining open, positive and respectful relationships with neighbours is essential, and a priority for Department staff;
- all landowners and managers can benefit from maintaining a productive and sustainable environment;
- the Department will consider the potential broader social impacts on neighbouring communities when making management decisions and setting Departmental policy; and
- issues and problems are generally best addressed at the local level.

Stakeholder engagement is an essential part of sustainable forest management, and the FPC has a stakeholder engagement framework and a procedure for identifying and notifying stakeholders prior to management activities.

Volunteers and community involvement

Volunteers are highly valued by DBCA because they build communication links and understanding between the Department and the community. Volunteers make a significant contribution to the management of parks and reserves and to a range of conservation programs throughout the State with more than 5,000 volunteers contributing more than 600,000 hours to projects across WA in 2015/16. DBCA's policy is to encourage and facilitate voluntary activity

that contributes to the achievement of DBCA's biodiversity conservation, recreation and land management objectives and which builds community awareness, understanding and commitment to these objectives; ensures appropriate opportunities for voluntary participation are provided for individuals, interest groups, peak organisations and communities; and facilitates involvement in educational and social development programs relevant to the Department's mission (*Volunteers and Community Involvement*, *Corporate Policy Statement No 15, Department of Parks and Wildlife, 2016)*.

Compliance and enforcement

In relation to compliance and enforcement, DBCA applies legislation consistently and fairly; encourages compliance with relevant legislation through providing information and education; responds appropriately to offences against relevant legislation; undertakes enforcement; and considers prosecution where appropriate (*Compliance and Enforcement, Corporate Policy Statement No 38*; *Department of Parks and Wildlife, 2016*, *Enforcement Options, Corporate Guideline No 38, Department of Parks and Wildlife, 2016*).

4.4.4.1 Biodiversity conservation

WA's land use planning system coordinates planning, land use and development through the review, approval and monitoring of planning schemes, policies, strategies, structure plans and subdivision and development applications, noting that:

- Land use planning policy and decision-making are largely the responsibility of the Western Australian Planning Commission, the Department of Planning, Lands and Heritage, local governments and redevelopment authorities.
- Planning in WA takes into account community, economic, environmental, infrastructure and regional development principles as set out in *State Planning Policy 1 State Planning Framework Policy*.
- DBCA has an important role in advising land use planning decision makers on environmental planning issues relating to biodiversity conservation and DBCA managed areas. This role is undertaken primarily through DBCA regional offices.
- Guidance on protecting the environment during planning and development is set out in the EPA's *Guidance Statement 33 - Environmental Guidance for Planning and Development*. Chapter B4 describes the requirements for the protection of wetlands.

Assessment of land and resource use impacts on public reserves and biodiversity conservation assets

DBCA has a significant role in providing advice to proponents and decision-making authorities on a range of major resource and other development proposals affecting DBCA managed lands and waters, other areas of conservation value and significant species and ecological communities. The aim is to guide the effective management of development projects and activities so as to maintain or improve biodiversity conservation outcomes for lands and waters managed under the CALM Act and species protected under the WC / BC Act.

The *WA Environmental Offsets Policy* and the *WA Environmental Offsets Guidelines* ensures that the basis for decision-making on environmental offsets is understood by regulators, government officers, industry and the community, and is consistently applied by regulators. The

Commonwealth's *EPBC Act Environmental Offsets Policy* and *Offsets Assessment Guide* outlines the use of environmental offsets and provides transparency around how the suitability of offsets is determined under the EPBC Act. Commonwealth environmental offset requirements may either be complementary or additional to State government environmental offsets relating to the same proposal. DBCA's policy and guidelines (*Environmental Offsets, Corporate Policy Statement No 4, 2016; Environmental Offsets – Proponent Land Management Contributions, Corporate Guideline No 14, 2015)* complement the State's and Commonwealth's environmental offsets policies and guidance, and acknowledge that DBCA may have any of the following roles in environmental offsets:

- as the agency with overall responsibility for planning and implementation of the protection of biodiversity in WA, providing advice on biodiversity conservation values, the significance of impacts and the suitability of environmental offset activities;
- as the agency that manages lands and waters under the CALM Act and wildlife under the WC / BC Act; and / or
- as a party that may be directly responsible for management (implementation) of environmental offsets.

Sustainable use of native flora and fauna

DBCA manages commercial, hobby and scientific fauna and flora utilisation in a sustainable manner for the species involved and the environment, via:

- licensing activities that will result in the taking of protected fauna and flora, including for scientific purposes;
- licensing the keeping and displaying of animals for educational and public purposes;
- ensuring licensed activities meet standards;
- undertaking research into the impacts of harvesting or other disturbance activities on protected fauna and flora;
- preparing and implementing biodiversity management programmes and any associated codes of conduct or management guidelines;
- monitoring the compliance and sustainability of industry activities; and
- reporting on the implementation of wildlife management programs (*Management of Wildlife Utilisation, Corporate Policy Statement No 37, Department of Parks and Wildlife, 2015*).

Wildlife or biodiversity management programs may be prepared for species that are subject to harvesting or other exploitation through human interaction. Biodiversity management programmes may be prepared under the BC Act to provide a strategic framework, linking together legislated and policy instruments in a manner to best achieve the desired outcome of conservation or sustainable use of biodiversity, and may cover the conservation, protection and management of native species and ecological communities, critical habitats or a combination of species, communities and habitats. Wildlife management programs under the WC Act will be progressively replaced by biodiversity management programmes under the BC Act.

A wildlife management program is in place for Muir's corella, which is specially protected by the WC Act having been removed from the threatened species list in 2012. Stakeholders impacted by Muir's corella may seek a damage permit to not only disturb or scare the birds but to also destroy birds where there is significant impact on their farming enterprise and/or lifestyle. This

creates some significant challenges to meet the expectation of the community to control the birds as they are regarded as a pest, yet not to decrease or impact on the species population to such an extent it again meets the criteria for listing as a threatened species. The wildlife management program considers and identifies the actions needed to meet the community demands for management of the birds and for the continued conservation of the species.

Building knowledge of biodiversity conservation

DBCA has systems and projects that operate across the State to build knowledge about biodiversity and its management. These systems and processes are guided by DBCA's policy (*Science*, *Corporate Policy Statement No 28, Department of Parks and Wildlife, 2015* and *Science Strategic Plan 2018-2021 DBCA, 2018)*. DBCA's policy is to ensure that science projects are aligned with the Department's service priorities, are well planned and executed and communicate results to relevant staff for implementation. A range of staff guidelines assist staff in planning, implementing and communicating science projects.

Science projects across the State are focussed on:

- Undertaking biological surveys to document the State's rich biodiversity
- Providing knowledge of our State's biodiversity to ensure our natural heritage is protected, valued and appreciated
- Managing and curating the Western Australian Herbarium and conducting taxonomic research on plants, fungi and algae
- Assisting the WA Museum and other institutions with research into fauna taxonomy
- Providing the scientific basis, policy and strategic advice for landscape scale restoration and reintroduction programs and mitigating threats from feral animals, weeds and plant diseases, altered hydrology, unlawful activities and wildlife conflict and emergencies
- Delivering monitoring programs in our marine parks and reserves and FORESTCHECK
- Providing best practice science to support the continual improvement of the prescribed burning program and the use of fire to support conservation of species and communities
- Collaborating with partners, such as the Western Australian Biodiversity Science Institute (WABSI) and Marine Science Institute (WAMSI), CSIRO, universities and other research organisations to deliver Departmental goals
- Providing objective and informed advice to decision-makers on conservation values and mechanisms for their protection
- Engaging with Aboriginal people and the community
- Operating programs for the promotion of biodiversity conservation on land not managed by the Department
- Ensuring that research and monitoring outcomes are communicated widely and translated into management actions.

FORESTCHECK is the key monitoring project that operates in the WA RFA region. It is an integrated monitoring project, designed to provide information to forest managers about changes and trends in biodiversity associated with forest activities. FORESTCHECK was developed with input from scientists and managers within the Department, and from universities and other government agencies. Since 2002 it has been monitoring a wide range of organisms at multiple sites across the jarrah forest. Annual reports on progress are prepared and made

available on DBCA's website and a series of papers on the first 10 years of results were published in *Australian Forestry* journals in 2011.

Regional conservation plans

Regional conservation plans play a key role in planning for and achieving conservation outcomes for the CAR reserve system. These non-statutory plans are undertaken within a condition-pressure-response (CPR) framework, where long-term conservation goals are achieved through a system of ongoing evaluation of management actions ('response') undertaken to improve or maintain the status ('condition') of biodiversity assets by managing the threats ('pressures') they are under. Biodiversity assets may be managed at a range of scales – landscape/seascape, protected area, ecological community or species. The CPR model allows managers and other decision makers to appreciate the deeper root cause and effect pathways at play in developing and delivering biodiversity conservation programs. It also enables new, emerging and indirect threats to be factored into management strategies.

The regional conservation plans are informed by the identification of biodiversity assets through the *Biodiversity Audit of Western Australia's Biogeographic Regions*, biological surveys at local and regional scales and continuous updates of the list of assets. Both the description of the biodiversity assets and a consideration of potential threats provide the basis for the asset/threat assessment at a regional level and identification of strategic, longer-term regional objectives, priorities, conservation challenges and opportunities.

Regional conservation plans include strategic actions that cover:

- continuing to establish the formal terrestrial and marine conservation reserve system; implementing priority conservation and science actions;
- developing and implementing approved wildlife or biodiversity management programmes, including recovery plans for threatened species and communities;
- ensuring the sustainable use of flora and fauna, hobby keeping of fauna and the trade in wildlife are appropriately regulated and managed;
- managing wildlife interactions to protect life and property;
- reviewing and determining priorities for pest animal, weed and plant disease control and undertake actions to achieve conservation and protection of native fauna and flora;
- implementing priority and targeted actions to reduce the impacts of altered hydrology (e.g. climate variability, secondary salinity, acidification and eutrophication) on biodiversity and other values on CALM Act land;
- implementing actions to improve the resilience of threatened terrestrial and marine species and ecological communities under predicted climate change settings;
- providing consistent and timely advice to industry, regulatory agencies and the Minister on land use, resource extraction and industrial development proposals;
- refining and implementing prescribed burning programs to support biodiversity conservation; considering protection of biodiversity values when undertaking bushfire suppression;
- ensuring science programs address the gaps in knowledge and reflect the applied nature of advice required by the region to deliver effective conservation, protection and management of flora, fauna, ecological communities and conservation reserves;

- undertaking terrestrial and marine biological surveys that systematically address gaps in knowledge and increase understanding of biodiversity components and patterns to better inform wildlife and conservation reserve management, including joint management with Aboriginal traditional owners;
- planning and implementing translocations, including captive breeding programs and ex-situ seed storage where necessary, focussing on high priority threatened flora and fauna and the development of success criteria;
- strengthening the Department's internal and public communications to enhance community understanding about the value of wildlife and its conservation requirements, and the positive contribution that wildlife makes to people's lives;
- improving communication with stakeholders to ensure conservation funding is targeted towards programs and actions that provide high value conservation outcomes; and
- facilitating conservation actions on land not managed by the Department.

4.4.4.2 Visitor services

The Department operations to provide visitor services and community engagement focus on designing and building recreation facilities and services; managing parks, recreation areas, facilities and services to a high quality in order to protect the environment and provide a quality visitor experience; enriching visitor experiences by providing opportunities to learn, explore and interact with the natural and cultural environment; involving Aboriginal people; in managing conservation lands in order to protect the value of the land to the culture and heritage of Aboriginal people, and developing and nurturing lifelong connections between the community and parks in order to conserve and protect natural areas.

The FPC works with stakeholders, maintaining a strong focus on engaging with the community, industry, Aboriginal groups and their representative organisations.

Recreation facilities and access

DBCA aims to provide high-quality visitor services and facilities that are planned, designed, developed and managed in a sustainable way (*Recreation, Tourism and Visitor Services, Corporate Policy Statement No 18, Department of Parks and Wildlife, 2017; Recreation, Tourism and Visitor Services, Corporate Guideline No 32, Department of Parks and Wildlife, 2017*). DBCA prepares visitor services plans, master plans, concept plans and site development plans for many projects across the State. These documents guide government decision-making, assist with strategic planning decisions and funding applications, and enable capital works projects to be built to a high standard. Capital works are guided by the *Tourist Road Improvement Program* which focuses on repairing and upgrading access roads to the reserve system and DBCA's policy for roads (*Road Management*, *Corporate Policy Statement No 40, Parks and Wildlife, 2016*). The *Fire Related Bridge Maintenance and Replacement Program* allocates funds for bridge work so that access is maintained to enable prescribed fire and bushfire suppression, and therefore provides access for other activities. DBCA undertakes visual impact assessment, recommendations, guidelines and specialist advice for proposals.

Enriching visitor experience

DBCA manages recreation and visitor services to provide world-class recreation and tourism opportunities, services and facilities for visitors to the public conservation estate, while

maintaining in perpetuity WA's natural and cultural heritage. DBCA aims to: plan and advocate for a world-class park system that maintains or enhances WA's natural environment; design and build recreation facilities and services while retaining an area's distinctive social, cultural, physical and natural attributes; manage parks, recreation areas, facilities and services to a high quality in order to protect the environment and provide a quality visitor experience; enrich visitor experiences by providing opportunities to learn, explore and interact with the natural and cultural environment; involve Aboriginal people in managing conservation lands in order to protect the value of the land to the culture and heritage of Aboriginal people; and develop and nurture lifelong connections between the community and parks in order to conserve and protect natural areas (*Recreation, Tourism and Visitor Services, Corporate Policy Statement No 18, Department of Parks and Wildlife, 2017; Recreation, Tourism and Visitor Services, Corporate Guideline No 32, Department of Parks and Wildlife, 2017*).

DBCA encourages and facilitates voluntary activity which contributes to the achievement of the Department's objectives building community awareness, understanding and commitment; ensures appropriate opportunities for voluntary participation are provided for individuals, interest groups, peak organisations and communities; and facilitates involvement in educational and social development programs relevant to the Department's mission. Policy implementation is focussed on: providing opportunities for secondary school work experience programs; supporting the Bush Ranger cadet program; accommodating tertiary students seeking work experience or research/study opportunities; providing work experience opportunities for Aboriginal people; cooperating with community and conservation volunteer groups or other initiatives to assist where Departmental objectives can be met; identifying and developing appropriate opportunities for prisoners and community-based offender programs; strengthening relationships and partnerships with the community, business partners and recreation organisations to achieve the Department's goals (*Volunteers and Community Engagement, Corporate Policy Statement No 15, Department of Parks and Wildlife, 2016)*.

