

# Forest Management Plan 2014 - 2023 Environmental Scoping Document



Conservation Commission  
of Western Australia



# FOREST MANAGEMENT PLAN 2014-2023

## ENVIRONMENTAL SCOPING DOCUMENT

### 1. PURPOSE

The proposed Forest Management Plan 2014-2023 (proposed FMP 2014-2023) will be subject to formal Environmental Impact Assessment (EIA) under Part IV of the *Environmental Protection Act 1986*. The Conservation Commission of Western Australia (Conservation Commission) submitted a Referral document to the Environmental Protection Authority (EPA) and the EPA determined the proposal would be formally assessed at the level of a Public Environmental Review (PER) under the *Environmental Impact Assessment Procedures 2010*. This environmental scoping document (ESD) has been prepared in line with the requirements for this level of assessment. As part of the process for a PER level of assessment, a PER document is released for public review. In this case, the PER document (that is, the environmental review document released for public review) will be the Draft Forest Management Plan 2014-2023 (Draft FMP 2014-2023) required under the *Conservation and Land Management Act 1984* (CALM Act).

This ESD will:

- provide a summary description of the Draft FMP 2014-2023
- outline an indicative timeline for the development and approval of the proposed FMP 2014-2023
- identify the potential key environmental threats
- provides a summary of the range of potential objectives for the Draft FMP 2014-2023
- identify potential changes from the current Forest Management Plan 2004-2013 (including consideration of items raised in the Mid-term Audit and the End of Term Audit of performance of the current Forest Management Plan 2004-2013 by the Conservation Commission and the associated EPA Report).
- show how the Draft FMP 2014-2023 will cover issues raised by the EPA and the Conservation Commission in various performance assessments and reports relating to the *Forest Management Plan 2004-2013* (FMP 2004-2013).

#### 1.1 Objectives of EPA assessment

As a starting point the EPA's broad environmental objectives for this assessment will be those identified in its previous assessment of the Forest Management Plan 2004-2013, namely:

- Biodiversity

To avoid adverse impacts on biological diversity, comprising the different plants and animals and the ecosystems they form, at the levels of genetic diversity, species diversity and ecosystem diversity.

- Ecologically sustainable forest management

To ensure, as far as is practicable, that the proposal meets or is consistent with the principles of Ecologically Sustainable Forest Management.

While noting that the public interest in the FMP has previously been focused on yield, the EPA expects the Draft FMP 2014-2023 will present a broader ecosystem perspective and address the management of whole-of-forest issues outside of timber harvesting, including the various land-uses and threatening processes, such as fire, dieback, and climate change

## **2. PROPONENT**

The proponent for this proposal is the Conservation Commission of Western Australia, a body established under the CALM Act with the vesting of State forest, timber reserves, national parks, conservation parks and nature reserves along with statutory functions as defined under that Act, which includes management planning.

The Conservation Commission is responsible for the preparation of proposed management plans through the agency of the Department of Environment and Conservation (DEC).

The key contact for this proposal is

Mr Gordon Graham  
Director  
Conservation Commission of Western Australia  
Cnr Hackett Drive and Australia II Drive  
Crawley WA 6009

### **3 SUMMARY DESCRIPTION OF THE PROPOSAL**

#### **3.1 INTRODUCTION**

Each ten-year period, as required by the CALM Act, a new management plan with a focus on the State forests of the south west of Western Australia is required and the Conservation Commission and DEC have commenced this process. This ESD relates to this process and the proposed Draft FMP 2014-2023.

The Draft FMP 2014-2023 aims to:

- provide clarity and transparency to the community and stakeholders
- provide direction to DEC in its management of land covered by the plan, with a focus on the management of State forests and timber reserves.
- provide direction to the Forest Products Commission (FPC) for undertaking timber harvesting activities and regeneration of forests.
- provide for wood production on a sustained yield basis.
- facilitate the Conservation Commission's assessment and review of the performance of DEC and FPC in carrying out and conforming with the FMP.
- provide a concise document that places emphasis on managing key issues affecting the Forest Management Plan area.

The Conservation Commission's overall goal in formulating the Draft FMP 2014-2023 is for biodiversity to be conserved, Aboriginal values to be recognised and protected, the health, vitality and productive capacity of ecosystems to be sustained, soil and water resources to be protected and the forest contribution to global carbon cycles to be sustained. The social, cultural and economic benefits valued by the community are to be addressed in a manner taking account of the principles of ecologically sustainable forest management (ESFM). The plan will focus on the management of State forest and timber reserves. Other land tenures vested in the Conservation Commission will be considered in the context of adopting an overarching landscape scale, integrated management approach. The Draft FMP 2014-2023 will align or defer to existing area management plans for reserves covered by the plan and also function as a management plan for areas where no specific area management plans exist.

The plan, and its supporting documentation, will be based on the most up to date data, information and knowledge available, including climate information. The plan will address issues already identified by the Conservation Commission, DEC and the EPA. Climate change, inter-agency governance arrangements and forest industry operational compliance, mining and recreation are key issues that have been identified to date. The issues will be identified from mid- and end-of-term audits on the Forest Management Plan 2004-2013, EPA reports on the audits, position or guidance papers prepared on key issues during the preparation of the plan, specific reviews and broader public concern and feedback.

Where documents, such as policies and guidelines of various agencies, are referred to in the Draft FMP 2014-2023 they will be made publicly available either in hard copy or by electronic link during the period of public comment.

The following sub sections will provide the legislative framework for the Draft FMP 2014-2023 in addition to detailing any significant changes in the structure from the current FMP 2004-2013.

## **3.2 LEGISLATIVE FRAMEWORK FOR A FOREST MANAGEMENT PLAN**

### **3.2.1 Ecologically sustainable forest management**

The principles of ecologically sustainable forest management are defined in the CALM Act s.19(2) and are required to be demonstrated in the Draft FMP 2014-2023.

19(2) For the purposes of subsection (1)(h) the principles of ecologically sustainable forest management are —

- (a) that the decision-making process should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- (b) that 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) that 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) that the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making; and
- (e) that improved valuation, pricing and incentive mechanisms should be promoted.

The principles are discussed in detail on the last pages of Attachment 3.

### **3.2.2 Management plans**

Management plans that are required by the controlling body, the Conservation Commission, whose functions are defined under section 19 of the CALM Act, must be developed in accordance with sections 54-55 of that Act.

#### **S19. Functions of Conservation Commission**

- 1(f) in accordance with Part V, to prepare and deal with proposed management plans for land vested in or under the care, control and management of the Conservation Commission, whether solely or jointly with an associated body;
- 1(g) in relation to management plans for land vested in or under the care, control and management of the Conservation Commission, whether solely or jointly with an associated body —
  - (i) to develop guidelines for monitoring; and
  - (ii) to set performance criteria for evaluating; and
  - (iii) to conduct periodic assessments of,  
the implementation of the management plans by those responsible for implementing them, including the CEO and, if the land is State forest or a timber reserve, the Forest Products Commission;

#### **S54. Management plans to be prepared**

- (1) A management plan prepared and approved under this Part is required for —
  - (a) all land that is vested in or under the care, control and management of a controlling body, whether solely or jointly with an associated body; and

- (b) all section 8A land.
- (2) The responsible body for land referred to in subsection (1) is responsible for —
  - (a) the preparation of the initial and every other proposed management plan; and
  - (b) the review of each expiring management plan,
 for the land.
- (3) Proposed management plans for any land shall be prepared —
  - (a) by —
    - (i) the responsible body for that land through the agency of the CEO;
    - (ii) if the land is State forest or a timber reserve, the responsible body for that land through the agency of the CEO in consultation with the Forest Products Commission; or
    - (iii) if the land is or includes a public water catchment area, the responsible body for that land through the agency of the CEO in consultation with the Minister (Water Resources) and any relevant water utility;
 and
  - (b) within such period after the commencement of this Act as is reasonably practicable having regard to the resources of the CEO available for the purpose.
- (4) Without limiting subsection (3), proposed management plans for section 8A land that, under the relevant section 8A agreement, is to be managed jointly as if it were land of a category listed in section 8A(5)(a) shall be prepared by the responsible body for the land through the agency of the CEO in consultation with the controlling body in which the land would be vested under section 7 if the land were of that category.

**S55. Contents of management plans**

- (1) A management plan for any land shall contain —
  - (a) a statement of the policies or guidelines proposed to be followed; and
  - (b) a summary of the operations proposed to be undertaken,
 in respect of that land during a specified period, which shall not exceed 10 years.
- (1a) A management plan for an indigenous State forest or timber reserve shall specify the purpose, or combination of purposes, for which it is reserved being one or more of the following purposes —
  - (a) conservation;
  - (b) recreation;
  - (c) timber production on a sustained yield basis;
  - (d) water catchment protection; or
  - (e) other purpose being a purpose prescribed by the regulations.
- (2) A management plan shall state the date on which it will expire, unless it is sooner revoked, but notwithstanding anything in this section or in the plan, a plan which would otherwise expire shall, unless it is revoked, remain in force until a new plan is approved.

- (3) A management plan shall not disclose any information or matter communicated in confidence for the purposes of this Act or which would or might reasonably be expected to cause damage to the interests of the person from whom the information was received.

The *Guide to preparing an Environmental Scoping Document (EPA)* requires a justification for the proposal and analysis of the options. However, the purpose of the land vested in the Conservation Commission is already defined in the CALM Act and the FMP needs to be developed within this legislative framework. The Draft FMP 2014-2023 will provide a range of management options that may be considered to meet the purpose of the land.

The preparation of management plans is also covered by the Conservation Commission's Position Statement No 6 *Management Plans for Lands Vested in the Conservation Commission under the Conservation and Land Management Act 1984*.

### **3.3 STRUCTURE OF THE PROPOSED DRAFT FMP 2014-2023**

The current Forest Management Plan 2004-2013 uses the Montreal Process Criteria (Attachment 2) first developed by Australia and 12 other countries in 1995 to provide the framework for demonstrating ESFM within the plan. This will not change with the Draft FMP 2014-2023.

The ESD has also adopted the Montreal Process Criteria to provide the framework for the table *Principles and environmental factors relating to the scope of options and activities to be considered* (Attachment 3) as it was considered to provide better integration with the Draft FMP 2014-2023.

The current FMP 2004-2013 is structured to provide a background, goal, objective and actions proposed for each chapter relating to each of the Montreal Process Criteria.

There has been no change in the Draft FMP 2014-2023 in regards to providing a detailed background section that will provide the detail relating to each chapter. The Draft FMP 2014-2023 will specify a goal (not significantly different from the current FMP 2004-2013 objectives) then identify the values and any threats to those values. The values and threats are not listed in the current FMP 2004-2013 but this is not a significant change. The current FMP contains Key Performance Indicators and these will be reviewed for the Draft FMP 2014-2023.

As required under the CALM Act s.55(1), the Draft FMP 2014-2023 plan will contain the statements of policies or guidelines proposed to be followed and a summary of operations proposed to be undertaken. The Draft FMP 2014-2023 will present the options considered when discussing the operations proposed. The final proposed FMP 2014-2023 will not contain that option discussion unless specifically required.

The Draft FMP 2014-2023 will establish goals, identify values and threats, and options and activities to achieve the goals. Opportunities and flexibility to incorporate new knowledge, learning from adaptive management, audit findings, monitoring and performance review recommendations should not be limited by the proposed operations outlined in the plan. Proposed changes to operations that are considered to be of a significant nature will be subject to assessment by the Conservation Commission and DEC to determine if an amendment to the plan is required.

The Draft FMP 2014-2023 plan seeks to address management goals using three scales of management which are defined below. The difference from the current FMP 2004-2013 is

the addition of Landscape Management Units based on vegetation complexes, and the renaming of the operational scale to local.

*Whole of forest:* All land categories that are subject to the plan (see Table 1).

*Landscape:* A mosaic where the mix of local ecosystems and landforms is repeated in a similar form over a kilometres-wide area. Several attributes including geology, soil types, vegetation types, local flora and fauna, climate and natural disturbance regimes tend to be similar and repeated across the whole area. It could be a (sub) catchment or, for convenience, an administrative management unit such as a forest block or an aggregation of blocks. Landscape scale is usually tens of thousands to a few thousand hectares. In the Draft FMP 2014-2023, reference is made to Landscape Management Units, which are based on mapping of vegetation complexes by Mattiske Consulting & Havel Land Consultants<sup>1</sup>, to provide a current indication of particular management emphases across the plan area.

*Local:* A discrete area of forest to which one or more operations have been or are planned to be applied.

#### **4. PROJECT AND ASSESSMENT SCHEDULE**

##### **January – July 2012**

Draft plan under preparation.

##### **February 2012**

Provision of Referral Document to the EPA.

##### **April 2012**

Provision of Scoping Document to the EPA.

##### **April - June 2012**

EPA assesses and approves Scoping Document as basis for Draft FMP 2014-2023 (PER document).

##### **July 2012**

Provision of Draft plan (PER) to the EPA.

##### **August – October 2012**

Draft FMP 2014-2023 (PER document) released for public comment period.

##### **November 2012 – April 2013**

Proposal is modified as appropriate by DEC and approved by the Conservation Commission; forwarded to the EPA.

##### **April – July 2013**

EPA assesses proposed FMP 2014-2023 and reports to Minister for Environment.

##### **July 2013:**

Appeal period on EPA assessment report.

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<sup>1</sup> Authors: Mattiske Consulting Pty Ltd, Havel Land Consultants *Delineation of landscape conservation units in southwest region of Western Australia* Department of Western Australia Conservation and Land Management, 2002.

### August - September 2013

Appeals determined and EPA advice provided to the Minister for Environment; Ministerial conditions set.

### October – November 2013

DEC revises the proposed FMP to align with Ministerial decision; Conservation Commission submits revised proposed FMP to the Minister for Environment.

### November- December 2013

Government decision and Ministerial approval of FMP 2014–2023.

## 5. REGIONAL SETTING AND AREA OF THE PLAN

The Draft FMP 2014-2023 will cover the three DEC administrative regions of Swan, Warren and South West, plus a section of lands known as the 'Redmond' block, in the South Coast Region but excluding marine waters (Attachment 1). The total area within these boundaries is 5.16 million hectares but the Draft FMP will apply only to land that is vested in the Conservation Commission, land which totals approximately 2.5 million hectares as set out in Table 1 below. This table also identifies the types of land categories covered by approximately 2.5 million hectares in the current FMP. The remaining 2.7 million hectares includes private land of about 2.5 million hectares. Of the 2.5 million hectares approximately 30% is plantation or native vegetation. Additionally, there are some small DEC land holdings and other public land of around 0.2 million hectares which is largely plantation or native vegetation. The map at Attachment 1 shows the existing land categories within the Plan area.

As noted the plan will focus on the management of State forest and timber reserves. Other land tenures vested in the Conservation Commission will be considered in the context of adopting an overarching integrated management approach. The Draft FMP 2014-2023 will align or defer to existing area management plans for reserves covered by the plan and also function as a management plan for areas where no specific area management plans exist.

The forests provide a livelihood for a considerable number of people in the area of the plan. The full extent of the range of sectors which rely on the productive capacity of the forests will be determined as part of a social and economic impact study which will be available during the public review process.

**Table 1: Area of land categories covered by the current Plan**

(as at June 2003, based on a similar table in the current FMP 2004-2013. The figures will be updated in the Draft FMP)

State forest (ha)	Timber reserve (ha)	State forest planted with exotic species (ha)	Existing and proposed nature reserves, national parks, conservation parks, CALM Act section 5(1)(g) and 5(1)(h) lands, and State forest classified as forest conservation area (ha)
1,114,900	44,400	50,300	1,264,100
1,209,600			1,264,100

Approximately 6,800ha of freehold land held by the Conservation and Land Management Executive Body is not vested in the Conservation Commission and will not be included as land to which the Draft FMP 2014-2023 will apply. However, freehold land held in the name of the Conservation and Land Management Executive Body that contains indigenous

vegetation, while not vested in the Conservation Commission, is taken into account in this Draft plan as the area contributes to the sustained yield of native timber and some land carries plantations harvested by FPC.

## 6. ACTIVITIES LEADING TO POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS

The health and vitality of the native vegetation, and therefore the benefits which flow from the lands covered by the plan, are subject to a wide range of activities, threats and impacts. Obviously climate change is not a result of operations proposed by the plan. Likewise unplanned fire (bushfire) and the impact from weeds, pests and disease, can have potentially significant environmental impacts, but are not necessarily a result of operations proposed by the plan (listed below under A). Other impacts are the result of disturbance from human activities such as timber harvesting, prescribed burning and clearing proposals for infrastructure development or mineral and energy resource purposes. Within this, it is necessary to further distinguish between those activities which are authorised or managed directly by the plan e.g. timber harvesting (listed under B) and those that have environmental assessment and approval processes that are separate to the plan, but which should be considered in the broad context for the management of the plan area (listed under C). Consideration must be given also to unauthorised activities, such as off-road vehicle usage and its role as a vector of various threats and impacts.