DBCA implements visitor risk management (VRM) procedures and practices through a comprehensive and integrated program and a consistent approach that: minimises the potential for injury to visitors to DBCA-managed lands and waters; encourages appropriate behaviour by visitors to DBCA-managed lands and waters that will reduce the risks posed by their activities in and around natural, cultural and developed sites; aligns with industry standards and best practice principles; and enables Departmental staff to effectively manage visitor risk. This corporate policy (*Visitor Risk Management, Corporate Policy Statement No 53, Department of Parks and Wildlife, 2015*) is supported by a guideline (*Visitor Risk Management, Corporate Guideline No 28, Department of Parks and Wildlife, 2015*) that outlines procedures to implement the corporate policy, and a range of operational guidelines that address specific risks and hazards.

Recreation activities and trails

DBCA liaises with other government agencies, local government, the outdoor industry and peak recreation activity groups to support and provide recreation opportunities; plans and manages for trails and recreation activities including advice on risk management; manages trails including Bibbulmun Track, Munda Biddi Trail and Cape to Cape Track (all in the WA RFA region); and

develop and nurture partnerships with community organisations in support of the Department's management of trails and recreational activities.

The FPC has a Stakeholder Engagement Strategy which is implemented through a range of actions, from providing consultation and feedback opportunities on management activities through to working with local organisations to sponsor events and support initiatives that provide lasting benefits to regional areas through its Community Support Program. Events sponsored include the Pemby Trail Fest, Cape to Cape MTB, Mountain Bike Australia National XCP – Pemberton rounds, and the Karri Cup MTB Challenge 2018.

Aboriginal liaison and customary activities

DBCA's policy and guideline in relation to Aboriginal customary activities is to establish the framework for decision making in relation to recognising activities undertaken by Aboriginal people for customary purposes, and in the application of relevant regulations (*Aboriginal Customary Activities, Corporate Policy Statement No 86, Department of Parks and Wildlife, 2015; Aboriginal Customary Activities, Corporate Guideline No 22, Department of Parks and Wildlife, 2016*). These documents guide DBCA staff who deal with Aboriginal customary activities on land to which the CALM Act applies and to apply the provisions of other Acts for which DBCA has responsibility. Implementation of the policy is supported by the *Guide to Aboriginal customary activities on Parks and Wildlife-managed lands and waters*. See section 4.7 in relation to management of Aboriginal heritage sites.

Management arrangements with Aboriginal people

DBCA's objectives for joint management are to: foster and facilitate Aboriginal involvement in the planning and management of lands and waters managed under the provisions of the CALM Act; protect and conserve the value of the land to the culture and heritage of Aboriginal persons under the provisions of the CALM Act; utilise the combined knowledge and skills of joint management partners for improved land management; develop the capacity of the Department and Aboriginal partners for effective joint management of CALM Act land; provide opportunities for Aboriginal people to achieve economic and social benefits through the jointly management of lands and waters; and provide opportunities for park visitors to experience and learn about the culture, history and aspirations of traditional owners (*Aboriginal Joint Management, Corporate Policy Statement No 87, Department of Parks and Wildlife, 2015*). Implementation of the policy is supported by a guideline (*Development and Management of Aboriginal Joint Management Arrangements, Corporate Guideline No 11, Department of Parks and Wildlife, 2015*).

Commercial operations

A commercial concession is a 'right granted by way of lease, licence, or permit for occupation or access and use of part of an area of land or water entrusted to the Department, for the purposes of provision of appropriate facilities and services for visitors' use and enjoyment' (*CONCOM Working Group Paper on Concession Management in National Parks and other Protected Areas, 1985*). To assist in creating sustainable community benefits, the Department enters into commercial arrangements with private sector partners. These arrangements, or concessions, can be by way of a lease or licence for the purpose of providing appropriate

facilities and services for visitors' use and enjoyment. In summary, leases and licences granted as commercial concessions

- enable access to and use of the area to be monitored and managed;
- ensure that conservation values are maintained;
- secure resources for management from those using the land; and / or
- provide the private sector with appropriate opportunities for commercial involvement on lands and waters managed by the Department.

4.4.5 Monitoring and reporting for the CAR reserve system

A range of monitoring and reporting is undertaken in relation to the CAR reserve system in the WA RFA region, the key elements being associated with key performance indicators of area management plans (including the FMP 2014-2023), performance criteria for recovery plans and performance measures for regional nature conservation plans.

Management actions in management plans are diverse and may include activities that support legislative requirements for the protection of species and habitats, for example, biodiversity surveys, research, capacity development, education, and policy development. Whilst some actions may succeed, others may fail and management plans may include strategies to document these successes and failures within a continual improvement framework (see the CPC's *Position Statement 9 Criteria for developing Key Performance Indicators for management plans prepared under the Conservation and Land Management Act 1984, 2014* and *Position Statement 10 Monitoring Strategy for assessing the implementation of management plans prepared under the Conservation and Land Management Act 1984, 2014*.

The CPC undertakes performance assessments with the following features: to demonstrate accountability in the management of public assets; adoption of a consistent systematic approach across the State; use of standard assessment methodologies to ensure comparability across different sites; incorporation of a balance in quantitative and qualitative assessment approaches; capture of experiential knowledge of park managers; inform both system-wide and park level planning and decision-making; improve understanding of the effectiveness of management activities; report on achievement of management outcomes; communicate benefits of periodic assessment processes; raise public awareness about important values and management challenges; and use self-evaluation to drive continuous improvement.

DBCA's annual reports include key effectiveness indicators that report on the CAR reserve system.

4.4.6 Private reserved land management

There are no private land areas within the WA CAR reserve system. There was one small parcel of private land in the proposed Darling Range Regional Park at the time of signing of the WA RFA, which was included in 1999 as a proposed CAR reserve (ID 3 Table 6 Attachment 1 of RFA). This area was subsequently subsumed into a national park under the FMP 2004-2013.

4.4.7 Commonwealth reserved land management

Approximately 1 per cent of the CAR reserve system is located on Department of Defence land at Bindoon.

The Department of Defence (Defence) manages the natural values of Bindoon Defence Training Area (BDTA) under a national Defence Environmental Management System (Defence EMS). Defence works closely with relevant State Government agencies to develop and implement components of the EMS, such as bushfire management plans.

The Defence EMS and associated plans cover all the forest and biodiversity values of the BDTA. Within the broader Defence EMS, a State-wide environmental management plan is in place, with site specific management strategies identified for the BDTA. Site-level management plans being implemented include the *Bindoon Defence Training Area Bushfire Management Plan 2016–2020*, *Dieback Management Plan 2014* and the *Bindoon Defence Training Area Heritage Management Plan 2009*.

4.5 Forest management system for wood production on multiple use State forest and timber reserves

Under the WA RFA, the WA and Australian Governments agreed that State forests and timber reserves outside the CAR reserve system are available for timber harvesting (for both native forests and plantations) in accordance with the FMP and the undertakings of the RFA agreement.

1,146,829 hectares or almost 27 per cent of the land area in the WA RFA region is designated as multiple use State forest and timber reserve and managed by DBCA under the CALM Act. DBCA and the FPC have designed and implemented a comprehensive planning and operational framework to deliver their wood production and land management responsibilities and to comply with all legal requirements. This system is described in the following sections.

4.5.1 Area of State forests and timber reserves available for timber production

Within public native forests in State forest and timber reserve tenure, various areas are set aside from timber production in informal reserves and fauna habitat zones. The total area of public land available for timber production within the RFA region is 903,433 hectares (Table 5).

Table 5: The composition of State forests and timber reserves as at 30 June 2018

Composition of State forests and timber reserves within the RFA region	**Area (hectares)**
Gross area	1,282,197
CAR informal reserves	83,443
Proposed formal reserves	103,116
Forest Conservation Areas	31,905
Gross area outside the CAR reserve system	1,063,733
Non-CAR informal reserves	111,960
Fauna Habitat Zones	48,341
Net area available for timber production	903,433

As at 30 June 2018, the total area of State forests and timber reserves within the RFA region was 1.282 million hectares, of which the net area available for wood production was 903,433 hectares. This comprises 21 per cent of the land area within the RFA region and 40 per cent (845,048 hectares) of the area of native forests. All of this land is managed by DBCA.

Forest Conservation Areas are classified under section 62(1) of the CALM Act and provide a higher level of security of classification than informal reserves for areas that have some impediment (for example, mineral resources) to being considered for a formal reserve category. The priority for the management of these areas is the maintenance of biodiversity and they will not be available for timber harvesting, but may be available for other uses such as wildflower picking, apiculture, craftwood, and possibly firewood collection. The latter would be considered on an area by area basis. Otherwise, where an approved area management plan exists, whatever management arrangements it sets out for particular forest conservation areas within its boundaries would apply.

Informal reserves provide a network of relatively undisturbed areas that are distributed across State forest and timber reserves within the area of the FMP 2014-2023 and protect aquatic ecosystems, provide connectivity, landscape heterogeneity and stand structural complexity, thereby making an important contribution to conservation outcomes. Appendix 11 of the FMP 2014-2023 describes the types and purpose of informal reserves. Types of informal reserves include old-growth forest, river and stream zones, diverse ecotype zones, travel route zones, less well reserved vegetation complexes, poorly reserved forest ecosystems and RFA accredited linkage zones. Some informal reserves are recognised through the WA RFA as CAR informal reserves. Informal reserves are managed having regard to DBCA's *Guidelines for Protection of the Values of Informal Reserves and Fauna Habitat Zones* (Department of Environment and Conservation, 2009a).

Figure 5 provides an example of the spatial connectivity between formal and informal reserves and FHZs across a portion of the karri forest landscape near Pemberton. FHZs were introduced in the previous FMP to provide additional areas from which fauna might recolonise adjacent regenerating areas following timber harvesting. Areas identified as FHZs can be rotated over time as alternative areas of regenerating forest are able to replace the purpose of established FHZs. Indicative zones of 50 – 200 hectares were located systematically across State forest and timber reserves, to provide a separation distance of about three kilometres between FHZs and areas of mature forest located within formal reserves. This design resulted in over 300 FHZs being established, setting aside a net area of 48,400 hectares of State forest and timber reserves from timber production.

FHZs are considered an important element in the forest matrix that contributes to the maintenance of biodiversity values in these landscapes (Burrows *et al.* 2011). The location of FHZs is finalised using the *Guidelines for the Selection of Fauna Habitat Zones, Department of Parks and Wildlife, 2017* and they are managed in accordance with the *Guidelines for Protection of the Values of Informal Reserves and Fauna Habitat Zones, Department of Environment and Conservation 2009a*).

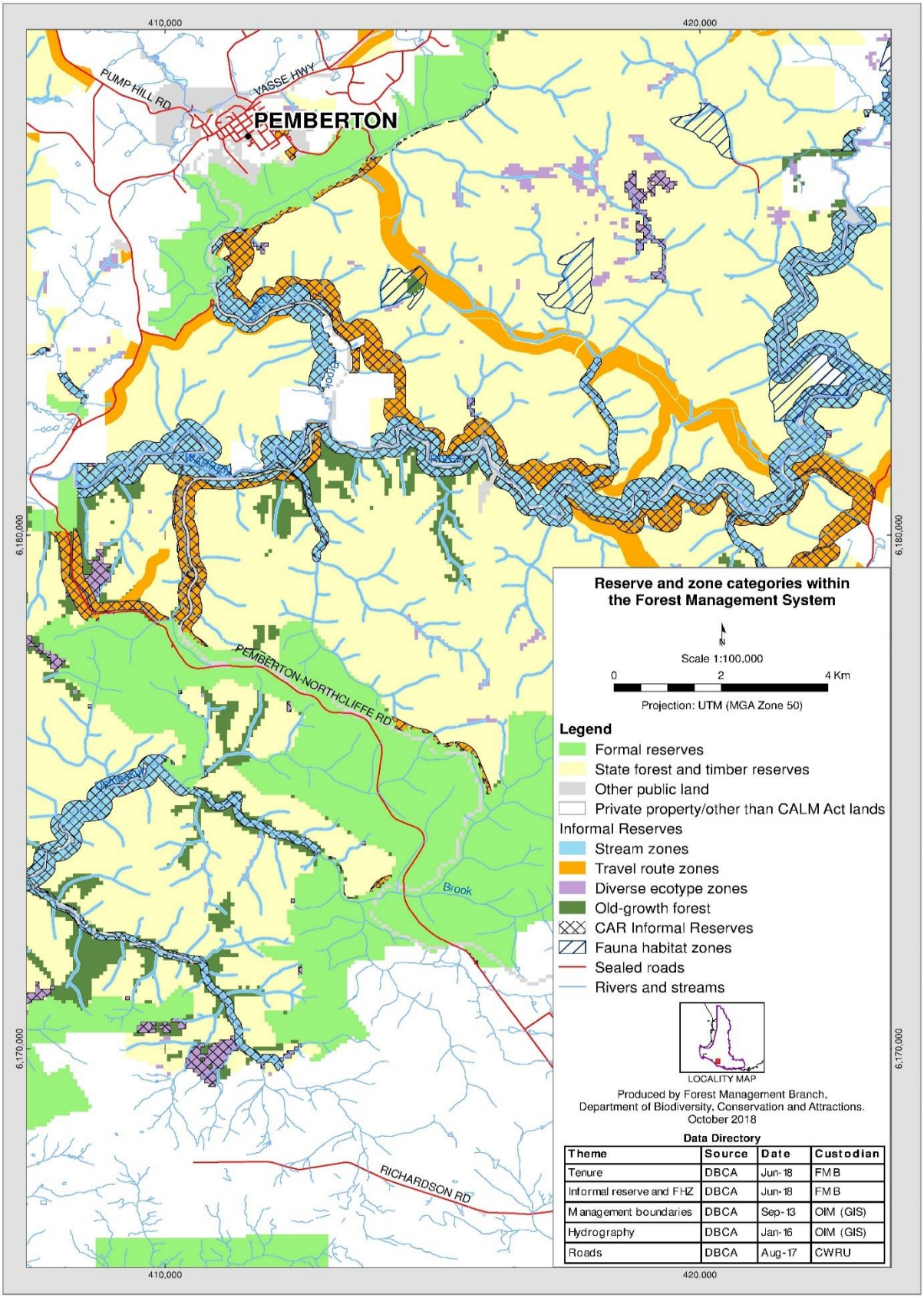

Figure 5: Map depicting the spatial arrangement and types of informal reserves within the WA RFA region

4.5.2 Strategic forest planning and timber sustained yields

Sustaining the flow of goods and services from the forest is an important element in ensuring forests are managed in an ecologically sustainable manner and provide a range of benefits to the community. Section 19(1)(i) of the CALM Act specifies that the CPC is to advise the Minister on the production and harvesting, on a *sustained yield basis*, of forest produce throughout the State. This includes the production of timber from native forests, and section 55 (1a) of the CALM Act explicitly requires that *timber production* from State forests and timber reserves be managed on a *sustained yield basis*.