### A. Potentially significant environmental impacts resulting from human activities – those that are authorised or managed directly by the plan

**Prescribed burning** DEC's fire management approach is underpinned by legislation and guided by *Policy Statement No. 19 – Fire Management* and the associated *Code of Practice for Fire Management*. DEC has responsibilities to prepare for and respond to bushfires under the *Bush Fires Act 1954* and CALM Act and has a well established framework of subsidiary documentation and processes to plan and review its prescribed burning program. This fire planning considers biodiversity impacts, land purpose and use and community protection amongst other things, and establishes management goals, burn strategies and success criteria. This is generally encapsulated in a Regional Fire Management Plan that covers a five-year period, but is updated as required. Master Burn Planning transforms the settings from the Regional Fire Management Plan into a works program constituting an indicative three-year (six season) program and a more definitive annual (two season) program of prescribed burning.

Prescribed Fire Plans give effect to the burn program and are developed for each planned burn, and these burns are scheduled, approved and implemented as suitable weather and fuel conditions occur. Models are used to predict where smoke plumes from the burn could travel, to assess the potential community impacts, and inform decisions regarding the timing of prescribed burns. Prescribed Fire Plans identify activities required to prepare the burn area and address any related environmental issues (such as boundary track maintenance and dieback hygiene) and identify any particular values that need special consideration, including for example, granite outcrops, wetlands and recreation sites. Post-burn assessments are carried out against the success criteria established in each Prescribed Fire Plan and reports are prepared at a regional and state level after each season.

The Conservation Commission will maintain a commitment to undertake performance assessments of fire management.

**Timber harvesting.** The potential impacts will be centred on forest structure, age and size class distribution and potential implications for biodiversity. There are also potential impacts on the spread of weeds, pests and diseases, on soil compaction and erosion and on water quality from turbid runoff via harvesting and haulage activity. Rolling three year indicative harvest plans are prepared by DEC. Annual indicative timber harvests plans are prepared by FPC refining the lists of coupes for native forest timber harvesting for that given year. At an operational level, the coupe plan is prepared by FPC incorporating the elements of the FMP required to be met prior to commencing harvesting operations, including demarcating

reserve areas (formal and informal); dieback survey and developing a hygiene management plan; flora surveys; fauna identification; access under moist soil conditions; and identifying registered Aboriginal and non-aboriginal heritage sites.

**Recreational use.** Population growth will result in increasing pressure for recreational use on the land within the FMP area, with potential impacts on soil and water quality and spread of weeds, pests and disease DEC will continue to manage recreation, tourism and visitor services in accordance with DEC Policy 18, *Recreation, Tourism and Visitor Services* and associated policies and strategies, including the *Parks and Visitor Services Strategy*. These documents will be periodically reviewed and updated in response to changing pressures and impacts. Further consideration will be given to the management options available to mitigate unauthorised usage in the Draft FMP 2014-2023.

**Supply of basic raw materials (BRM).** Products such as gravel and limestone are sourced within the area of the plan. This requires limited clearing, with the main potential impact on flora and vegetation with effects also on the spread of weeds, pests and diseases. There are existing policies and guidelines governing the extraction of BRM and the rehabilitation of affected areas.

#### **B. Potentially significant environmental impacts resulting from human activities – but not authorised or managed directly by the plan**

Environmental approval for these activities is not provided by the plan. However, the impact of these activities will be considered as part of the context for the plan.

**Mining and minesite rehabilitation.** Mining is the principal disturbance activity, but the environmental assessment and much of the management of this issue is not under the control of the plan but rather, is controlled by other legislation e.g the *Mining Act 1978*, the *Environmental Protection Act 1986* or various State Agreements (See CALM Act section 4(1)). Mining activity and its identified impacts are considered in the context of developing the Draft FMP 2014-2023. DEC does have input into the rehabilitation approvals process but not final approval. Potential impacts are as set out for clearing proposals immediately below.

**Clearing (proposals) for infrastructure development and maintenance.** Examples include clearing for water extraction; for construction of power lines; and for construction of roads. It is not possible to quantify the area of land to be affected, but the potential impacts would be on water quality, native vegetation, and the continuity of forest coverage, with consequential potential impacts on habitat and biodiversity, including threatened species. DEC has input on the conditions applying to such proposals and, where significant or a change in land tenure affects vesting arrangements, these proposals are brought to the attention of the Conservation Commission for consideration and comment.

#### **C. Potentially significant environmental impacts that are not a result of operations proposed by the plan**

**Inappropriate fire regimes.** Inappropriate fire regimes, including frequent bushfires, present a threat to biodiversity, ecosystem health and vitality; to places and objects of spiritual and cultural significance to Aboriginal and non Aboriginal people; to life and property; and to soil, water, wood and carbon stocks.

The Government's approach to fire management is underpinned by legislation and guided by DEC *Policy Statement No. 19 – Fire Management* and the associated *Code of Practice for Fire Management* plus fire management and fire operations guidelines. DEC will continue to maintain a competent capability in fire management, prescribed fire, bushfire risk mitigation, detection and suppression; and DEC will seek to maintain a fire science capability.

**Climate change.** This has wide ranging effects which cut across many of the issues discussed in the Draft FMP 2014-2023. It will be dealt with at a number of points throughout the document as it is particularly relevant to ecosystem health and vitality, biodiversity, productive capacity, soil and water and global carbon cycles. DEC, in recognition of the expected impacts of climate change on native forest ecosystems and processes, will manage native forests to support and promote mitigation of climate change, and the adaptation of forest ecosystems and their elements to climate-related changes, consistent with the principles of ecologically sustainable forest management. The report “*Vulnerability of Forests in South-West Western Australia to Timber Harvesting Under the Influence of Climate Change*, SFM Technical Report No. 5, 2010”, and the Department’s response to that report have informed the manner in which the impacts of climate change are to be addressed in the Draft FMP 2014-2023 and in the draft revised jarrah silviculture guideline.

**Weeds, pests and diseases.** These present threats to ecosystem health and vitality and to particular values. The introduction of exotic pests, the incursion of invasive weeds and dieback disease caused by *Phytophthora cinnamomi* continues to spread and affect the distribution and abundance of many native south-west plant and animal species.

The management response to those threats identified is to maintain surveillance and recording systems and where reasonable and practicable, implement control programs for priority weeds, pests and diseases. It is planned to extend the current prioritisation program for weeds to pests and disease.

## **7. OPTIONS AND ACTIVITIES TO BE CONSIDERED IN THE DRAFT FMP 2014-2023**

Attachment 3 brings together, in tabular form, this Section 7 with the previous Section 6, to integrate the identified threats and impacts within the context of the key principles and environmental factors of the plan.

As with the current FMP 2004-2013, the Draft FMP 2014-2023 will be based on the principles of ESFM as described in section 19(2) of the CALM Act, and the plan will again be structured on the criteria for sustainability developed in the Montreal Process. Australia and 12 other countries participating in that process agreed in 1995 that the criteria and indicators they had developed provided a common understanding of sustainable forest management at a whole of forest scale. This structure provides a sound basis for the Draft FMP 2014-2023 both for continuity of management activities and for examination of progress between forest management plans.

The Montreal Criteria are also utilised as the basis for classification of the generic environmental factors in Attachment 3. Proposed management responses to the key impacts from the activities and identified threats outlined in Section 6 are outlined below against each of those criteria.

It should be noted that many of the impacts and hence the appropriate management responses are not restricted to one particular criterion, e.g. fire, climate change and weeds, pests and disease, cut across a number of the criteria, but will be addressed mainly under one criterion.

## **Biological diversity**

### **Key environmental factors: flora, fauna, wetlands and land.**

The management of the impact of climate change is central to the health of native vegetation ecosystems. All strategies, at relevant scales, will be designed to promote the adaptation of ecosystems to climate related changes, and the Draft FMP 2014-2023 will outline those strategies along with appropriate monitoring on outcomes.

The conservation of biological diversity will continue to be managed via the system of formal and informal reserves as at present, as well as through ongoing examination of options for settings for fauna habitat zones (FHZs), ecological linkages, recovery plans for selected threatened species and ecological communities, procedures for identification of old-growth forest, silvicultural practices and the management of various types of human impact. Monitoring is essential, and it is proposed that DEC's key forest biodiversity monitoring program, FORESTCHECK, which was conducted during the current Forest Management Plan (2004-2013) and is aimed at studying the effects on silvicultural treatments on ecological processes, be continued. Consideration may be required of a review of FORESTCHECK or the establishment of other monitoring systems in order to accommodate changing conditions or reporting requirements.

To minimise the impact of mineral and petroleum operations, State development and infrastructure projects on biodiversity and land to which the plan applies, it is proposed to promote the construction of infrastructure such as roads, pipelines and other utilities at common locations, such as infrastructure corridors, whilst minimising construction in sensitive areas.

## **Productive capacity**

### **Key environmental factors: forest cover, sustained timber yield.**

A number of the identified threats, impacts and management responses outlined above under '*Biological diversity*' are very similar for this and other criteria and therefore will not be repeated in every instance. There are however additional factors to be included which relate more specifically to a particular criterion, in this case, maintenance of productive capacity. While the focus is on sustained timber yield, the chapter will also address other forest produce such as seed collection, beekeeping and wildflower collection.