The sustained yields of jarrah and karri sawlogs are calculated for each FMP by DBCA. In accordance with the RFA the yields are based on the area of forests outside the CAR and other reserves (Section 4.5.1) and reviewed by an independent expert panel. The process of calculating the sustained yields involves whole-of-forest estate modelling in which non-declining woodflows are scheduled over the long-term from the areas available for timber production. This involves the following steps:

1. *Estimation of the net available area and stratification by forest type and condition*. Calculations of sustained yield are based on the net area of forest available for timber harvesting within State forest and timber reserves. This excludes areas such as the network of informal reserves where timber harvesting is not permitted, and other areas, such as FHZs. Further reductions to the net area are made during the calculation process to exclude unproductive or degraded forest, such as those areas mapped as drought impacted, areas that are too steep to harvest safely or are used as minor roads or landings. Included in the net area are areas of jarrah-dominant mine site rehabilitation, as they contribute to future jarrah sawlog and other bole volume yields. Those areas of mine site rehabilitation planted with exotic species are also available for timber production, but do not contribute to the native forest sustained yields.

2. *Estimation of the standing timber resource within the forest strata*. Strategic-level timber inventories of the forests are maintained by DBCA, which are used to compute the standing volumes in each forest strata, and to estimate the potential volumes removed (by product) when areas are harvested to the range of silvicultural objectives. The inventory information includes age class distribution and information about the extent and impacts of key tree pests and diseases.

3. *Future growth and consequent yield from forest areas is projected over time*. Volume growth varies between forest types and reflects differences in site productive capacity, stand condition (reflecting past silvicultural treatment, disease and drought impacts) and future growing conditions (including climate). Adjustments for the potential impact of climate change on the growth rates of jarrah and karri trees and stands are applied when projecting future yields. The approach varies according to whether two-tiered or regrowth forests are being projected.
    - *For regrowth jarrah and karri forests*: historical tree measurements are used in empirical growth models to predict future stand growth and consequent yield. Reduced future growth rates are then applied as determined from a physiological growth model for the same site qualities, using the 3PG physiological growth model developed by CSIRO (Landsberg and Waring 1997; Landsberg and Sands 2010), which was calibrated for jarrah and karri by DBCA. This model is then run on a

monthly time step using the CSIRO (2007) climate projection datasets for high climate change severity to 2070. The overall effect of this approach is a progressive reduction over the long term of the maximum productivity of the regrowth forest sites as the projected rainfall reduces.

- *For the two-tiered jarrah and karri forests*: the projected yields are much less sensitive to variations in growth rates over the next few decades, because most of the available yield is already standing in larger trees of sawlog size. In these forests, the growth rates recorded in the inventory re-measurements for the period 1990 to 2012 (jarrah) and 2002 to 2012 (karri) are applied for the period of this plan (that is to the end of 2023) and from 2024, no growth on the mature trees was applied in subsequent decades. This is very conservative and allows for the potential impacts of a drying climate on future growth.
- *In the eastern jarrah forest*: projections include extended time for recruitment and stocking levels adjusted to reflect expected drier conditions. These provisions are specified in the revised silviculture guidelines for jarrah and its subsidiary guidance documents.
- *Past and future disease and insect impacts*: the current and future impact on yields from some forest diseases and insect outbreaks are incorporated in yield projections, including *Phytophthora* dieback, and in karri regrowth, *Armillaria* and *Phoracantha* borer.

4. *Scheduling of harvest operations over time and space to meet the range of management settings and generate a non-declining woodflow of sawlogs*. The sustained yields of jarrah and karri sawlogs, and the projected availability of other bole volume are calculated using a Woodstock™ model developed for the jarrah and karri forests. The underlying data, structure and function of the model were examined by an Independent Expert Panel (Ferguson *et al.* 2013). The Panel concluded that, subject to some minor data adjustments and modifications to the processes involved in calculating the sustained yields, the:
    - structure, operation and outputs from the woodflow models are robust and flexible enough for computing the sustained yields and other wood availability figures included in the FMP
    - uncertainty associated with a drying climate has been adequately factored into the sustained yield calculations
    - level of provision for other risks and uncertainty associated with the volume estimates are appropriate
    - calculations incorporate suitable adjustments for the operational feasibility of obtaining the strategic woodflows.

Prior to the calculation of the sustained yields for the FMP 2014-2023, those Panel recommendations that would make a consequential difference to the woodflows were incorporated into revisions of data or the design of the Woodstock™ model.

Sustained yields and allowable cut

There is a hierarchical relationship between the sustained yields, the annual allowable cut, and the level of wood available for contracts to be issued by the FPC under the FMP:

- the sustained yield figures were computed from strategic-level woodflows scheduled in Woodstock™ to 2070, and reflect the area settings, silviculture and utilisation assumptions adopted for the plan;
- the annual allowable cut for the 10 years of the plan was based on the sustained yield, but reduced by a 'safety margin' to provide for any factors not directly modelled in the sustained yield calculations, such as future losses which may arise from catastrophic bushfires, drought, pest and disease events; and
- the FPC may make available through contracts a lesser volume than the allowable cut.

For jarrah and karri sawlog production, the sustained yields are based on woodflows averaged to 2070. Beyond this period, the absence of climate change projection datasets, together with the increasing uncertainty about such settings as land use, product requirements, inventory projections and wood processing technologies, makes detailed scheduling unrealistic (Ferguson *et al.* 2003, 2013).

Annual allowable cuts are also set for the lower grade logs, or 'other bole volume', that are made available as a consequence of the harvesting of sawlogs and the silvicultural treatment of stands to promote growth, ecosystem health and/or achieve other aims of management.

The type and size of the markets assumed to be available for removal of the lower grades of logs (i.e. the other bole volume) has a marked effect on both the jarrah sustained yield and the projected level of jarrah and marri other bole volume made available. Consequently, the FMP provides for both a lower and upper limit of sawlog and other bole volume depending on the markets available for other bole volume, and hence the future level of sawlog utilisation and silvicultural outcomes in the field. The lower limit assumes log utilisation will be the same as that recorded during the FMP 2004-2013. However, while these assumptions provide a reasonable basis for calculating yields, they fail to recognise the potential gains that may arise during the period of the FMP through the development of new markets such as engineered wood products, or improvements to log segregation practices such as a shift to whole-bole log sales.

Accordingly, the sustained yields and availability of other bole volume was also calculated using an assumption that 'full' markets and the maximum utilisation of jarrah and marri other bole volume applies from the commencement of the FMP in 2014. Keeping all other assumptions the same, this woodflow modelling provides an upper limit that could be approached should new markets arise during the period of the FMP 2014-2023 (see Table 6).

Table 6: Average annual allowable cut (m^3 per year) for the *Forest Management Plan 2014-2023*

Species / log grade	**Lower limit**	**Upper limit**
Sawlog		
Jarrah first and second grade	132,000	160,000
Karri first and second grade	59,000	59,000
Other bole volume (non sawlog)		
Jarrah	292,000	521,000
Karri	164,000	164,000
Marri	140,000	254,000

Note: Small volumes of wandoo, blackbutt and sheoak sawlogs become available for sale as a consequence of the harvesting of jarrah and karri sawlogs or harvesting for other purposes.

The FMP provides for a maximum annual allowable cut of between 1,100 to 1,300 m^3 per year. However, the dispersed distribution and fine-scale mix of these species within the jarrah and karri forest gives rise to substantial fluctuations in the availability of these species between years. The volumes for wandoo, blackbutt and sheoak are estimated to comprise less than one per cent of the standing inventory volume for each of these species in the area available for timber harvesting.

The FMP 2014-2023 recognised that in practice, progression toward 'full' markets and utilisation may take some years, and will depend on factors such as the nature, location and minimum viable intakes of any new or restructured wood processing facilities. Moreover, any major step-wise changes in markets could require variations to underlying model assumptions such as the relative proportion of the various forest types and categories cutover each year. For example, the upper limit of 521,000 cubic metres for jarrah other bole volume assumes considerable expansion of first thinning operations in young regrowth jarrah stands beyond minesite rehabilitation, as well as accessing areas currently deemed uneconomic due to the low proportion of sawlogs in the stands.

The average annual allowable cuts for jarrah and karri sawlogs under the FMP 2014-2023 did not alter substantially from the FMP 2004-2013, despite the calculations explicitly incorporating the projected impact of 'high severity' climate change conditions on tree and stand growth. There are several reasons why the projected decreases in rainfall and rising temperature did not result in a proportional reduction to the sustained yield or availability of other bole volume:

- The calculation of the sustained yields for the FMP 2004-2013 already incorporated major adaptive settings and provision for future reduced yields under a drying climate. Some of these assumptions were believed to be precautionary, and monitoring to 2012 showed this to be the case. For example, no future growth on the 1990 inventory was assumed for the two-tiered jarrah forest when calculating the sustained yields for the previous plan, whereas the remeasurement of the inventory indicated substantial growth and sawlog yield had accrued to 2012. Similarly, the revised rates of future spread of *Phytophthora* dieback across the forest indicate a marked slow-down in spread and hence modelled impact on yields relative to the previous plan calculations.
- The relative contribution of future growth to the sustained yield woodflow varies between forest categories. This moderates the potential impacts from a drying climate

on overall wood availability. For example, in the jarrah two-tiered forest, most of the sawlog yield for the next few decades is already standing and available, and because no sawlog growth is assumed in the modelling beyond 2023, a drying climate has little impact. In the karri regrowth forest, the impact of reduced growth is more than offset by a substantial increase in available yields as the large areas of karri regenerated since 1970 start to contribute to sawlog yields.

- Because the sustained yield calculation for the FMP assumed no net growth from jarrah two-tiered forests beyond 2023, the impact of a progressively drying, warmer climate on sawlog yields was mainly on the regrowth jarrah forests. However, while the models suggest a progressive decline in *growth rates* of trees and stands over the very long term, some growth is still maintained so that the timber *yields* (which are the sum of the accrued growth over time) are impacted at a comparatively slower rate.

Further information is available (*Sustained yield information sheets, Department of Environment and Conservation, 2012*) on the DBCA website.

The FPC prepares development strategies for the wood processing industry to align future industry opportunities with the location and log quality mix made available under the FMP 2014–2023, and the mix likely to be made available under future FMPs based on woodflow modelling.

Review processes

The process of developing the FMP includes a draft FMP released for public comment under both the CALM Act and EP Act. Following the public review process, a proposed FMP is prepared and forwarded to the EPA for assessment. Following EPA assessment and the completion of an appeals process, a revised proposed FMP is finalised and submitted to the Environment Minister for approval. These processes provide for significant public and technical review and comment on aspects of the FMP, including sustained yields.

For example, the development of a draft FMP involves drawing together a wide range of forest research and technical information to review outcomes and inform the settings applied in the strategic planning. Since the FMP 2004-2013 this has included an independent review of silvicultural practices and guidelines. The most recent (Burrows *et al.* 2011) recommended several improvements which were incorporated into the current silvicultural guidelines for jarrah and karri, which then formed the basis of the silvicultural settings applied in the sustained yield modelling for the FMP 2014-2023.

Any proposal to increase the annual allowable removals to the upper limits stipulated in the FMP 2014–2023 must be approved by the Environment Minister, in consultation with DBCA and the CPC. Removal of log products compared to the allowable cut set in the FMP 2014–2023 is continuously monitored. Cumulative removal of jarrah and karri first and second grade sawlogs by approved harvesting operations compared to limits in the FMP 2014–2023 are reported in the DBCA and FPC annual reports. Removal of log products compared to the allowable cut is also a key performance indicator (KPI) of the FMP 2014–2023, which is reported in the mid-term and end-of-term performance reviews undertaken by the CPC. The performance review includes analysing results, identifying underlying causes and developing recommendations to improve performance.

State forests and timber reserves also provide other wood and non-wood products such as firewood, burls, craftwood, wildflowers, seeds and honey. These are regulated and managed through commercial licencing arrangements.

4.5.3 Forest operations planning framework

Forest products are harvested from public native forests and plantations by the FPC under planning and approval processes established by the DBCA, with operational planning conducted by the FPC. For native forests, this begins with DBCA preparing (in consultation with the FPC) rolling, three-year indicative harvest plans, which provide a forward schedule of coupes proposed for harvesting. These plans are consistent with the average annual allowable cut set by the FMP 2014–2023 (and hence the volumes contracted by FPC to wood processing industries) and are made publicly available[3] (Table 7).

The FPC prepares annual indicative harvest plans which list the harvest areas (coupes) within various forest types and supply zones to deliver contracted volume commitments. These annual plans are submitted to DBCA for endorsement prior to the FPC releasing them for public comment[4]. Subsequently, for each coupe, detailed plans are prepared by FPC and submitted to DBCA for assessment. Harvesting is conducted in accordance with approved harvest plans that include any specific coupe level approval conditions imposed by DBCA.

[3] Department of Parks and Wildlife (2014d). dpaw.wa.gov.au/management/forests/forest-produce/175-planning-for-timber-harvesting

[4] Forest Products Commission Western Australia (n.d.). fpc.wa.gov.au/content_migration/native_forests/harvest_plans/Default.aspx

Table 7: Planning and approvals process for native forest timber harvesting

Planning document	Duration	Purpose and consultation
Forest management plan	Ten years	Prepared in accordance with the CALM Act. Provides the framework for a range of activities, including timber harvesting in an ecologically sustainable manner. Proposes additions to the formal conservation reserve system and establishes informal reserves in State forest. Involves comprehensive public consultation.
Three-year (indicative) timber harvest plans	Rolling plan every 1 to 2 years	Provides a forward schedule of coupes for harvesting to supply sawlog and other products. Developed through planning processes that account for other activities within State forest and timber reserves including mining, recreation, prescribed burn program and infrastructure works. Made publicly available.
One-year (indicative) annual harvest plan	Annually	A refinement of the three-year harvest plans that accounts for other activities and provides a forward schedule of coupes that are made available to the FPC for harvesting to supply sawlog and other products to their customers. Made publicly available.
Coupe plan	As required, prior to start of harvest	Planning and approval for timber harvesting specifying conditions that need to be met prior to beginning harvest operations including: • dieback survey and developing a hygiene management plan • flora survey • fauna identification • plan for access under moist soil conditions • identify registered Aboriginal sites. The FPC consults with the local community prior to harvesting, including neighbours or groups with an interest in the area.