A key management operation is the development of the sustained timber yield figures that provide the basis for the level of timber harvesting activity. This Draft FMP 2014-2023 will put forward a number of options for public comment as part of the process of finding an appropriate balance. Below is a summary of these options, with further details available in the chapter identified.

- i. proposed additions to the formal conservation reserve system and some changes to the informal reserves network and FHZs - *Biological diversity* chapter;
- ii. options for change to, silvicultural guidelines - *Productive Capacity* chapter; and
- iii. options for more active catchment management - *Soil and Water* chapter.

These options have the potential to alter the sustained timber yield. Given possible combinations of these, there are two scenarios for the determination of the sustained timber yield put forward for public comment. In summary, one scenario includes settings that provide for a higher sustained timber yield, whilst the other scenario includes settings that will provide a lower sustained timber yield. Both scenarios are based on updated inventory data and growth rates that take into account expected climate change and related impacts. Further details will be included in the '*Productive capacity*' chapter.

An independent review of the sustainable timber yield will also be undertaken as part of the preparation of the proposed FMP 2014-2023.

Processes will be established to ensure ongoing monitoring, reporting and auditing of the volume of forest products actually removed, compared with the approved figure as represented by the sustained timber yield set out in the proposed FMP 2014-2023.

The potential loss of forest cover will be minimised by a program of working with industry and government agencies to ensure that areas subject to mineral and petroleum activities are rehabilitated to a pre-defined standard where approved. Those mine closure plans, which are mandatory under the Mining Act 1978, are carried out according to the existing best practice standard in mining programs. A parallel program to minimise the loss of forest (e.g. due to allocation to non-public use and the development of essential public utilities) where there may be a significant impact on timber production will also be pursued.

The Draft FMP will also provide an explanation of the silvicultural treatments required to support the sustained yield.

### **Ecosystem health and vitality**

#### **Key environmental factors: Fire; weeds; pests and diseases; self-sustaining ecosystems.**

The maintenance of self-sustaining ecosystems depends very much on the management responses to the identified threats and impacts of disturbance from fire, weeds, pests and disease, use demands and climate change. The management of the impact of weeds, pests and disease on ecosystems and on particular forest values is considered a high priority and is regularly updated. For example, in 2008 DEC's approach to weed management was reorganised through its '*Invasive Plant Prioritisation Process*'. The goals of this process were to refocus and better integrate efforts within the agency and with its partners, by establishing an approach with both 'species-led' and 'asset-based protection' components. It is proposed to continue reviewing this process and extend its application beyond weeds, to the management of pests and disease as appropriate, over the course of the next FMP 2014-2023.

DEC, and proponents where required, will continue to maintain a competent fire capacity to undertake activities at the whole of forest and landscape scale for the purpose of seeking to use and respond to fire in a manner that promotes the maintenance of ecosystem health and vitality, the conservation of biodiversity, and mitigates the risk of adverse impacts of bushfire. All policies and guidelines will be updated as a result of new knowledge as appropriate and in response to the outcomes of official enquiries or investigations.

To provide self-sustaining ecosystems with the best opportunity for regeneration, should natural regeneration not be reasonable and practical, DEC will seek to ensure that rehabilitation is undertaken by using propagules collected in the surrounding area. If that is not practicable or desirable, then, subject to a process of approval by DEC, based on assessment criteria agreed between DEC and the Conservation Commission,, other sources may be used.

### **Soil and Water**

#### **Key environmental factors: soil, surface water, groundwater.**

As identified, threats to soil and water can arise from timber harvesting, mining operations and recreational use. Management activities are carried out in accordance with current policies, guidelines and manuals and it is proposed that this will continue. Documentation relating to the management of spills of chemicals will be updated.

The extended period of below average rainfall since the 1970's has had a major impact on water availability. Groundwater levels have fallen, streamflow has declined and aquatic fauna have been impacted. Predictions are that rainfall will continue to decline and on that

basis further impacts on these components are to be expected, potentially at an all of forest scale.

The potential to increase water availability via catchment management plans involving silvicultural treatments will be examined through options that will be outlined in the Draft FMP 2014-2023.

### **Climate change and carbon cycles**

#### **Key environmental factor: greenhouse gases.**

Forests have an important role in global carbon cycles, both as sinks and potential sources of carbon. It is proposed to:

- conduct, support and monitor research in relevant areas, including in forest carbon cycles and accounting;
- provide reporting on forest carbon stocks as part of the Draft FMP 2014-2023; and
- periodically review guidelines for silviculture and fire management with a view to incorporating techniques that recognise the contribution of the areas covered by the plan to global carbon cycles, consistent with other mitigation and adaptation strategies and achievement of other silvicultural objectives and goals for forest management.

### **Aboriginal and 'other Australian' heritage**

#### **Key environmental factors: historical and cultural heritage, natural heritage.**

The conservation and protection of Aboriginal and 'other Australian' heritage depends very much on the proposed management responses to the identified threats and impacts from fire, from weeds, pests and disease, human use and climate change. These issues have been discussed above and will not be repeated here. Additional threats arise from vandalism, theft and disturbance activities.

The Draft FMP 2014-2023 will set out a range of activities to be considered which are designed to protect and conserve the value of the land to the culture and heritage of Aboriginal persons, in particular from any adverse material effect caused by:

- entry on or use of the land by other persons; or
- the taking and removal of the land's fauna, flora or forest produce;

but in a manner that does not have an adverse effect on the protection or conservation of the land's fauna and flora. At the local scale, it will seek to protect Aboriginal cultural sites. This is an additional requirement resulting from one of a number of amendments to the CALM Act. This amendment has been promulgated and is expected to be operational prior to the commencement of the proposed FMP 2014-2023.

The Draft FMP 2014-2023 will also set out options and activities to be considered to protect and conserve the known 'other Australian' heritage values and recognise and determine the significance of new 'other Australian' heritage values, including improved inventory methodology and records management.

### **Socio-economic benefits**

#### **Key environmental factors: recreation, amenity, heritage, range of economic produce.**

It is acknowledged that the analysis in this section is partly outside the scope of a PER under the EP Act. The information has been included in this ESD as it is also central to the principles of ESFM which guide the Conservation Commission.

The ongoing availability of the socio- economic benefits provided by the forest depends very much on the maintenance of the forest land base and of natural forest ecosystems. Forests can provide a range of socio-economic benefits including but not limited to, mining, recreation, visual amenity, and timber production. A description of the socio-economic

benefits derived from various commercial activities provided for by the plan will be included. Options and activities to be considered will be set out in the Draft FMP 2014-2023 which will seek to balance this range of benefits in manner which takes account of the principles of ESFM.

Consideration will be given to new or additional management responses to cater for increased recreation demands being placed on forests and other natural areas within the area covered by the Draft FMP 2014-2023.

A study assessing the socio-economic impact of the implementation of possible scenarios identified in the Draft FMP 2014-2023 will be finalised and made available to accompany the release of the Draft FMP 2014-2023 for the statutory public consultation period.

### **Plan implementation and management**

#### **Key environmental factors: management proceeds in line with plan and in line with system of environmental management**

There is a hierarchy of elements that together combine to provide the intent of a system for environmental management. This includes the legislation that the Conservation Commission, DEC and FPC administer and other legislation that they operate within; various policies and other documents that are subsidiary to and referred to in various sections of the plan. Below this sit the various goals, options and activities to be considered and key performance indicators identified in various sections of the Draft FMP 2014-2023. Finally, there are the risk assessment, planning and approvals processes, and operational controls that apply to environmental aspects of disturbance operations, which seek to protect identified values and minimise identified threats.

In line with the system outlined above, it is proposed to develop and implement formal working arrangements to define and confirm roles, responsibilities and processes. Results from research, monitoring and audits will be implemented as appropriate. Key initiatives will be to initiate an expert review of silvicultural practices during the second half of the term of the FMP and to provide training to ensure all staff and contractors are at the required competency levels.

## **8. STUDIES AND INVESTIGATIONS**

### **Introduction**

The development and ongoing implementation of the proposed FMP 2014-2023 requires that there be a suite of 'routine' planning procedures and operational controls used by DEC and proponents as required, many of which are detailed in a comprehensive package of subsidiary documents (policies, guidelines, manuals etc.) and related processes for approval. These processes also provide mechanisms to impose additional site-specific controls to protect site-level values. The preparation of these documents requires that they are reviewed internally across DEC and FPC as appropriate.

This documentation in turn is informed by detailed scientific studies and/or investigations and relevant peer reviewed journal articles. A list of peer reviewed publications since 2004 resulting from such studies is at Attachment 4.

In addition, a number of studies designed to address specific topics, (including those raised in audits and reports by the Conservation Commission and the EPA) have been carried out.