An operational harvest plan is prepared for each coupe (or plantation) and submitted to DBCA for review and approval using the *Disturbance Approval System* (DBCA, 2018). This checklist is structured around the Montréal Criteria for ESFM. Key components of the checklist include:

- tenure and other management issues including land classification, tenure or proposed tenure, potential joint vesting with other organisations or individuals, excisions, lease or land exchange, exploration or tenements for mining operations, conservation covenants, proposed access or haul routes in relation to area management plans or other agreements in place for the land;

- biological diversity, including elements relating to old-growth forest, informal reserves, threatened flora and fauna, threatened ecological communities (including those that are MNES), priority flora, endemic and disjunct flora, taxa that are rare or priority (including those that are MNES), endemic or disjunct, areas of high floristic diversity, conservation category, Ramsar wetlands (MNES) or wetlands of national significance, key habitat for listed threatened or specially protected species, fauna recovery translocation areas, release areas or areas with approved fauna management plans;
- productive capacity, including silvicultural treatments, use of basic raw materials, roading, use of prescribed fire and rehabilitation;
- health and vitality including *Phytophthora* dieback disease mapping and the development of hygiene management plans to prevent spread of the disease, insect or other pathogen infestations, priority pest species or priority diseases, environmental weeds and feral animals;
- soil, including the off-road use of heavy vehicles, control of erosion, spills, treatment of fragile or steep areas and the management of acid sulphate risk;
- water, including areas covered by the CAWS Act or *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, the taking of water, pesticide use and the management of salt-risk; and
- socio-economic factors including stakeholder consultation, authorised use by Aboriginal people for customary activities or joint management arrangements, management of potential conflict between operational vehicles, machinery and other road users, public utilities, noise or air quality impacts, visual amenity, impact on other operations, recreational activities and events, wildflower picking or apiary sites, native title or registered Aboriginal sites, places listed on the National Heritage List, WA Register of Heritage places or local shire Municipal Inventory Register, inventory, research plots and scientific or soil reference areas.

These coupe plans must be approved by DBCA prior to the commencement of disturbance operations, and they provide a basis for monitoring and reporting on conformance to the FMP management standards.

A range of key documents guide the implementation of operations including:

- *Planning Checklist for Disturbance Activities*, Procedure *FEM019, Department of Parks and Wildlife, 2014*
- *Approvals Matrix for Operations on State Forest and Timber Reserves, SFM Advisory Note No. 6 Department of Environment and Conservation.*
- *Code of Practice for Fire Management, Department of Environment and Conservation, 2008*
- *Silviculture Guideline for Jarrah Forest, FEM Guideline No 1, Department of Parks and Wildlife, 2014*
- *Silviculture Guideline for Wandoo Forest, FEM Guideline No 2, Department of Parks and Wildlife, 2014*
- *Silviculture Guideline for Karri Forest, FEM Guideline No 3, Department of Parks and Wildlife, 2014*
- *Guidelines for the Protection of the Values of Informal Reserves and Fauna Habitat Zones, SFM Guideline No 4, Department of Environment and Conservation, 2009*

- *Soil and Water Conservation Guideline, SFM Guideline No 5, Department of Environment and Conservation, 2009*
- *Manual for the Management of Surface Water, SFM Manual No.3, Department of Environment and Conservation, 2009*
- *Manual of Procedures for the Management of Soils Associated with Timber Harvesting in Native Forests, FEM Manual No 1, Department of Parks and Wildlife, 2015*
- *Jarrah Silvicultural Burning Manual, SFM Manual 4, Department of Environment and Conservation, 2011*
- *Karri Silvicultural Burning Manual, FEM072, Department of Parks and Wildlife, 2016*
- *Phytophthora Dieback Management Manual, Department of Biodiversity, Conservation and Attractions, 2017*
- *Karri – Treemarking for Retention, Procedure FEM035, Department of Parks and Wildlife, 2016*
- *Jarrah – Treemarking for Retention, Procedure FEM036, Department of Parks and Wildlife, 2015*
- *Landing and Extraction Track Rehabilitation Procedures, Procedure DPaWSFM 026, Department of Parks and Wildlife, 2012*
- *Planning and Approval of Salvage Harvesting Following Unplanned Disturbance, Procedure FEM071, Department of Parks and Wildlife, 2016*
- *Guidelines for the Selection of Fauna Habitat Zones, FEM Guideline No 6, Department of Parks and Wildlife, 2017*.

The FPC also has a suite of key documents which guide planning, contractor and coupe management operations in the field. These are listed in Appendix 3.

4.5.4 Monitoring, reporting, review and continual improvement

DBCA and the CPC evaluate the results from research, monitoring, audits and adaptive management projects to assess performance of the FMS and whether plans, policies, guidelines, operating procedures and subsidiary documents should be amended. Actions specified in a FMP require the CPC and DBCA to take action that is reasonable and practicable to address problems identified in the FMS. Where performance targets have not been achieved, the relevant agency is required to investigate the cause and report, through the mid-term and end-of-term performance reviews, to the CPC, which will report to the Environment Minister. The CPC evaluates the need for revision of management practices in the context of its assessment and auditing function, in consultation with DBCA and where relevant the FPC, and provides its advice through the reports on the mid-term and end-of-term performance reviews to the Environment Minister.

WA has committed to increasing knowledge and undertaking adaptive management to address identified gaps or potential future gaps in the FMS, thus providing evidence of a commitment to continuous improvement.

Key aspects of the WA monitoring and review program include:

- delivery of management activities in line with a 10-year FMP;
- mid-term and end-of-term performance reviews including KPI reporting that tracks the implementation of a FMP;
- five-yearly reviews of progress with implementation of the WA RFA;

- operational (regional and district level) monitoring of disturbance activities (including timber harvesting) against requirements and approval conditions;
- Works Improvement Notices to document non-conformances identified by operational monitoring and to communicate remedial actions;
- audits of FPC and the Department's FMS and operations conducted by DBCA's Management Audit Branch;
- internal and independent external audits to maintain FPC's certification to forest management standards;
- research informing adaptive management;
- stakeholder engagement; and
- annual reports of DBCA and FPC.

Work Improvement Notices are part of the monitoring and conformance system used for DBCA-managed lands to alert external agencies operating on the land that they have failed to meet an environmental standard, management requirement, condition of approval, or where there is an unsatisfactory environmental outcome (*Procedure for the use of Work Improvement Notices and Notifications, Advisory Note No 4, Forest and Ecosystem Management Division, Department of Parks and Wildlife, 2016*). When this occurs, it is referred to as non-conformance. The issuing of a Works Improvement Notice provides the Department with a:

- process to alert staff and external agencies to non-conformance of a management activity or other requirement(s);
- trigger to rectify non-conformance or poor outcomes;
- means to document non-conformance;
- means to monitor the frequency with which non-conformance occurs; and a
- means to monitor the conditions of approval or guidelines for which non-conformance is most often observed.

4.5.5 Certification

The FPC is certified to internationally recognised forest management standards including the Australian Forestry Standard (AFS) AS 4708:2013. AFS is internationally recognised by the Program for the Endorsement of Forestry Certification (PEFC). This certification covers south-west native forest operations and softwood plantations, including those on private property managed by the FPC. It also includes mixed eucalyptus plantations on land owned by the DWER. It excludes native sandalwood operations and areas covered by active mining tenements.

The FPC is also certified to ISO 14001:2015 (previously ISO 14001:2007), the international standard for environmental management systems (EMS). The EMS certification enables FPC to demonstrate its commitment to the environment. The EMS certification encompasses all operations, including management of wild and plantation sandalwood, softwood and hardwood plantations, the nursery and seed centre in Manjimup and south-west native forests. The EMS standard provides guidance on managing the environmental aspects of FPC business activities more effectively, taking into consideration environmental protection, pollution prevention and socio-economic needs. The standard also assists the FPC to minimise environmental impacts, comply with applicable legislation and other environmental requirements, and implement continuous improvement.

4.6 Forest management systems for privately owned forests outside reserves

The contribution of forests outside reserves to sustainable environmental, social and economic outcomes is achieved through both regulatory and voluntary mechanisms.

Around 11 per cent of WA's forests in the RFA region, or 250,320 hectares, are on privately owned land. This comprises 137,350 hectares of native forest and 112,970 hectares of plantation forest. Ownership ranges from industrial scale forestry and managed investments to individuals – mainly farmers and rural land owners. WA's private forest owners have access to a variety of voluntary mechanisms that can contribute to improved outcomes for sustainable forest management. These include the Emissions Reduction Fund, the FPC's Farm Forestry Assist program and timber supply agreements with industry.

The legislation listed in section 4 above, the CALM Act, BC Act, EP Act, FP Act and EPBC Act are the key legislation relevant to the management of forests outside of reserves and govern activities relating to the establishment of forests, the harvesting of timber, the clearing of trees and the clearance and conversion of native vegetation.

The EP Act prohibits clearing (or harvesting) native vegetation unless a clearing permit is granted by DWER or clearing is for an exempt purpose as defined in the EP Act and the associated *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. These regulations apply to forestry operations conducted on private land within the RFA region, and require an application for a "clearing" permit to harvest native forest to be accompanied by a Forest Management Plan which summarises the proposed operations. Clearing permits are assessed in accordance with the principles of Schedule 5 of the EP Act, planning instruments and other relevant matters. When assessing applications, DWER access datasets, documents and listings for threatened species and communities maintained and updated by DBCA, and liaise directly with DBCA where relevant. Provisions of the WC / BC Act also apply. For the purposes of the CAWS Act, clearing native vegetation on private land is controlled on catchments contained in Schedule 2 of the CAWS Act, which is administered by DWER.

Vegetation conservation notices may be given under Section 70 of the EP Act if, on reasonable grounds, it is suspected that unlawful clearing is likely to take place, is taking place or has taken place on any land. The notice can specify measures to repair or mitigate the environmental harm caused by the clearing.

Under Part 3 of the EPBC Act, actions which have a significant impact on Matters of National Environmental Significance (MNES) are offences unless the Australian Environment Minister has given approval under Part 9 of the Act. However, Section 38 of the EPBC Act states that Part 3 does not apply to forestry operations undertaken in accordance with an RFA, except for any forestry operations in World Heritage properties or Ramsar sites. This is because the objectives of the EPBC Act are considered to have been met through the processes undertaken to establish and maintain the RFA. Section 38, therefore, obviates the need for EPBC Act assessment and approval requirements which apply to other activities.

Managing a private native forest for sustainable wood production is subject to the same legislation as clearing and requires a clearing permit under the EP Act. In addition, there is a requirement for a Commercial Producers Licence (CPL) issued by DBCA under the WC Act (to be

replaced from January 2019 by a Flora Supply Licence under the BC Act) where products are sold from native forests. In catchments contained in Schedule 2 of the CAWS Act, a licence is required to harvest private native forest. In circumstances where a clearing permit has been approved under the EP Act, this requirement is waived.

The Natural Heritage Trust, the then Department of Conservation and Land Management (CALM), the FPC and the then Department of Environment commissioned the publication of *Managing private native forests and woodlands in the south-west of Western Australia: combining wood production and conservation*[5] to assist private forest growers to understand how management operations relating to wood production could be undertaken in a way that protected conservation values. The booklet aims to address management issues involved in managing private native forests and assisted landowners to develop management plans for their native forest.

Clearing native vegetation to establish a plantation also requires a clearing permit. The Forest Industries Federation of Western Australia (FIFWA) and the Australian Forest Growers encourage forest growers to apply the *Code of Practice for Timber Plantations in Western Australia* on private lands. This code of practice is based on the national principles in *Forest Practices Related to Wood Production in Plantations: National Principles*[6]. The code provides a guide for developing plantation management plans that formed the basis of plantation management activities.

Landowners may voluntarily enter into formal conservation arrangements for private forested land. Covenants can be placed over land under the *Soil and Land Conservation Act 1945* (WA) or through the conservation covenant programs operated by DBCA and the National Trust of Australia (WA)[7]. Conservation covenants assist in protecting high quality native vegetation, usually in perpetuity. Through the covenants, covenanters receive a set of guidelines for the management of the protected bushland, and can apply for financial assistance to undertake initial management actions to implement the guidelines. To 31 December 2014, there were 138 properties with conservation covenants in DBCA's Swan, South West and Warren administrative regions covering 3864 hectares.

The *Land for Wildlife* program facilitates management that enhances the natural values of bushland located outside WA's conservation estate and reserves system. This scheme, along with a range of other off-conservation reserve initiatives, encourages landholders to make personal commitments to provide habitat for wildlife on their properties. Advice provided to landholders includes:

- integrating wildlife habitat with other land uses;
- how to include wildlife aspects into revegetation schemes and landcare;
- managing remnant vegetation and fauna; and
- the ecological role and requirements of native flora and fauna.

---

5 Bradshaw, J. (2005).

6 Ministerial Council on Forestry, Fisheries and Aquaculture (1996). http://www.agriculture.gov.au/forestry/australias-forests/plantation-farm-forestry/principles

7 Department of Parks and Wildlife (n.d.). dpaw.wa.gov.au/management/off-reserve-conservation/nature-conservation-covenant-program

Land for Wildlife does not alter the legal status of the property. To 31 December 2014, there were 1156 properties within DBCA's Swan, South West and Warren administrative regions covering 27,081 hectares registered as *Land for Wildlife* sites providing managed habitat for wildlife.

Under the *Biosecurity and Agriculture Management Act 2007* all landowners are responsible for the control of declared pest animal and weed species on their land. This includes plantation and native forests.

4.7 Management of Aboriginal and historic cultural heritage sites across all lands

4.7.1 Aboriginal heritage

The Noongar people are the traditional owners of the land and waters within the RFA region.

The *Aboriginal Heritage Act 1972* (facilitates the protection of Noongar heritage through the maintenance of a register of sites and provisions to prevent damage, alteration or concealment of any registered or unregistered site. As at 22 March 2018, there were 423 sites on the State's Register of Aboriginal Sites within the RFA region. As these registered sites will comprise only a portion of the actual sites known to Noongar persons in the area, the FMS provides for desktop, consultation and field checks prior to approving disturbance operations. Within State forests, sites are generally managed by implementing a buffer of undisturbed area around the feature, and in many cases the sites are located in informal reserves and areas set aside from timber harvesting.

On lands managed by DBCA, the protection and maintenance of Noongar heritage (encompassing traditions, culture and spirituality) is a goal of the FMP. This reflects provisions within the CALM Act that enhance the protection and conservation of Noongar cultural and heritage values, including:

- a management objective to conserve and protect the value of the land to the culture and heritage of Aboriginal people;
- facilitation of the conduct of Aboriginal customary activities (such as visiting country to care for and protect Noongar sites and values, obtaining food, medicines, or conducting ceremonies); and
- for a framework for the joint management of CALM Act lands.

The processes to identify and protect Noongar heritage places are being further strengthened through the South West Native Title Settlement (SWNT Settlement) process. This is a comprehensive native title agreement, comprising the full and final resolution of all native title claims in the south-west of WA in exchange for a comprehensive settlement package.

Identical Indigenous Land Use Agreements (ILUAs) have been executed across the south-west by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip and Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC). The SWNT Settlement ILUAs were registered with the National Native Title Tribunal on 17 October 2018 which, subject to the outcome of any judicial review, will enable the implementation of the agreement.

The SWNT Settlement significantly alters the way that CALM Act land is managed within the settlement area. Each of the six Noongar Regional Corporations that will be formed within the settlement area will form Cooperative Management Committees with DBCA. These Cooperative Management Committees will, among other things, provide advice to DBCA on the value of the land to the culture and heritage of Noongar people from the relevant areas and on management of the conservation estate more generally.

The SWNT Settlement acknowledges Noongar People as the first peoples and traditional owners of lands within the south-west corner of WA and formally acknowledges their culture, spirit, presence, heritage and identity. The *Noongar (Koorah, Nitja, Boordahwan) (Past, Present and Future) Recognition Act 2016* gives effect to the settlement objectives. One of the outcomes includes a revised heritage protection scheme involving the development of a Standard Heritage Agreement for conducting Aboriginal heritage surveys to ensure compliance with the Aboriginal Heritage Act.

The SWNT Settlement ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement.

A NSHA is entered into if there is a risk that activities will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. Timber harvesting and road construction are examples of activities that may impact sites, and both the FPC and Main Roads WA have adopted the NSHA requirements. This involves referring proposed coupes for determination of survey requirements and conducting consultation with Noongar representatives at the coupe planning phase. Approval by DBCA for coupes to be harvested is contingent on these processes having been satisfactorily completed prior to accessing an area. The process provides for continuous improvement in heritage management through incorporating new sites and information into registers and databases.

The ongoing refinement of processes to acknowledge and protect Noongar heritage is reflected in DBCA's *Policy No. 69 Acknowledgement of Aboriginal traditional custodians*, 2016; *Policy No. 86 Aboriginal customary activities, 2015* and the statement *Engagement with Noongar Peoples in the South West of Western Australia, FPC 2015*. This overarching commitment is given effect through policy, procedures and work instructions. Adherence to these is audited as required for obligations under the FMP 2014–2023 and quality certification.

4.7.2 Other Australian cultural heritage

Recognition and conservation of heritage places in Western Australia is guided by the Australia ICOMOS Burra Charter (1999). The *Heritage of Western Australia Act 1990* provided the statutory framework for the policy. The 1990 Act has been updated and modernised with the new *Heritage Act 2018*. This Act provides for, and encourages, the conservation of places significant to the cultural heritage of the State.

The WA RFA encompasses other Australian cultural heritage sites, many associated with the history of early European settlement and development of the south-west. Examples include

railway infrastructure, complex timber bridges, other industry heritage as well as examples of early architecture, dams and weirs.

Heritage Act 2018 (WA)

On 12 September 2018, Parliament passed the *Heritage Bill 2017*, giving WA a new Heritage Act. The Act recognises the importance of, and promotes an understanding and appreciation of, WA's cultural heritage; and provides for the identification and documentation of places of cultural heritage significance and for the conservation, use, development and adaptation of such places.

The new Act ensures better protections for important heritage places, particularly those left to 'demolition by neglect'. Another key change included streamlining the process for entering a place in the State Register.

The Act is administered by the State Heritage Council, which is supported by the Department of Planning, Lands and Heritage (DPLH), the State Government department responsible for planning WA's communities and managing heritage assets.

The Heritage of Western Australia Act established the State Register of Heritage Places, a statutory list of places that represent the story of Western Australia's history and development. Entry in the State Register recognises the value and importance of a place and helps promote its conservation into the future. Heritage places are entered in the State Register following a rigorous assessment and registration process which includes extensive consultation with owners, local governments and other stakeholders. The assessment considers a range of heritage values including the aesthetic, historic, scientific and social values of a place, in addition to its rarity, representativeness, condition, integrity and authenticity. As at November 2018, more than 1,350 places throughout WA are listed in the State Register.

Local Government Inventories, also known as Municipal Inventories or MIs, are compiled and reviewed by the Local Authority. These inventories identify local heritage assets and provide the base information needed for local governments to achieve consistency, strategic direction and community support when dealing with heritage matters.

The assessment, registration, maintenance and treatment of heritage places is supported by State Heritage Council and DPLH guidance policies and documents.

The FMP seeks to identify and manage places of other Australian heritage significance and lists management activities to achieve this giving regard to DBCA's *Policy Statement 18: Recreation, tourism and visitor services, 2017*. Sites with potential heritage value on lands and waters managed by the Department are recorded by regional DBCA offices. Information from the WA State Heritage Register is made available through the Department's geographic information systems (GIS) mapping. This data is accessed by staff when assessing proposals in the Disturbance Assessment System.

4.8 Public consultation and complaints management

4.8.1 Public consultation

DBCA works with and on behalf of the people of WA to protect and conserve the state's parks, wildlife, forest and other natural assets. Community participation and feedback on conservation and management activities is an important component of WA's FMS.

Community consultation and feedback is undertaken at a range of levels, including through formal legislated processes as well as liaison at local and regional levels. In 2011, DBCA (then DEC) developed *Corporate Policy 76 Public Participation and Stakeholder Engagement* to guide the commitment to public participation and stakeholder engagement.

As described in section 4.7.1, the registration of the SWNT Settlement will enable the six Noongar Regional Corporations located within the WA RFA region to form Cooperative Management Committees with DBCA. These committees will, among other things, provide advice to DBCA on the value of the land to the culture and heritage of Noongar people from the relevant areas and on management of the conservation estate more generally.

The WA RFA involves public consultation on the five-yearly progress reports, a process that allows for the public to provide feedback on the implementation of the RFA and to liaise directly with Commonwealth and State government representatives. The CALM Act requires statutory public comment periods (for at least 2 months) associated with the development of area management plans, including the development of forest management plans. The preparation of the FMP 2014-23 included consultation within State government, across industry, conservation groups, local government and Noongar representatives as well as a 12-week public comment period on a Draft FMP. The mid-term performance review of this FMP was also released by the CPC for a 6-week public comment period.

DBCA routinely consults with industry and land users prior to implementing land management activities. For example, the planning and implementation of prescribed burning may include liaison with neighbours, wine and horticultural groups and beekeeping representatives to minimise risks of adverse impacts on these stakeholders. In 2007, DBCA (DEC at the time) published the *Good Neighbour Policy,* after extensive consultation with key stakeholders, to improve the management of cross-boundary land management activities.

Advice from key stakeholders is also sought when developing recovery plans for threatened species or ecological communities. Further, biodiversity management programmes developed under the BC Act may include consultation with any person or organisation likely to be affected in a material way by the program.

Similarly, the FPC has a range of consultation processes which operate at the strategic (industry policy development, certification) to local (harvest coupe or individual activity such as weed control) levels. These have been described in the relevant sections of this document.

4.8.2 Complaints management

DBCA policy aims to ensure that a consistent method of management, monitoring and reporting of complaints is implemented so as to improve the quality of services provided by the

Department to its customers (*Management of Complaints, Corporate Policy Statement No 6, Department of Parks and Wildlife, 2015*). A guide to assist DBCA staff in managing complaints is also used *(Complaints Handling Guide, Department of Parks and Wildlife, 2016).*

The FPC also manages complaints through an official recordkeeping system (Content Manager). This system enables the FPC to record and track the progression of complaints. This process of effective complaints management is outlined in FPC's *Complaints, concerns and compliments procedure, FPC Procedure 5*.

Appendices

Appendix 1: State and Commonwealth legislation relevant to the conduct of forest practices in the WA RFA region

Legislation	Agency	Purpose	Tenure
State			
Aboriginal Heritage Act 1972	Department of Planning, Lands and Heritage	to make provision for the preservation on behalf of the community of places and objects customarily used by or traditional to the original inhabitants of Australia or their descendants, or associated therewith	All tenures
Agriculture and Related Resources Protection Act 1976	Department of Primary Industries and Regional Development	to provide for the management, control and prevention of certain plants and animals, for the prohibition and regulation of the introduction and spread of certain plants and of the introduction, spread and keeping of certain animals, for the protection of agriculture and related resources generally, and for incidental and other purposes	All tenures
Agricultural and Veterinary Chemicals (Western Australia) Act 1995	Department of Primary Industries and Regional Development	to apply certain laws of the Commonwealth relating to agricultural and veterinary chemical products as laws of Western Australia and for related purposes	All tenures
Biodiversity Conservation Act 2016	Department of Biodiversity, Conservation and Attractions	to provide for the conservation and protection of biodiversity and biodiversity components in Western Australia; and the ecologically sustainable use of biodiversity components in Western Australia	All tenures

Legislation	Agency	Purpose	Tenure
State			
Biosecurity and Agriculture Management Act 2007	Department of Primary Industries and Regional Development	the control of certain organisms, the use of agricultural and veterinary chemicals, the identification and attainment of standards of quality and safety for agricultural products, animal feeds, fertilisers and other substances and things, the establishment of a Declared Pest Account, a Modified Penalties Revenue Account and accounts for industry funding schemes	All tenures
Bush Fires Act 1954	Department of Fire and Emergency Services	to make better provision for diminishing the dangers resulting from bush fires, for the prevention, control and extinguishment of bush fires	All tenures
Carbon Rights Act 2003	Department of Water and Environment Regulation	to provide for the creation and effect of certain interests in land in relation to the effects of carbon sequestration from, and carbon release to, the atmosphere, and for related matters	All tenures
Conservation and Land Management Act 1984	Department of Biodiversity, Conservation and Attractions	to make better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to establish authorities to be responsible therefor	Crown land
Contaminated Sites Act 2003	Department of Water and Environment Regulation	the identification, recording, management and remediation of contaminated sites, to consequentially amend certain other Acts and for related purposes	All tenures
Country Areas Water Supply Act 1947	Department of Water and Environmental Regulation	to safeguard water supplies	All tenures
Emergency Management Act 2005	Department of Fire and Emergency Services	to provide for prompt and coordinated organisation of emergency management in the State	All tenures

Legislation	Agency	Purpose	Tenure
State			
Environmental Protection Act 1986	Environmental Protection Authority	to provide for the prevention, control and abatement of pollution and environmental harm, the conservation, preservation, protection, enhancement and management of the environment, and for matters incidental to or connected with the foregoing	All tenures
Fire and Emergency Services Act 1998	Department of Fire and Emergency Services	to provide for functions relating to the provision and management of emergency services, and for related purposes	All tenures
Forest Products Act 2000	Forest Products Commission	to establish the Forest Products Commission and outline the functions undertaken by the FPC, including performing commercial functions of growing, harvesting and selling forest products; supporting industry development; and advising the Minister on forestry	All tenures
Health Act 1911	Department of Health Western Australia	to consolidate and amend the law relating to public health	All tenures
Heritage Act 2018	Heritage Council of Western Australia/State Heritage Office	recognise the importance of, and promote understanding and appreciation of, Western Australia's cultural heritage; and provide for the identification and documentation of places of cultural heritage significance and for the conservation, use, development and adaptation of such places	All tenures
Land Administration Act 1997	Department of Planning, Lands and Heritage	to consolidate and reform law about Crown land and the compulsory acquisition of land	Crown land

Legislation	Agency	Purpose	Tenure
State			
Land Administration (South West Native Title Settlement) Act 2016	Department of Planning, Lands and Heritage	to provide for the conveyance of freehold title, the creation of reserves and the making of management orders in respect of reserves, and the grant of leasehold interests, for the benefit of the Noongar people; and to provide for licences to enable the Noongar people to access, and carry out activities for Aboriginal Customary Purposes, on certain unallocated Crown land and unmanaged reserves	
Metropolitan Water Supply, Sewerage, and Drainage Act 1909	Department of Water and Environmental Regulation	to constitute the Metropolitan Water, Sewerage, and Drainage Area	Metropolitan Water, Sewerage, and Drainage Area
Mining Act 1978	Department of Mines, Industry Regulation and Safety	to consolidate and amend the law relating to mining and for incidental and other purposes	All tenures
The Noongar (Koorah, Nitja, Boordahwan) (Past, Present and Future) Recognition Act 2016	Department of the Premier and Cabinet	recognises the living cultural, spiritual, familial and social relationship that the Noongar people have with the Noongar lands, and the significant and unique contribution that the Noongar people have made, are making, and will continue to make, to the heritage, cultural identity, community and economy of the State	Not relevant
Petroleum and Geothermal Energy Resources Act 1967	Department of Mines, Industry Regulation and Safety	to ensure responsible petroleum and geothermal energy exploration and production including appropriate environmental management of these activities	All tenures
Petroleum Pipelines Act 1969	Department of Mines, Industry Regulation and Safety	construction, operation and maintenance of pipelines for the conveyance of petroleum and for purposes connected therewith	All tenures

Legislation	Agency	Purpose	Tenure
State			
Rights in Water and Irrigation Act 1914	Department of Water and Environmental Regulation	makes provision for the regulation, management, use and protection of water resources, and for related purposes	All tenures
Soil and Land Conservation Act 1945	Department of Primary Industries and Regional Development	land drainage, clearing, land degradation assessment, compliance, covenanting and Land Conservation District Committees	All tenures
State Records Act 2000	Department of Culture and the Arts	provides for keeping of State records	N/A[8]
Water Agencies (Powers) Act 1984	Department of Water and Environmental Regulation	to give the Minister functions and powers, to make other provisions in respect of the Minister's functions, to establish the Water Resources Ministerial Body and the Water Resources Council	
Waterways Conservation Act 1976	Department of Water and Environmental Regulation	to make provision for the conservation and management of certain waters and of the associated land and environment	
Wildlife Conservation Act 1950	Department of Biodiversity, Conservation and Attractions	conservation and legal protection of flora and fauna	All tenure
Commonwealth			
Australian Heritage Council Act 2003	Department of the Environment and Energy	established the Australian Heritage Council as the Australian Government's independent expert advisory body on National and Commonwealth heritage matters under the *Environment Protection and Biodiversity Conservation Act 1999*	Not relevant

[8] This Act does not have tenure, however the WA State Government administers the Act

Legislation	Agency	Purpose	Tenure
State			
Environmental Protection and Biodiversity Conservation Act 1999	Department of the Environment and Energy	the Australian Government's central piece of environmental legislation. The Act provides a legal framework to protect and manage matters of national environmental significance: listed threatened species and communities, migratory species, internationally important wetlands (Ramsar wetlands), National Heritage places, World Heritage properties, the Great Barrier Reef, Commonwealth marine areas, nuclear actions and water resources, in relation to coal seam gas and large coal mining	All tenure
Export Control Act 1982	Department of Agriculture and Water Resources	Facilitates the export of food and agricultural products and authorises restraints on businesses engaged in export	All tenure
Regional Forest Agreement Act 2002	Department of Agriculture and Water Resources	to give effect to the Regional Forest Agreements and aspects of the National Forest Policy Statement	

State Agreement Acts

A State Agreement Act (SAA) is a legal contract between the WA Government and a proponent of a major project within the boundaries of Western Australia. It is an indication of the State's support for and commitment to the major project. State Agreements detail the rights, obligations, terms and conditions for the development of the specific project and establish a framework for ongoing relations and cooperation between the State and the project proponents.