Particular attention has been given to EPA Report 1362 on the Conservation Commission Mid -Term Audit of the FMP 2004-2013. Attachment 5 summarises the 12 key points listed in

that report and which the EPA considered would need to be addressed in the preparation of the Draft FMP 2014-2023. These will be considered in further detail in the discussion within the Draft FMP 2014-2023.

In addition, a panel of independent experts will be established to review the sustained yield process. The scope of the review is the calculation of sustained yields within the settings designed to provide for ecologically sustainable forest management as defined for the proposed FMP that will be assessed by the Environmental Protection Authority. These settings have been informed by an expert review of silvicultural practices (Burrows et al. 2011). This review includes the method of computation and the overall veracity of the sustained yield and other wood availability figures, particularly in the context of:

- the provision for risk and uncertainty associated with a drying climate for the south west forests; and
- the level of risk in determining an allowable cut for the period of the FMP (ten years) based on the sustained yields.

The terms of reference for the review is to have due regard to the previous independent reviews of sustained yield, and within the context of determining an allowable cut for the period of the FMP, the expert panel will provide a written report to the Department of Environment and Conservation and the Conservation Commission, based on the settings adopted for the proposed FMP, that confirms whether:

1. 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 proposed FMP;
2. the uncertainty associated with a drying climate has been adequately factored into the sustained yield calculations;
3. the level of provision for other risks and uncertainty associated with the volume estimates are appropriate; and
4. the calculations incorporate suitable adjustments for the operational feasibility of obtaining the strategic woodflows.

The Panel will be informed of issues related to the calculation of sustained yields raised in the public consultation process for the draft FMP and will consider these issues when undertaking its work.

The panel will convene following the finalization of settings for the proposed FMP and the associated preliminary woodflow analysis has been completed. At this stage this is scheduled for February 2013, during the period of review of the draft FMP and preparation of the proposed FMP. This timing provides for the integration of settings and any amendments to be incorporated following the panel report in March.

### **Key reports or studies**

FMP 2004-2013 End-of-term Audit of Performance Report by the Conservation Commission and the EPA report on that audit will have been completed prior to the finalisation of the Draft FMP 2014-2023. (Both documents will be publicly available during the statutory public comment period on the Draft FMP 2014-2023).

Maher, D., McCaw L., and Yates C. (2010) Vulnerability of Forests in south-west Western Australia to Timber Harvesting under the Influence of Climate Change. Department of Environment and Conservation, Sustainable Forest Management Technical Report No.5

Rab, A., Bradshaw, J., Campbell, R. and Murphy, S. (2005). Review of factors affecting disturbance, compaction and trafficability of soils with particular reference to timber

harvesting in the forests of south-west Western Australia. Department of Environment and Conservation, Sustainable Forest Management Technical Report 2.

Smolinski, H. and Kuswardiyanto, K. (2007). Soil Survey and Assessment of Trafficability in the South-West Forests of Western Australia - Adaptive Management and Operational Trials Harvested in Winter 2004. Department of Environment and Conservation, Sustainable Forest Management Technical Report 3.

McCaw, W. L. Robinson, R. M., and Williams, M. R. (2011) Integrated biodiversity monitoring for the jarrah (*eucalyptus marginata*) forest in south west Western Australia: the Forestcheck project

Abbott I. and Williams MR. 'Silvicultural impacts in jarrah forest of Western Australia: synthesis, evaluation, and policy implications of the Forestcheck monitoring project of 2001-2006' *Australian Forestry* 2011 Vol 74(4).

Review of Silviculture in Forests of south-west Western Australia. (December 2011) (Expert panel members were Dr Neil Burrows, Dr Bernie Dell, Dr Mark Neyland, Mr John Ruprecht)

A Social and Economic Impact Study, of implementation of scenarios under the Draft FMP 2014-2023, which will be completed and made available for the public comment period on the Draft FMP 2014-2023

Forest Management Plan 2004-2013 Mid-term Audit of Performance Report (Dec 2008). Conservation Commission of Western Australia

Forest Management Plan 2004-2013 Mid-term Audit of Performance Report (Dec 2008). Conservation Commission of Western Australia, Report and recommendations of the Environmental Protection Authority. Report 1362 (August 2010)

Conservation Commission Forest Management Plan Performance Assessment Prescribed burning (2005)

Conservation Commission Forest Management Plan Performance Assessment Fauna Habitat Zones (2005)

Conservation Commission Forest Management Plan Performance Assessment Master Burn Plan Assessment (2006)

Conservation Commission Forest Management Plan Performance Assessment Informal reserve protection during timber harvesting operations –Part B (2007)

Conservation Commission Forest Management Plan Performance Assessment Informal reserve protection during timber harvesting operations – Part A (2007)

Conservation Commission of Western Australia. Conservation Commission Forest Management Plan Performance Assessment. Wungong Catchment Environment and Water Management Project (Wungong catchment trial /Wungong catchment thinning trial) - Performance Assessment PART A. Performance Assessment Number FMPPA 01/2008.(2009)

Conservation Commission of Western Australia. FMP Mid Term Audit Supplemental Advice Machine Harvesting (2009)

Conservation Commission of Western Australia. FMP Audit Supplemental advice to the Conservation Commission – Jarrah sawlog (2009)

Conservation Commission of Western Australia. FMP audit Supplemental advice to the Conservation Commission – Karri other bole volume (2009)

Conservation Commission of Western Australia. Amendment to the Forest Management Plan 2004-2013 (2010)

Conservation Commission of Western Australia. Performance assessment report - Protection of significant flora and understorey species within the Forest Management Plan 2004-2013 (FMP) area. (2011)

Conservation Commission of Western Australia. 'Performance assessment of *Phytophthora dieback* management in lands vested in the Conservation Commission of Western Australia.' (2011)

Conservation Commission of Western Australia. Conservation Commission Forest Management Plan Performance Assessment. Wungong Catchment Environment and Water Management Project (Wungong catchment trial /Wungong catchment thinning trial) - Performance Assessment PART B. Performance Assessment Number FMPPA 01/2010 (2011)

## 9. APPLICABLE LEGISLATION

As indicated in Section 3 above, the preparation and much of the content and process of management planning is determined by the CALM Act. It is noted that recent amendments to this Act state that the land must be managed to protect and conserve the value of the land to the culture and heritage of Aboriginal persons. The Act will also enable Aboriginal people to undertake joint management of certain lands. A further amendment, not yet proclaimed, will enable customary activities, such as preparing and consuming food, preparing or using medicine, and engaging in artistic, ceremonial or other customary activities to be undertaken within forests.

Further relevant legislation includes the *Wildlife Conservation Act 1950* (WC Act), administered by the Department, which provides for the conservation of flora and fauna throughout the State. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* also contains provisions relating to the protection of nationally-listed threatened species and ecological communities. In that part of the plan area covered by the RFA, the Commonwealth and State Governments have agreed that a Comprehensive, Adequate and Representative (CAR) reserve system and the forest management system meet the requirements of that Act for the protection of threatened flora and fauna and ecological communities (RFA clause 56). Therefore, the provisions of that Act for environmental assessment are not triggered for forestry operations.

The *Bush Fires Act 1954* provides for regulation of the control of bushfire and the use of prescribed fire, however, it is not aimed at biodiversity conservation. The *Emergency Management Act 2005* sets out the emergency management arrangements for the State and requires that a number of emergency response plans be maintained. The response plan for bushfire is Westplan Bushfire, which sets out DEC's role in bushfire suppression operations as a 'Controlling Agency'. This will be updated in response to applicable reports and recommendations.

Water allocation plans prepared by the Department of Water, and source protection plans prepared by the Department of Water and the Water Corporation, include goals and policies that DEC takes into account when planning at strategic and operational levels. The use of water in the plan area is covered under the *Rights in Water and Irrigation Act 1914*. Permits (related to the disturbance of beds and banks) and licences (for the taking and use of water) are required within proclaimed areas. The protection of water resources in the plan area is covered under the *Country Areas Water Supply Act 1947* and the *Metropolitan Water Supply Sewerage and Drainage Act 1909*.

The *Aboriginal Heritage Act 1972* and the *Heritage of Western Australia Act 1990* are also relevant. Exploration activities are subject to conditions intended to protect the environment and cultural heritage through specific approvals under Section 24 of the *Mining Act*. Mineral and petroleum extraction operations are allowed only after approval is granted for each specific proposal submitted to the Department of Mines and Petroleum (DMP), which consults with DEC and other relevant agencies.

The Department of State Development (DSD) administers projects covered under the *Government Agreements Act 1979*. State Agreements are in force for the major mining projects operating on FMP land (mostly State forest), covering the bauxite/alumina operations of Alcoa and Worsley, and the coal mining operations of Griffin and Premier Coal (affecting smaller areas near Collie).