SAAs relating to the forest products industry and mining operations on public forest within the WA RFA region are:

Forest Products

- Dardanup Pine Log Sawmill Agreement Act 1992
- Wood Processing (WESFI) Agreement Act 2000
- Wood Processing (Wesbeam) Agreement Act 2002

Mining

- Alumina Refinery Agreement Act 1961
- Alumina Refinery Agreements (Alcoa) Amendment Act 1967
- Alumina Refinery (Pinjarra) Agreement Act 1969
- Alumina Refinery (Wagerup) Agreement and Acts Amendment Act 1978

- Alumina Refinery (Worsley) Agreement Act 1973
- Collie Coal (Griffin) Agreement Act 1979
- Collie Coal (Western Collieries) Agreement Act 1979
- Mineral Sands (Beenup) Agreement Act 1995
- Silicon (Kemerton) Agreement Act 1987
- Wundowie Charcoal Iron Industry Sale Agreement Act 1974

Appendix 2: Hierarchy of controlling documents

Controlling Document	Content	Custodian
Acts of Parliament	Bill that has been enacted by Parliament and which contains a sequence of provisions containing statements and rules designed to give effect to a particular national or State responsibility	WA Parliament Australian Parliament
Government policy, strategy and agreement	Policy on specific issues relevant to forest management that has a statutory or whole-of-government backing. Developed to clarify uncertainty or fill gaps in legislation or to guide decisions where there are choices, especially in regard to contentious issues	WA Government, Australian Government
Management plan	Strategies for management utilising CALM Act requirements and relevant policies	Conservation and Parks Commission
Corporate policy	Corporate level statement of principles and rules to guide decisions and actions in the conduct of the Department's business	Conservation and Parks Commission, Department of Biodiversity, Conservation and Attractions, Forest Products Commission and other relevant government agencies
Corporate guideline	Corporate level set of procedures that will guide and direct actions by Departmental staff to achieve consistency and required standards. Guidelines contain sufficient detail to help ensure that processes are streamlines to a set routine	Department of Biodiversity, Conservation and Attractions, Forest Products Commission and other relevant government agencies
Code of Practice	Details of the principles about tasks that are required and how tasks are to be performed to meet management requirements	Department of Biodiversity, Conservation and Attractions, and other industry bodies depending on the activity
Operational policy	Divisional level statement of operations policy to guide decisions and actions by Departmental staff	Department of Biodiversity, Conservation and Attractions Forests Product Commission
Divisional guidelines and procedures Alternative names: Standard operating	Divisional, branch, section, unit or regional level set of guidelines to guide and direct actions by Departmental staff	Department of Biodiversity, Conservation and Attractions /Forest Products Commission Director, Branch, Section, Unit or Regional Manager

procedures, protocols		
Manual Alternative name: User guide	Branch, regional or functional level compendium of documents, mostly technical in nature, to assist people to locate and use a particular system or process	Department of Biodiversity, Conservation and Attractions /Forest Products Commission Director, Branch, Section, Unit or Regional Manager
Work Instructions	Branch, region or district level documents that direct people how to undertake a particular task	Department of Biodiversity, Conservation and Attractions /Forest Products Commission District/ Region/Branch Manager

Appendix 3: Key controlling documents for forest management agencies

Department of Biodiversity, Conservation and Attractions policies[9]

- 1 Department of Parks and Wildlife - Key Documents
- 3 Management of Phytophthora Disease
- 4 Environmental Offsets
- 6 Management of Complaints
- 10 Legislative Authorisations - Appointment of Authorised Officers
- 11 Regulation of the Forest Products Industry
- 12 Management of Pest Animals
- 14 Weeds Management
- 15 Community Involvement
- 17 Training
- 18 Recreation, Tourism and Visitor Services
- 19 Fire Management
- 28 Science
- 31 Terrestrial Conservation Reserve System
- 35 Conserving Threatened Species and Ecological Communities
- 36 Conservation Reserve System
- 37 Management of Wildlife Utilisation
- 38 Compliance and Enforcement
- *40 Road management* (this policy is under review and some content is no longer current)
- 41 Beekeeping on Crown land
- 53 Visitor Risk Management
- 55 Commercial Filming
- 56 Risk Management
- 60 Work Health and Safety
- 62 Identification and Management of Wilderness and Surrounding Areas
- 63 Information and Related Technology
- 65 Good Neighbour
- 68 Management of Events and Organised Group Activities
- 69 Acknowledgment of Aboriginal Traditional Owners
- 70 Information Security Management
- 76 Public Participation and Stakeholder Engagement
- 80 Protection and Management of Caves and Karst
- 86 Aboriginal Customary Activities
- 87 Aboriginal Joint Management
- 88 Prescribed Burning
- 91 Burial of Aboriginal People on CALM Act Land
- 94 Aboriginal Outstations, Camps and Settlements on CALM Act Land
- Science Policy Guideline No. 1 – Science plans
- Science Policy Guideline No. 2 – Implementing research results
- Science Policy Guideline No. 3 – Publications, reports and manuscripts

[9] Any further information or requests should be directed to the Parks and Wildlife website - dpaw.wa.gov.au or by email to forest.info@dpaw.wa.gov.au

- Science Policy Guideline No. 4 – Databases and their management
- Science Policy Guideline No. 5 – Scientific ethics and etiquette

Conservation and Parks Commission position statements[10]

- Position Statement (2018): Prescribed burning on vested lands
- Position Statement (2017): Periodic performance assessment of the implementation of management plans
- Position Statement No.2 (2011): Implementation of conservation reserve proposals [NB: currently under review]
- Position Statement No.3 (2015): Mining in lands vested in the Conservation Commission
- Position Statement No.6 (2015): The preparation of management plans for vested lands
- Position Statement No.8 (2013): Minor changes to Conservation Estate [NB: currently under review]
- Position Statement No.9 (2014): Criteria for developing key performance indicators for management plans
- Position Statement No.10 (2014): Monitoring strategy for assessing the implementation of management plans
- Position Statement No.11 (2014): The protection of surface and groundwater biodiversity values of vested lands [NB: currently under review]
- Position Statement No.12 (2015): Basic Raw Materials: State Government and local government access to vested lands

Parks and Wildlife Service guidance documents

- Biodiversity Conservation Appraisal System
- Code of Practice for Fire Management
- Code of Practice for Timber Harvesting in Western Australia
- Guidelines for conservation management plans relating to mineral exploration on lands managed by DEC
- Guidelines for the management and rehabilitation of basic raw material pits
- Management of commercial harvesting of protected flora in Western Australia 2008-2013
- Manual of management guidelines for timber harvesting in Western Australia
- Management guideline No. 1 – User guide for approvals matrix for operations on CALM Act Reserves
- *Phytophthora cinnamomi* and disease caused by it – Volume 1, Management Guideline
- Silviculture guideline no. 1 – Silvicultural practice in the jarrah forest
- Silviculture guideline no. 2 – Silvicultural practice in the wandoo forest and woodland
- SFM interim guideline no. 2 – Interim guideline for the first thinning of bauxite rehabilitation areas established before 1988 with exotic species in the Wungong catchment
- SFM guideline no. 2 – Guidelines for the protection of the values of informal reserves and fauna habitat zones
- SFM guideline no. 5 – Soil and water conservation
- SFM guideline no. 6 – Guidelines for the selection of fauna habitat zones

[10] All documents are available through the Document search web page - conservation.wa.gov.au/document-search.aspx

- FEM manual no. 1 – Manual of procedures for the management of soils associated with timber harvesting in native forests

FPC policies and guidance documents[11]

Code of Practice for Timber Plantations (2006) FIFWA
Code of Practice for Timber Harvesting in Western Australia DBCA
Code of Practice for Fire Management DBCA
Code of Practice for the use of Agricultural and Veterinary Chemicals in Western Australia DPIRD
Biosecurity Manual for the Plantation Timber Industry, Plant Health Australia
Guidelines for Plantation Fire Protection (FESA)
Policy 9 – Forest management
Policy 10 – Excision policy
Policy 30 – Utilisation of forest products from native forests
Policy 37 – Seedling donations
Policy 46 – Land purchase
Procedure 5 – Complaints, concerns and compliments
Procedure 8 – Risk assessment for land contamination
Procedure 18 – Emergency response for a wildfire
Procedure 22 – Emergency response for an incursion of an exotic pest
Procedure 35 – Sandalwood plantation inventory plots
Procedure 36 – Sirex wood wasp prevention, surveillance and management
Procedure 37 – Incident management and investigation
Procedure 44 – Identifying and protecting native title rights as well as Noongar and non-Aboriginal heritage sites in the South West forest region
Procedure 45 – Forest certification communication requirements and specifications for sales documentation
Procedure 46 – Targeted fauna surveys within pure and mixed karri forest
Procedure 47 – Identification assessment and demarcation of Type 2 old-growth karri forest
Procedure 48 – Chain of responsibility compliance
Procedure 49 – Tree marker in charge: Native forest coupes
Procedure 55 – Defined forest area
Procedure 60 – Log grading
Procedure 61 – Log adjudication
Procedure 62 – Auction process
Procedure 63 – Native forest log specifications
Procedure 69 – Piecework treemarking in the jarrah forest
Procedure 70 – Identifying and marking hazards in native forest coupes
Procedure 74 – Demarcating harvest exclusion areas in native forest coupes
Procedure 77 – Tree felling and machine operation near power lines, pipelines or on roads
Procedure 80 – Myrtle Rust incursion prevention

[11] Generally, Procedures, Contractor Procedures and Work Instructions are not publicly available as are internal working documents or are commercial in confidence. Further information can be found at fpc.wa.gov.au or dpaw.wa.gov.au

Procedure 81 – Management of a chemical and hydrocarbon spill
Procedure 83 – Integrated Forest Management System and corporate governance framework
Procedure 95 – Approval for disturbance activities
Procedure 97 – Defining the Karri Forest Management Unit
Procedure 98 – Plantations harvesting (Soil and water management)
Procedure 99 – Plantation establishment (Site Preparation)
Procedure 101 – Plantation establishment (Debris Clean-Up)
Procedure 102 – Preparation and management of Native Forest harvest coupe management maps
Procedure 103 – Native Forest regeneration operations
Procedure 104 – Plantation establishment (Planting, infill and survival assessment)
Procedure 105 – Plantation establishment (ground based application of herbicide)
Procedure 106 – Plantation establishment (aerial application of herbicide)
Procedure 111 – Pest, disease and weed surveillance and management
Procedure 112 – Pre-operations planning (plantations)
Procedure 115 – Plantation harvesting (management)
Procedure 116 – Plantation harvesting (crop tree damage assessment)
Procedure 121 – Plantation harvesting (pre-operations planning)
Procedure 122 – scarifying seeding and fertilising log landings and extraction tracks and BRM pits in FPC NF harvesting coupes
Procedure 123 – Post harvest jarrah regeneration
Procedure 124 – Sampling and measurement for wood utilisation assessments
Procedure 132 – reporting of injured fauna
Procedure 133 – Identification and demarcation of mixed karri/jarrah forest type within coupes comprising two-tiered karri forest
Procedure 135 – Plantation nutrition
Procedure 137 – Environmental monitoring and evaluation of compliance
Procedure 139 – Plantations log specifications
Contractor procedure A1 – Glossary
Contractor procedure C1 – Obligations
Contractor procedure C2 – Timber workers registration
Contractor procedure C4 – Delivery notes
Contractor procedure E1 – Incident reporting
Contractor procedure E2 – Management of the spread of weeds and diseases in native forest operations
Contractor procedure E3 – Environmental compliance
Contractor procedure E4 – Soil and water management for native forest operations
Contractor procedure E5 – E-learning modules - Integrated Forest Management System (IFMS) ~~induction for Contractors~~
Contractor procedure F1 – Fire requirements
Contractor procedure H1 – Pre-operation harvesting briefing
Contractor procedure H2 – Planning extraction tracks and log landings
Contractor procedure H3 – Pre-harvesting scrub rolling
Contractor procedure H4 – Felling
Contractor procedure H5 – In-forest treatment – Log preparation
Contractor procedure H6 – Log landing construction and management

Contractor procedure H7 – Extraction
Contractor procedure H8 – Log landing segregation, loading and stockpiling
Contractor procedure H9 – Haulage
Contractor procedure H10 – In-coupe rehabilitation
Contractor procedure H11 – Certification
Contractor procedure H12 – Operations on mine sites or private land
Contractor procedure H13 – Utilisation of harvesting debris
Contractor procedure O1 – Safety requirements
Contractor procedure O2 – Road works, earth works or reclamation accreditation
Contractor procedure O3 – Alcohol and other drugs
Contractor procedure R1 – Pre-operation roading briefing
Contractor procedure R2 – Clearing new road alignments
Contractor procedure R3 – Clearing of existing alignments
Contractor procedure R4 – Road construction and forming
Contractor procedure R5 – Road surfacing
Contractor procedure R6 – Road drainage
Contractor procedure R7 – Road maintenance
Contractor procedure R8 – Basic raw material
Contractor procedure R9 – Roading completion and certification
Contractor procedure S1 – Standard bush signs and markings
Work instruction 23 – Taping in of road alignments in South West native forests
Work instruction 25 – Protocol for thinning operation assessment (FPC470 form)
Work instruction 29 – South West native forest harvesting forms
Work instruction 30 – Environmental compliance monitoring in South West native forest harvesting operations
Work instruction 31 – General vehicle loading
Work instruction 32 – Harvey Mill – Vehicle loading
Work instruction 34 – Log transport compliance checks
Work instruction 35 – Preparing worksites for contractors
Work Instruction 37 – Panel trap establishment for Sirex monitoring
Work Instruction 204 – Reporting and monitoring of declared weeds

Other relevant documents

- Unsealed road manual – Guidelines to good practice (Australian Roads Research Board 2009)
- WA Environmental Offsets Policy (Government of Western Australia 2011)

Appendix 4: Case studies of management of nationally listed threatened species

Woylie

The woylie *Bettongia penicillata ogilbyi* is a small kangaroo-like marsupial. Woylies make many diggings in search of the preferred food, and these diggings help water seep into the ground and move nutrients in the soil. Fungal spore survive being eaten by woylies and dispersed around the forest in woylie scats (droppings). As fungi help plants to grow, woylies play an important role in maintaining the health and re-establishment of native vegetation. Woylie are also known to disperse and store seed, which also affects the recruitment and regeneration of vegetation.