The *Mining Act* controls mineral exploration activities and mining operations other than those within State Agreement areas. Petroleum (which includes oil, gas, geothermal energy and geological storage of greenhouse gases) exploration and production within State land and on-shore waters is authorised under the *Petroleum and Geothermal Energy Resources Act 1967*. DMP is the State's lead agency for assessment and approvals and is a decision-making authority for non-State Agreement Act projects.

Under the *Mining Act*, the type of consultation the mining Minister undertakes with the Minister for Environment varies according to reserve tenure, and is specified in that Act and the *Land Administration Act 1997*.

The *Agricultural and Veterinary Chemicals (Western Australia) Act 1995* covers the use and control of pesticides, including the requirement to use pesticides in accordance with label requirements or approved 'off label' permits. Regulations related to pesticide application will be covered through reference to compliance with the Department of Agriculture and Food Bulletin 4648 *Code of Practice for the use of agricultural and veterinary chemicals in Western Australia*.

The *Contaminated Sites Act (2003)* provides for the identification, recording, management and remediation of contaminated sites. Sites contaminated with hydrocarbons, fertilisers or pesticides it will fall within this Act. Contaminated sites do not include areas where fertiliser or pesticide is applied correctly.

The *Health Act (1911)* is applicable to pesticides used by the crown within a Public Drinking Water Supply Area (PDWSA). The conditions for pesticide use are specified in the Department of Health *Public Service Circular 88 Use of herbicides in catchment areas*.

## **10. COMMUNITY AND STAKEHOLDER CONSULTATION**

Consultation on the Draft FMP 2014-2023 is required under both the CALM Act and the EP Act. At the time of writing, non-statutory initial consultation had been carried out by DEC with key stakeholders both inside and outside government. Attachment 6 lists those stakeholders.

The release of the Draft FMP 2014-2023 calls for statutory consultation under the two Acts mentioned above. The opportunity also exists for both DEC and the Conservation Commission to adopt a range of strategies to ensure that adequate consultation is taking place including further meetings with selected stakeholders and public forums.

## **Public notification**

Section 57 of the CALM Act sets out the requirements for public notification.

### **57. Plan to be publicly notified**

- (1) Public notification that a proposed management plan has been prepared shall be given in accordance with subsection (2).
- (2) The plan shall be publicly notified by the publication —
  - (a) in the *Gazette*;
  - (b) in 2 issues of a daily newspaper circulating throughout the State;
  - (c) in 2 issues of a local newspaper circulating within the area in which the land is situated; and
  - (d) on such signs as the responsible body for that land may direct to be placed on or near the boundaries of the land;

of a notice —

- (e) describing in general terms the type of land to which the plan applies and the purpose for which it is to be made;
- (f) specifying the places at which —
  - (i) a copy of the plan may be inspected; and
  - (ii) copies of the plan may be obtained;and
- (g) stating the effect of section 58 and specifying the period and the address or addresses referred to in that section.

## **Public Submissions**

Section 58 of the CALM Act sets out the requirements regarding public submissions.

### **58. Public submissions**

- (1) Written submissions on the proposed management plan may be made by any person —
  - (a) within a period determined by the CEO, which period shall be not less than 2 months after the day on which the notice is published in the *Gazette*; and
  - (b) by delivering or posting them, so that they are received within that period at an address designated by the CEO.
- (2) If the proposed management plan is for State forest or a timber reserve, the CEO shall give a copy of any written submission on the plan to the Forest Products Commission.
- (3) If the proposed management plan is for land that is or includes a public water catchment area, the CEO shall give a copy of any written submission on the plan to the Minister (Water Resources) and to any relevant water utility.

FPC and the Minister for Water and any relevant water utility will be given a copy of any written submission on the Draft FMP 2014-2023.

To ensure every opportunity is provided for submissions, consultation techniques will include public information sessions which will be widely advertised (events will be held in a number of locations in the south-west and in Perth), and the gathering of formal submissions both in hard copy and via a dedicated DEC email address. Information sessions will also be offered to specific interest groups. Mechanisms will be put in place to ensure Aboriginal stakeholders are widely consulted.

An FMP 2014-2023 page will also be developed on the DEC website with links to the Conservation Commission website.

### **Referral to other Bodies**

Section 59 of the CALM Act sets the requirements for referral to other bodies:

#### **59. Plans to be referred to other bodies**

- (1) The responsible body may submit the proposed management plan, modified if it thinks fit after considering submissions made under section 58, to any organization or body it thinks appropriate, together with a summary of those submissions.
- (2) The responsible body shall submit the proposed management plan to the local government of each district within which the land in question is situated and any such local government shall, notwithstanding section 58, be given a reasonable time in which to prepare written submissions on the proposed plan.
- (3) In the case of section 8A land, the responsible body must submit the proposed management plan —
  - (a) to any party to the relevant section 8A agreement who, under the agreement, is not involved in managing the land; and
  - (b) if the land is or includes the intertidal zone, to the Minister for Fisheries; and
  - (c) if the land includes an Aboriginal site, as defined in the *Aboriginal Heritage Act 1972* section 4, to the Minister for Indigenous Affairs.
- (4) If a person to whom a proposed plan is referred under subsection (1) or (3) considers the responsible body should vary the plan or make any addition to or delete any provision from the plan, the person, within one month after the date of receiving the plan, may request the responsible body in writing to make the variation, addition or deletion.
- (5) The responsible body shall submit a proposed management plan for a marine park or a marine management area to the Minister for Fisheries and the Minister for Mines.
- (6) The responsible body shall submit a proposed management plan for State forest or a timber reserve to the Minister for Forest Products.
- (7) The responsible body shall submit a proposed management plan for land that is or includes a public water catchment area to the Minister (Water Resources).
- (8) If a proposed management plan is relevant to the functions of the Western Australian Tourism Commission under the *Western Australian Tourism Commission Act 1983*, the responsible body shall submit the plan to the Minister administering that Act.

In addition the Draft FMP 2014-2023 (PER) will be made available to the public and government agencies in accordance with the EP Act requirements. It is proposed that the period of public comment will be designed to allow for consultation and submissions under both the CALM Act and the EP Act. The current timeline discussed between DEC, the Conservation Commission and the EPA allows for this period from early August through to the end of October 2012.

## **11. PEER REVIEW**

As indicated in section 8 above (*Studies and Investigations*), all DEC policies, guidelines and manuals are reviewed by internal experts from appropriate sections across the organisation as appropriate. External input may also be sought where DEC believes it is required. The Conservation Commission can also seek independent opinion.

In addition, the following two reports are designed specifically to contribute to the development of the Draft FMP 2014-2023.

Review of Silviculture in Forests of South-west Western Australia (December 2011). (The expert panel members were Dr Neil Burrows, Dr Bernie Dell, Dr Mark Neyland, and Mr John Ruprecht).

An Independent Panel will review the process for calculation of sustained yield of timber (as agreed in the Regional Forest Agreement process). The Independent Panel will conduct its review prior to completion of the proposed FMP, prior to its assessment by the EPA.

The list of publications at Attachment 4 further demonstrates the commitment to increase knowledge and improve management based on peer reviewed information.

## **12. STUDY TEAM**

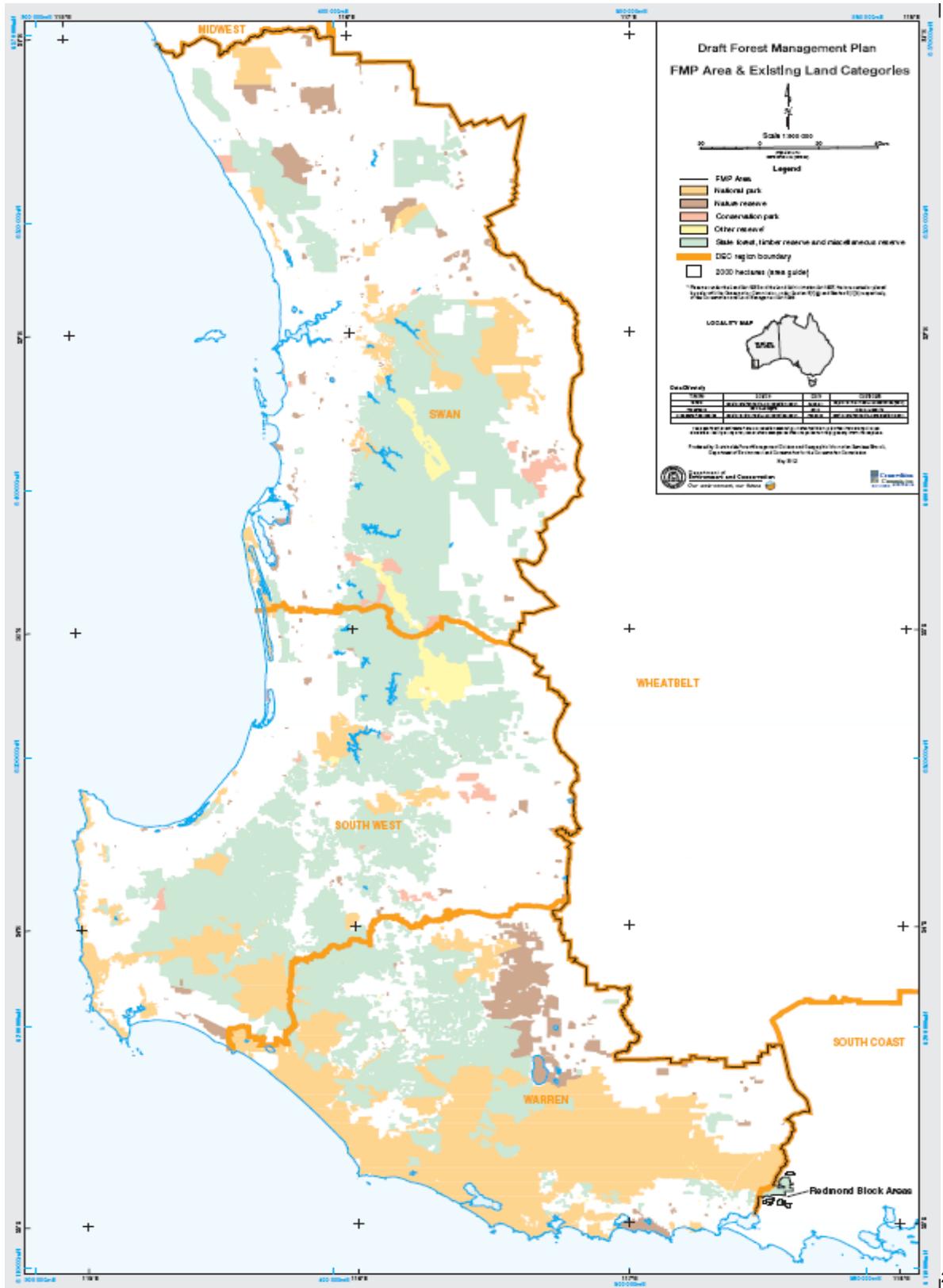
The Draft FMP 2014-2023 is being prepared by the Conservation Commission through the agency of DEC. The Conservation Commission has established a Working Group of three Commissioners plus Commission staff and consultants, with representatives from DEC and FPC. A project board, with representation from all relevant management areas of DEC plus officers from the Conservation Commission and FPC, meets regularly to check draft material and ensure progress is maintained according to agreed schedules.

## **13. REFERENCES**

Attachment 7 is a list of key subsidiary documentation that is being used in the preparation of the Draft FMP 2014-2023 (PER) and in ongoing management of lands covered by the Draft FMP 2014-2023.

# Attachment 1

## AREA COVERED BY THE DRAFT PLAN



## **Attachment 2**

### **Montreal Process Criteria:**

- Criterion 1. Conservation of biological diversity
- Criterion 2. Maintenance of productive capacity of forestry ecosystems
- Criterion 3. Maintenance of forest ecosystem health and vitality
- Criterion 4. Conservation and maintenance of soils and water resources
- Criterion 5. Maintenance of forest contribution to global carbon cycles
- Criterion 6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of society
- Criterion 7. Legal, political and institutional framework

**Attachment 3**

**FOREST MANAGEMENT PLAN 2014-2023**

**TABLE RELATING PRINCIPLES AND ENVIRONMENTAL FACTORS TO THE SCOPE OF POTENTIAL OPERATIONS AND INVESTIGATIONS**

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft FMP 2014-2023</b>
<p>Biological diversity</p> <p><i>Flora</i></p> <p><i>Fauna</i></p> <p><i>Wetlands</i></p> <p><i>Land</i></p>	<p>The sustaining of biological diversity and ecological integrity through the maintenance of a comprehensive, adequate and representative reserve system.</p> <p>Seek to conserve biodiversity at the whole of forest and at the landscape scale, and seek to allow for the recovery of biodiversity between one timber rotation</p>	<p>Climate change leading to negative impacts.</p> <p>Clearing associated with disturbance activities including timber harvesting, inappropriate fire regimes, construction of facilities, inappropriate recreation use and uncontrolled vehicle access.</p> <p>Fragmentation, loss of connectivity. Inadequate procedures or ineffective</p>	<p>Manage formal and informal reserves and conservation areas as in the current FMP 2004-2013. In addition, the Draft FMP 2014-2023 will examine options for change in, formal reserves, informal reserves, and silvicultural practices at the local scale (the latter is also covered in the '<i>Productive capacity</i>' chapter).</p> <p>The species, community and process monitoring system (FORESTCHECK) will be continued and periodically refined.</p> <p>Provide advice and, where appropriate, assistance to industry and Government agencies in relation to the effect of mining and petroleum operations on native ecosystems, the means by which those effects may be reduced and the appropriate rehabilitation of native vegetation as those operations are completed.</p> <p>Subsidiary management guidelines, systems and processes are designed to ensure the protection of significant flora and fauna, and</p>	<p>Maher, D., McCaw L., and Yates C. (2010) 'Vulnerability of Forests in south-west Western Australia to Timber Harvesting under the Influence of Climate Change'. Department of Environment and Conservation, Sustainable Forest Management Technical Report No.5</p> <p>'Review of Silviculture in Forests of South-west Western Australia', December 2011 (Expert panel members were Dr Neil Burrows, Dr Bernie Dell, Dr Mark Neyland, Mr John Ruprecht).</p> <p>Keighery, B.J., Keighery G.J., Webb, A., Longman, V.M., (Department of Environment and Conservation) Griffin, E.A. (E A Griffin and Associates,) 'A Floristic Survey of the Whicher Scarp'. A report for the Department of Environment and Conservation as part of the Swan Bioplan Project</p>

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft FMP 2014-2023</b>
	<p>and the next at the landscape scale.</p> <p>Protect and maintain the biological diversity of forest ecosystems, including their successional stages, across the whole of forest.</p>	<p>operational application of current procedures.</p>	<p>retention of adequate habitat and potential habitat trees.</p> <p>.</p> <p>Identify and seek to ensure that management operations lead to the survival of populations of threatened species and ecological communities and recovery plans (as in Appendix 12)</p>	<p>April 2008</p> <p>Abbott I. and Williams MR. 'Silvicultural impacts in jarrah forest of Western Australia: synthesis, evaluation, and policy implications of the Forestcheck monitoring project of 2001- 2006' <i>'Australian Forestry'</i> 2011 Vol 74(4), pp 350-360.</p>

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
<p>Productive capacity</p> <p><i>Forest cover</i></p> <p><i>Sustained timber yield</i></p>	<p>Maintenance of productive capacity of ecosystems.</p> <p>Limit the harvesting of timber to the sustained timber yield.</p> <p>Limit the removal of other forest produce to a sustainable level, but as far as practicable to satisfy public demand.</p> <p>.</p>	<p>Introduction and spread of invasive species of weeds, pests and disease.</p> <p>Climate change.</p> <p>Inappropriate fire regimes and unacceptable fuel loads.</p> <p>Inadequate level of, or inappropriate application of, silvicultural practices.</p>	<p>The sustained timber yield will be developed for the Draft FMP 2014-2023 according to the principles of ESFM. New scenarios will be presented and will be based on the most up to date data available.</p> <p>Prepare where appropriate and maintain guidelines for the management of other forest produce and regulate the supply of that produce.</p> <p>Minimise the loss of forest due to allocation to non- public use and the development of public utilities to a level considered essential by Government.( This is also covered in the <i>Biological diversity</i> chapter.)</p> <p>Continue to work with other government agencies and industry to ensure that as much as is practicable, areas subject to mineral and petroleum activities and the removal of basic raw materials are rehabilitated according to the principles of ESFM.</p> <p>Some changes to silvicultural practices are proposed as a result of the recent review (as required by the FMP 2003-2014. This is also covered in the <i>Biological diversity</i> chapter.)</p>	<p>Maher, D., McCaw L., and Yates C. (2010) 'Vulnerability of Forests in south-west Western Australia to Timber Harvesting under the Influence of Climate Change'. Department of Environment and Conservation, Sustainable Forest Management Technical Report No.5</p> <p>Updates to information and further development of systems used in the calculation of sustained timber yields will occur as a part of the preparation of the proposed FMP 2014-2023</p> <p>An independent review of the sustained yield will be undertaken as part of the preparation of the final FMP.</p> <p>'Review of Silviculture in Forests of South-west Western Australia', December 2011 (Expert panel members were Dr Neil Burrows, Dr Bernie Dell, Dr Mark Neyland, Mr John Ruprecht).</p>