Woylie once occupied most of the Australian mainland south of the tropics including the arid and semi-arid zones of Western Australia, the Northern Territory, New South Wales and Victoria. However, they are now only found in two small areas: Upper Warren and Dryandra Woodland. There are also translocated populations at Batalling and inside fenced areas in Mt Gibson, Karakamia and Whiteman Park, and also in New South Wales and South Australia.

The woylie was once hailed as one of the success stories of wildlife conservation programs. In 1996, as a direct result of a recovery program, the woylie was removed from the Threatened (Specially Protected) Fauna Notice under the Western Australian *Wildlife Conservation Act 1950*. However, monitoring of the species continued as part of the fauna management program, and a dramatic decline in woylie numbers was observed which started in 1999 and consequently, the woylie was re-listed in 2008.

The species is listed as fauna that is 'likely to become extinct' in the wild (Specially Protected) under the Wildlife Conservation Act and has been assigned the threat status ranking of Critically Endangered using the International Union for Conservation of Nature (IUCN) criteria. Nationally it is also listed as Endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

In 2004, the FMP 2004-2013 formalised actions begun under our *Protecting our old-growth forests* policy and established a number of measures to improve management of biodiversity including:

- the creation of 30 new national parks, including in areas providing habitat for woylies;
- an end to harvesting of old-growth forests and the expansion of the informal reserve system to include patches of old-growth forest that were too fragmented to include in the formal reserve system;
- an independent review of areas available for timber harvesting which were classified as old-growth forest in 1997, but which had been reclassified as non old-growth forest;
- a process to check areas ahead of disturbance operations for the presence of unmapped old-growth forest and to reclassify these areas, if appropriate, as old-growth forest and thus protect them in informal reserves
- the expansion of the informal reserve system to increase representation of less well reserved vegetation complexes and forest ecosystems;

- improved protection of wildlife habitats in State forest through the establishment of a system of fauna habitat zones that exclude timber harvesting. This included better protection for parts of the Greater Kingston area, an area of importance for the woylie, by increasing the concentration of fauna habitat zones in that area;
- silvicultural guidelines were amended to provide increased retention of habitat elements and an increased number of habitat trees, increased protection for understorey species, more surety of regeneration and reduced culling of marri trees;
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the subsequent forest management plan and provide for adaptive management and continuous improvement (Stoneman *et al*. 2015).

In 2006, when it became apparent that declines in numbers were continuing and not isolated to a single location, the intensive Woylie Conservation Research Project began. The project is focused on an area east of Manjimup where the greatest amount of information is available, but the project is also gathering information from other locations. It complements the standard fauna monitoring being undertaken through the Western Shield program. The project aims to determine the underlying factors responsible for the recent woylie decline in the Upper Warren region of south-west WA. It is also identifying management strategies required to reverse these declines.

Woylie demographics are being researched by trapping animals and radio-telemetry has been used to monitor their survival. Food resources, disease and predation have also been the focus of investigations to help identify the possible causes for the woylie decline. Current evidence suggests that woylies have been predated by cats predominantly, but also foxes, and that they may have become more vulnerable to predation by some form of disease. Efforts continue to verify the real causes because knowing for certain is the best way to inform how conservation and management can most effectively save the woylie.

The Perup Sanctuary is a 423 hectare predator-free enclosure in native bushland near Manjimup. It was established in late 2010 as an insurance colony in case the most important woylie populations in the wild became extinct. With a good representation of the genetic diversity of the woylie it is also an excellent source for translocations to help reintroduce the woylie to areas where it is safe to do so. In just the first four years their numbers in the Sanctuary increased from a founding stock of 87 adults to more than 400, plus nearly 300 that have been translocated to three sites to help stimulate their recovery in the wild. More recently, a fenced area has been built at Dryandra Woodland, and woylies are one of the species that will benefit from this predator-free environment.

Due to the decline in the population of woylie and its re-listing in 2008, work began to develop a recovery plan. Main threats to the woylie are historical habitat clearing for agriculture, ongoing habitat loss and fragmentation, predation by feral cats and foxes, and disease and stress. The *National Recovery Plan for the Woylie Bettongia penicillata ogilbyi* (Yeatman and Groom, 2012) outlines actions that are being implemented to improve the conservation status of the woylie:

- Verifying the causes of decline;
- Minimising fox and feral cat predations;
- Maintaining the health, genetic diversity and viability of wild populations;

- Maintaining genetic health and population sizes of captive populations;
- Undertaking translocations, and
- Educating the community about and involving the community in woylie conservation

The recovery plan was prepared by WA was adopted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The recovery plan is in place for a period of 10 years.

Data gathered through population monitoring provides valuable information to assess the conservation status of the species. There are currently 42 sites throughout the south-west of WA where woylies are monitored. The majority of these sites are part of DBCA's Western Shield animal conservation program. The program controls foxes and feral cats by baiting and monitors some of WA's most vulnerable native animals, including the woylie, which benefit from predator control.

Consistent with the objective of the recovery plan to reduce predation pressure on woylies, integrating feral cat baiting (using *Eradicat*®) into Western Shield fox control programs to improve feral cat control was initiated in 2015 to protect the two key woylie populations at Dryandra and Upper Warren with funding from the Federal Government.

In 2014, the FMP 2014-2023 came into effect and includes a number of measures to enhance biodiversity protection across the forest, at both landscape and local levels, including:

- protection of more than 1.5 million hectares in national parks, conservation parks and nature reserves, and informal reserves, such as stream and river zones;
- protection of around 334,000 hectares of old-growth forest in the reserve system;
- a proposal to add a further 4,000 hectares to Whicher National Park near Busselton, recognising the need to protect the unique flora of this area;
- added protection for marri trees, which are key habitat for some species. Habitat requirements (such as nesting, roosting and foraging needs) for a range of fauna are considered in selecting habitat trees and hollow logs for retention; and
- the fauna habitat zone network was refined, resulting in a reweighting of the allocation of area to those forest ecosystems with lower levels of reservation, a slightly greater area of mature forest in fauna habitat zones and a higher proportion of mature forest in fauna habitat zones, lesser area of regrowth forest and a lesser total area in FHZs, a greater range of size of FHZs in recognition of the characteristics of the landscape in which they are located, and the inclusion of some larger FHZs in areas of known fauna values including in areas of importance for woylies; and
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the next forest management plan and provide for adaptive management and continuous improvement.

The approvals process for disturbance activities provides the relevant DBCA manager with the ability to apply conditions on approval for operations that may impact on the woylie. Conditions may include ensuring there is a dieback hygiene management plan in place and that effective hygiene is undertaken, that additional fox and feral cat baiting is undertaken, that prescribed burning leaves unburnt patches and a mosaic of burn intensities, protecting preferred habitat

from fire, managing fuels to avoid large scale bushfire, using fire to regenerate senescing habitat, and avoiding road construction in preferred habitat or to fragment contiguous habitat.

Numbat

The recovery plan for the numbat (*Myrmecobius fasciatus*) was prepared by DBCA, and adopted under the EPBC Act as the national recovery plan for this species (Department of Parks and Wildlife 2017). The numbat is endemic to the south-west region of Western Australia, with additional reintroduced populations in South Australia and New South Wales. The long-term recovery goals for the species include: ensuring the security of existing self-sustaining subpopulations, extending the current distribution of the species, and ensuring that the numbat's genetic health and diversity is maintained. The recovery plan outlines the recovery actions necessary over the next 10 years for the numbat to persist in its natural environment. The numbat is listed as vulnerable under the EPBC Act and endangered under the WC / BC Act.

The numbat's historic distribution encompassed a number of habitat types, including eucalypt forest, eucalypt woodland, Acacia woodland and Triodia grassland. Known numbat subpopulations occupy several different habitat types, but only a small proportion of the range of habitat types previously occupied by the species.

The key habitat requirements of the numbat, based on habitats occupied throughout its past range and those where the species currently occurs include:

- Presence of termites in sufficient abundance - all evidence relating to the diet of the numbat throughout its range indicates an almost complete dependence on termites.
- Sufficient cover - adequate cover near ground level is required to provide refuge from raptors. Cover may be provided by thickets or a combination of thickets and hollow logs. An exception to this may be the apparent existence of numbat subpopulations in Triodia tussock grasslands of the arid zone, but these may have relied on proximity to woodland patches.
- Sufficient openness - although a degree of cover is required for refuge from predators, a sufficiently open understorey is required for feeding sites. A combination of an open understorey interspersed with thickets and hollow logs is ideal.
- Presence of eucalypt species - the majority of sites where numbats occur and were recorded in the past are characterised by the presence of eucalypt species thus providing logs and hollows and possibly higher termite densities.

The recovery plan is in place for 10 years with a review after 5 years.

Management practices such as the retention of logs and hollows during timber harvesting and burning operations and implementation of introduced predator baiting programs are important to the conservation of the numbat. Numbats need large areas of natural woodland vegetation because of their relatively large home ranges and limited food resources. Corridors of native vegetation with adequate low vegetation cover are important to maintain in agricultural areas as they will be used by dispersing young.

All subpopulations are considered necessary for long-term survival of the species. Importance is attributed to the original subpopulations and to ones sufficiently large to be considered self-sustaining or that have the potential to become self-sustaining.

Current key threats to numbats include predation by feral cats and foxes, inappropriate fire regimes, habitat fragmentation and disturbance, disease, and climate change.

In 2004, the FMP 2004-2013 formalised actions begun under our *Protecting our old-growth forests* policy and established a number of measures to improve management of biodiversity including:

- the creation of 30 new national parks including significant additions in the Upper Warren area which is where one of only two remaining original numbat populations occur;
- an end to logging of old-growth forests and the expansion of the informal reserve system to include patches of old-growth forest that were too fragmented to include in the formal reserve system;
- an independent review of areas available for timber harvesting which were classified as old-growth forest in 1997, but which had been reclassified as non old-growth forest;
- a process to check areas ahead of disturbance operations for the presence of unmapped old-growth forest and to reclassify these areas, if appropriate, as old-growth forest and thus protect them in informal reserves
- the expansion of the informal reserve system to increase representation of less well reserved vegetation complexes and forest ecosystems;
- improved protection of wildlife habitats in State forest through the establishment of a system of fauna habitat zones that exclude timber harvesting. This included better protection for parts of the Upper Warren area where numbats occur by increasing the concentration of fauna habitat zones in that area;
- silvicultural guidelines were amended to provide increased retention of habitat elements, including those that benefit numbats, and an increased number of habitat trees, more surety of regeneration and reduced culling of marri trees, increased protection for understorey species by limiting impact on understorey species by heavy machinery, preserving of thickets of balga (*Xanthorrhoea preissii*), push down treatments of the understorey to focus on groups or clumps of species such as bull banksia (*Banksia grandis*) and sheoak (*Allocasuarina fraseriana*) that impede regeneration establishment and the retention of elements as small clumps or as scattered individuals, scattered mature individuals of a range of mid-storey species to be retained, disturbance of the topsoil to be avoided to protect the understorey seed store, explicitly mark for retention of balga was introduced as was greater diversity of retained habitat, retention of all natural hollow logs with a pipe of more than 10 centimetres diameter and length of more than three metres (important habitat for numbats), and a greater emphasis on the protection of retained habitat from fire applied during the regeneration process; and
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the subsequent forest management plan and provide for adaptive management and continuous improvement (Stoneman *et al*. 2015).

In 2014, the FMP 2014-2023 came into effect and includes a number of measures to enhance biodiversity protection across the forest, including:

- protection of more than 1.5 million hectares in national parks, conservation parks and nature reserves, and informal reserves, such as stream and river zones;

- all old-growth continues to be protected, including an additional 2,260 hectares identified since the FMP 2004-2013 was put in place;
- a proposal to add a further 4,000 hectares to Whicher National Park near Busselton, recognising the need to protect the unique flora of this area;
- the fauna habitat zone network was refined, resulting in a reweighting of the allocation of area to those forest ecosystems with lower levels of reservation, a slightly greater area of mature forest in fauna habitat zones and a higher proportion of mature forest in fauna habitat zones, lesser area of regrowth forest and a lesser total area in FHZs, a greater range of size of FHZs in recognition of the characteristics of the landscape in which they are located, and the inclusion of some larger FHZs in areas of known fauna values including in areas of importance for numbats;
- added protection for marri trees, which are key habitat for some species;
- habitat requirements (such as nesting, roosting and foraging needs) for a range of fauna, including numbats, are considered in selecting habitat trees and hollow logs for retention;
- retention of additional large logs, logs with hollows suitable for refuge for ground dwelling fauna such as numbats, stumps and other features which provide underground cavities, additional ground log retention in areas supporting threatened fauna which depend on ground habitat (including numbat); and
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the next forest management plan and provide for adaptive management and continuous improvement.

The *Silviculture Guideline for Jarrah Forest* (DPaW 2014) includes guiding principles and strategies to manage biodiversity in areas subject to wood production. Specific requirements for retention of legacy elements, including logs and ground habitat that are preferred by numbats are specified in *Jarrah – Treemarking for Retention* (DPaW, 2015).

Consistent with the objective of the recovery plan to reduce predation pressure on numbats, ongoing introduced predator (feral cat and fox) control continues to be a focus of the numbat recovery program. Integrating feral cat baiting (using *Eradicat*®) into Western Shield fox control programs to improve feral cat control has been initiated for the two wild numbat populations at Dryandra and Upper Warren with financial support from the Federal Government.

The approvals process for disturbance activities provides the relevant DBCA manager with the ability to apply conditions on approval for operations that may impact on the numbat. Conditions may include that additional fox and feral cat baiting is undertaken, raking around and avoid the felling and pushing of potential habitat trees in fire operations, that prescribed burning leaves unburnt patches and a mosaic of burn intensities, using different season of burns for preferred and critical habitat, and using fire to regenerate senescing habitat.

Black cockatoos

Baudin's cockatoo (*Calyptorhynchus baudinii)* and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) both occur in the humid and sub-humid forests of south-west of Western Australia They nest in the hollows of mature marri and jarrah trees. Baudin's cockatoo feeds mainly on marri seeds but will also occasionally feed on various banksias, hakeas and

jarrah, while the forest red-tailed cockatoo feeds on marri and jarrah, blackbutt, sheoak and snottygobble.

Baudin's cockatoo and the forest red-tailed black cockatoo are recognised as threatened species under State and Commonwealth legislation. In Western Australia the species are listed as fauna that is 'likely to become extinct' in the wild (Specially Protected) under the WC Act and have been assigned the threat status ranking of Endangered (Baudin's cockatoo) and Vulnerable (forest red-tailed black cockatoo) using International Union for Conservation of Nature criteria. Nationally, they are listed as Endangered (Baudin's cockatoo) and Vulnerable (forest red-tailed black cockatoo) under the Commonwealth EPBC Act.

A combined recovery plan for Baudin's cockatoo and the forest red-tailed black cockatoo has been prepared as these 'forest black cockatoos' have similar breeding and feeding requirements and face similar threats (*Forest Black Cockatoo (Baudin's Cockatoo Calyptorhynchus baudinii and Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso) Recovery Plan, Department of Environment and Conservation, 2008*).

The recovery plan was adopted under the EPBC Act in 2011.

The threats faced by these black cockatoos are killing by illegal shooting, feral honeybees (*Apis mellifera)* using nesting hollows, habitat loss, nest hollow shortage and competition for available nest hollows. Climate change is an additional threat that is likely to exacerbate the threatening processes as a result of changes to biodiversity and ecosystem function.

Recovery actions are focussed on seeking non-lethal means of mitigating fruit damage by Baudin's cockatoo in orchards, eliminating illegal shooting, strategies to allow for the use of noise emitting devices in orchards, removing feral honey bees from nesting hollows, identifying factors affecting the number of breeding attempts and breeding success and nest hollows to increase recruitment, and minimising the effects of mining and urban development on habitat loss.

The Western Australian Museum and Water Corporation launched the Cockatoo Care research initiative in 2001, with the aim of researching the distribution and ecology of black cockatoos and threats to their survival, as well as implementing measures to encourage the conservation of the species. Karaakin, a black cockatoo conservation centre, and Perth Zoo are involved in rehabilitating injured black cockatoos for release back into the wild. Karaakin also revegetate areas of degraded bushland and educate the community about the conservation of these species. DBCA, BirdLife Australia and the WA Museum have been involved in installing artificial nest hollows and repairing damaged and degraded natural nest hollows. The Great Cocky Count, a citizen science program that undertakes an annual count of Carnaby's cockatoo roosting sites to support estimating the species' population has been expanded in recent years to include forest red-tailed black cockatoo sites to provide more information about this species.

In 2004, the FMP 2004-2013 formalised actions begun under our *Protecting our old-growth forests* policy and established a number of measures to improve management of biodiversity including:

- the creation of 30 new national parks including significant additions throughout the range of these black cockatoos;
- an end to logging of old-growth forests and the expansion of the informal reserve system to include patches of old-growth forest that were too fragmented to include in the formal reserve system;
- an independent review of areas available for timber harvesting which were classified as old-growth forest in 1997, but which had been reclassified as non old-growth forest;
- a process to check areas ahead of disturbance operations for the presence of unmapped old-growth forest and to reclassify these areas, if appropriate, as old-growth forest and thus protect them in informal reserves
- the expansion of the informal reserve system to increase representation of less well reserved vegetation complexes and forest ecosystems;
- improved protection of wildlife habitats in State forest through the establishment of a system of fauna habitat zones that exclude timber harvesting;
- silvicultural guidelines were amended to provide increased retention of habitat elements and an increased number of habitat trees, more surety of regeneration and reduced culling of marri trees (an important resource for black cockatoos), increased protection for understorey species by limiting impact on understorey species by heavy machinery, preserving of thickets of balga (*Xanthorrhoea preissii*), push down treatments of the understorey to focus on groups or clumps of species such as bull banksia (*Banksia grandis*) and sheoak (*Allocasuarina fraseriana*) that impede regeneration establishment and the retention of elements as small clumps or as scattered individuals, scattered mature individuals of a range of mid-storey species to be retained, disturbance of the topsoil to be avoided to protect the understorey seed store, greater diversity of retained habitat, retention of all natural hollow logs with a pipe of more than 10 centimetres diameter and length of more than three metres, and a greater emphasis on the protection of retained habitat from fire applied during the regeneration process; and
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the subsequent forest management plan and provide for adaptive management and continuous improvement (Stoneman *et al*. 2015).

In 2012, when the *Draft Forest Management Plan 2014-2023* (Conservation Commission, 2012) was released for public comment, it included measures to improve the protection of marri trees for food and habitat for black cockatoos. More than 3,000 submissions on the draft plan made reference to protecting marri trees.

In 2014, the FMP 2014-2023 came into effect and includes a number of measures to enhance biodiversity protection across the forest, including:

- protection of more than 1.5 million hectares in national parks, conservation parks and nature reserves, and informal reserves, such as stream and river zones;
- all old-growth continues to be protected, including an additional 2,260 hectares identified since the prior forest management plan was put in place;
- a proposal to add a further 4,000 hectares to Whicher National Park near Busselton, recognising the need to protect the unique flora of this area;
- the fauna habitat zone network was refined, resulting in a reweighting to those forest ecosystems with lower levels of reservation, a slightly greater area of mature forest in

fauna habitat zones and a higher proportion of mature forest in fauna habitat zones, lesser area of regrowth forest and a lesser total area in FHZs, a greater range of size of FHZs in recognition of the characteristics of the landscape in which they are located, and the inclusion of some larger FHZs in areas of known fauna values;
- added protection for marri trees, which are important food and habitat for black cockatoos;
- habitat requirements (such as nesting, roosting and foraging needs) for a range of fauna are considered in selecting habitat trees and hollow logs for retention;
- an action to revise relevant documents pertaining to fire management to seek to ensure that where practicable, its prescribed burning and bushfire operations consider appropriate measures to minimise loss of legacy habitat elements;
- retention of additional large logs and other ground habitat for ground dwelling fauna; and
- a requirement that an expert panel undertake a review of silvicultural practices and their impacts on biodiversity to inform the development of the next forest management plan and provide for adaptive management and continuous improvement.

The *Silviculture Guideline for Jarrah Forest* (DPaW 2014) and *Silviculture Guideline for Karri Forest* (DPaW 2014) include guiding principles and strategies to manage biodiversity in areas subject to wood production, including using knowledge of natural disturbance regimes, maintaining connectivity, retaining legacy elements and maintaining diversity of composition. Requirements are specified in *Jarrah – Treemarking for Retention* (DPaW, 2015) and *Karri – Treemarking for Retention* (DaPW, 2016), including for example retention of legacy element important to black cockatoos such habitat trees, marri trees, dead trees and secondary storey elements.

In 2015, an important forest black cockatoo breeding area (Myara site) was identified as a Fauna Habitat Zone under the *Forest Management Plan 2014–2023* and Alcoa of Australia agreed to exclude the site from mining.

The approvals process for disturbance activities provides the relevant DBCA manager with the ability to apply conditions on approval for operations that may impact on the black cockatoos. Conditions may include managing fuels to avoid large scale bushfire, that prescribed burning leaves unburnt patches and a mosaic of burn intensities, using fire to regenerate senescing habitat, raking around and avoiding the felling and pushing of potential habitat trees in fire operations, and avoiding construction of roads adjacent or through species preferred habitat type.

Prescribed fire and threatened flora

Within Western Australia, threatened flora are listed under the *Wildlife Conservation Act 1950* as rare flora where the Minister is of the opinion that the flora is likely to become extinct or is rare or otherwise in need of special protection. Assessment of the conservation status of threatened flora is based on the national distribution of the species using the IUCN Red List criteria. This assessment methodology is compliant with the national *Memorandum of Understanding on Agreement on a Common Assessment Method for Listing of Threatened Species and Threatened Ecological Communities*.

Most Western Australian threatened flora are also listed as threatened flora under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999,* with national Conservation Advices and/or Recovery Plans in place guiding recovery effort. Through the implementation of the Common Assessment Method MOU, the State and National lists of threatened species are being aligned.

Under the Wildlife Conservation Act, any person intending to take (disturb in any way) threatened flora must obtain the written permission of the Minister for Environment. This requirement is binding on the Crown and consequently any management operation within the WA RFA region that may impact threatened flora requires Ministerial authorisation.

Prescribed burning is a management practice undertaken by the DBCA in the forests and other ecosystems of the WA RFA region. Standard procedures have been established to first identify the occurrence of threatened flora within a management area, and secondly to seek a Ministerial authorisation to impact (take) that flora.

Prior to a prescribed burn occurring, the individual prescribed burn planning process requires that a pre-burn check is completed. This is integrated into the online electronic prescribed fire plan (ePFP) which replaced the previous paper-based system in 2013 as part of DBCA's commitment to a prescribed burning system that is compliant with ISO 31000:2009 - Risk management.

The integrated checklist addresses a comprehensive list of considerations such as stakeholder issues, requirements of relevant management plans or conservation plans, silviculture and regeneration, disease hygiene, cultural heritage and biodiversity conservation issues. Amongst other things, it ensures that any priority or declared rare flora populations within the prescribed burn area are identified through DBCA's database, and that appropriate management actions are undertaken in accordance with their individual requirements.

Threatened flora data is maintained on a corporate database, and all threatened flora data is collated into a central data platform, NatureMap. This central data platform provides the data source for DBCA to check for known or likely occurrences of threatened flora.

Once an occurrence of threatened flora is identified in an area proposed for burning, an environmental evaluation is undertaken by regional DBCA staff to determine if the burn as proposed poses an ecological risk to the species. If a risk is identified, the burn plan is reviewed to reduce that risk by either excluding the area, restricting the seasonal specifications of the burn, or otherwise modifying the burn prescription, such as through the ignition strategy.

Where the threatened flora will be impacted, or may be impacted, an application is made by the burn proponent for a 'Permit to Take Rare Flora'. This application includes information on the proposed burn, the characteristics of the subpopulation to be impacted, the known ecology of the species in response to fire, and the status of other subpopulations of the species in the area.

Applications to take rare flora during prescribed burns have occurred since prior to the signing of the RFA, however, the application form and administrative processes have been subject to continual review and modification since that time. Revisions to the application form have

occurred in 2006, 2011, 2013, 2016 and 2017, and a further revision is currently (2018) being trialled by regional staff prior to full implementation. The 'Application to Take Rare Flora' form also covers the proposed taking of Priority 1 and 2 flora to enable a more complete assessment of the potential impact of a prescribed burn on the flora values in the application area.

The 'Application to Take Rare Flora' is forwarded to a section of DBCA within Biodiversity and Conservation Science that is independent of the regional structure of the Department and the fire services. An assessment is made of the application to ensure that the proposed burn will not pose an unacceptable risk to the conservation of the flora species occurring within the proposed burn boundary. This may include consultation with the proponent where required to further modify a burn proposal.

Once the assessment has been completed and a recommendation is able to be made to issue a 'Permit to Take Rare Flora', the recommendation is referred to the Executive Director of Biodiversity and Conservation Science to authorise the permit. This authorisation is through a delegated authority from the Minister, but is limited to only those circumstances where the taking of the rare flora will not result in a significant impact to the species.

An issued permit will include conditions on the approval, including where necessary, a requirement to monitor the regeneration of the flora, and report this to Biodiversity and Conservation Science. Informal advice on the management of Priority flora is also provided directly to the proponent by Biodiversity and Conservation Science.

This procedure is well established within DBCA, and represents an integrated environmental management system that ensures independent evaluation of DBCA management procedures for maintaining critical biodiversity assets within the WA RFA region.

Appendix 5: CALM Act management plans applicable to the WA RFA region

The following area management plans or draft area management plans[12] have been prepared for the particular reserves in the WA RFA area in accordance with Part V of the CALM Act:

- Beeliar Regional Park 2006
- Forestdale Lake Nature Reserve 2005
- Jandakot Regional Park 2010
- John Forrest National Park 1994
- Lake McLarty 2008
- Lane Poole Reserve and proposed reserve additions 2011
- Leeuwin-Naturaliste and Capes Area Parks and Reserves 2015
- Logue Brook Reservoir and Catchment Area 1990
- Mooradung Nature Reserve 1986
- Nature Reserves of the Shire of York-Northam 1987
- Perup Management Plan 2012
- Rockingham Lakes Regional Park 2010
- Serpentine National Park 2000
- Shannon and D'Entrecasteaux National Parks 2012
- South Coast Region 1992
- Tuart Forest National Park 2014
- Walpole Wilderness 2008
- Waroona Reservoir and Catchment Area 1990
- Wellington National Parks, Westralia Conservation Parks and Wellington Discovery Forest 2008
- Yanchep and Neerabup parks and reserves 2012

[12] Department of Parks and Wildlife (n.d.). dpaw.wa.gov.au/parks/management-plans

References

Food and Agriculture Organization of the United Nations (2016). *Forty years of community-based forestry – A review of its extent and effectiveness*. Rome

Commonwealth of Australia (1992). *National Forest Policy Statement – A new focus for Australia's forests.* Australia