Montreal SFM Criterion/ Principle and <i>Environmental Factor</i>	Preliminary Environmental Objective/s	Identified threats leading to potential impacts	Examples of options and activities to be considered in the drafting of the FMP 2014-2023	Recent and additional investigations which will guide the Draft plan
			<p>Monitor application of silvicultural practices, and conduct a review of silvicultural practices in second half of this plan.</p> <p>Options will be put forward for the public collection of firewood in the <i>Forest products</i> section of this chapter.</p>	
<p>Ecosystem health and vitality</p> <p><i>Self sustaining ecosystems</i></p> <p><i>Fire</i></p> <p><i>Weeds</i></p> <p><i>Pests and diseases</i></p>	<p>Maintenance of forest ecosystem health and vitality, by protection of “naturalness” of areas and maintenance of self sustaining ecosystems of native species from rehabilitation operations.</p> <p>To use and respond to fire in a manner that promotes the maintenance of ecosystem health and</p>	<p>Inappropriate fire regimes, high fuel loads.</p> <p>Introduction and spread of invasive species of pests, weeds or disease, including <i>Phytophthora cinnamomi</i>.</p> <p>Non self sustaining rehabilitation.</p> <p>Climate change.</p>	<p>The current program of centralised prioritisation and management of priority weeds is proposed to be extended to cover pests and diseases, in order to:</p> <ul style="list-style-type: none"> <li>• minimise the impact of weeds, pests and forest pathogens, and syndromes, on the health and vitality of forest ecosystems, including plantations; and</li> <li>• minimise the risk of introduction or naturalisation of weeds, pests and exotic pathogens and protect from infection those areas currently free from infestation or disease symptoms.</li> </ul> <p>Strategies for self sustaining ecosystems (rehabilitated sites) including consideration of the impacts of a drying climate.</p> <p>Seek to maintain the Western Shield program (which reduces predation pressure on threatened and priority species of fauna).</p> <p>Maintain a competent capability in fire</p>	<p>Maher, D., McCaw L., and Yates C. (2010) ‘Vulnerability of Forests in south-west Western Australia to Timber Harvesting under the Influence of Climate Change’. Department of Environment and Conservation, Sustainable Forest Management Technical Report No.5</p> <p>‘Review of Silviculture in Forests of South-west Western Australia’, December 2011 (Expert panel members were Dr Neil Burrows, Dr Bernie Dell, Dr Mark Neyland, Mr John Ruprecht).</p> <p>FMP 2004-2013 End –of- term Audit of Performance Report by the Conservation Commission.</p> <p>Conservation Commission of Western Australia ‘Performance assessment of <i>Phytophthora dieback</i></p>

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
	vitality, the conservation of biodiversity, and mitigates the risk of adverse impacts of bushfire.		<p>management, prescribed burning, bushfire risk mitigation, detection and suppression.</p> <p>Review relevant policies, and subsidiary manuals and guidelines as appropriate.</p> <p>Use prescribed fire to protect values and respond to bushfire, by undertaking bushfire suppression and recovery operations in a manner that has regard to environmental concerns using fire operations guidelines, which are periodically revised.</p> <p>Continue to work with other government agencies and industry to ensure that as much as is practicable, areas subject to mineral and petroleum activities and the removal of basic raw materials are rehabilitated according to the principles of ESFM.</p> <p>Seek to ensure that rehabilitation is undertaken by using natural regeneration where reasonable and practicable; or where natural regeneration is not reasonable and practicable, by using seed collected locally or plants propagated from seed collected locally; or otherwise, subject to a process of approval by DEC, based on assessment criteria agreed between DEC and the</p>	management in lands vested in the Conservation Commission of Western Australia.' (February 2011)

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
			Conservation Commission, may use other seed sources where climate change, impact from damaging agents or some other identified management need requires that use.	

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
Soil and water  <i>Soil</i>  <i>Surface Water</i>  <i>Groundwater</i>	Protect surface and groundwater resources  Minimise unnecessary soil disturbance.  Protect water quality, quantity and the ecological integrity of stream and wetlands and their associated flora and fauna..	Soil contamination due to use of herbicides, pesticides or hydrocarbon spills.  Soil compaction, rutting or erosion.  Soil acidification,  Nutrient deficiency as a result of management activities.  Inadequate rehabilitation of damaged soil.  Climate change resulting in reductions in groundwater levels and streamflows.  Salinity.  Increased turbidity from erosion.  Excessive water	Continue approach in the current FMP 2004-2013 to implement operational measures designed to protect soil and water, such as stream zones, including monitoring of adherence to existing policies, guidelines, manuals and relevant codes of practice.  Use approvals process for timber harvesting operations under moist soil conditions including use of trafficability index system to identify soil risk period and definition of allowable activities in relation to timber industry.  Subsidiary documents and training programs will be reviewed to ensure that procedures for containment of spills are adequately addressed.  New options for silviculture treatments to address the potential enhancement of water production will be presented for comment. Proposals for silviculture treatments for ecosystem health and vitality will be developed as appropriate.  Identify proposed silvicultural change due to reduced salinity risk.  DEC will take and use water sustainably, and may issue permits for the taking of water in a sustainable manner, from land to which the Draft plan applies.	Whitford, K.R. and Mellican, A.E. (2011) Intensity, extent and persistence of soil disturbance caused by timber harvesting in jarrah ( <i>Eucalyptus marginata</i> ) forest on FORESTCHECK monitoring sites. <i>Australian Forestry</i> 74: 266-275.  Rab, M.A, Bradshaw, F.J., Campbell, R.G. and Murphy, S. (2005) <i>Review of Factors Affecting Disturbance, Compaction and Trafficability of Soils with Particular Reference to Timber Harvesting in the Forests of South-West Western Australia</i> . Consultants Report to Department of Conservation and Land Management, Western Australia, Sustainable Forest Management Series, SFM Technical Report No. 2, 146 pp.  Whitford, K.R., Stoneman, G., Seymour, A., Murray, P., Eaton, L. and Tanimoto, M. (in press) <i>The effects of cording, timber load and soil gravel content on soil compaction during timber harvesting on moist soils</i> . <i>Australian Forestry</i> 75.  Bates, B.C., Hope, P., Ryan, B., Smith, I. and Charles, S. (2008) Key findings from the Indian Ocean Climate Initiative and their impact on policy development in Australia. <i>Climate Change</i> 89: 339-354.

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
		<p>extraction for human use or plantation use.</p> <p>Damage to stream bed and banks.</p>		<p>CSIRO (2009) Water yields and demands in south-west Western Australia. A report to the Australian Government from the CSIRO South-West Western Australia Sustainable Yields Project. CSIRO Water for a Healthy Country Flagship, Australia.</p> <p>Kinal, J. and Stoneman, G.L. (2011) Hydrologic impact of two intensities of timber harvest and associated silviculture in the jarrah forest in south-western Australia. Journal of Hydrology 399: 108-120</p>

<b>Montreal SFM Criterion/ Principle and Environmental Factor</b>	<b>Preliminary Environmental Objective/s</b>	<b>Identified threats leading to potential impacts</b>	<b>Examples of options and activities to be considered in the drafting of the FMP 2014-2023</b>	<b>Recent and additional investigations which will guide the Draft plan</b>
<p>Climate change and carbon cycles</p> <p><i>Greenhouse gases</i></p>	<p>Maintenance of forest contribution to global carbon cycles</p>	<p>Climate change.</p> <p>Loss of forest area, and/or permanent reduction of forest cover and hence forest carbon pool.</p> <p>Reduction in soil carbon pool.</p>	<p>Incorporate carbon management considerations in management planning and guidelines.</p> <p>Incorporate best available scenarios of climate change in management planning, with particular reference to sustained yield scenarios. (This is also covered in the <i>Productive capacity</i> chapter)</p> <p>Through scientific research increase knowledge and capacity to periodically report on native forest carbon stocks.</p> <p>Periodically review guidelines for silviculture and fire management with a view to incorporating techniques that recognise the contribution of the areas covered by the plan to global carbon cycles, consistent with other mitigation and adaptation strategies and achievement of other silvicultural objectives and goals for forest management.</p> <p>The Forest Products Commission will encourage the use of wood harvested from native forests to maximise greenhouse mitigation benefits.</p>	<p>Work is underway to provide an indicative estimate of the carbon stock of native forests on DEC lands within the FMP area.</p>
<p>Aboriginal and 'other Australian' Heritage</p>	<p>Protection and maintenance of Aboriginal and 'other Australian'</p>	<p>Inappropriate fire regimes, theft, vandalism, disturbance activities,</p>	<p>Various measures as required to address recent amendments to the CALM Act:</p> <p>Agencies will work with appropriate and representative Aboriginal groups to identify</p>	

<p><i>Aboriginal heritage</i></p> <p><i>Historical heritage</i></p> <p><i>Natural heritage</i></p>	<p>cultural heritage.</p>	<p>animal activity, introduction and spread of invasive species of weeds, pests, disease, uncontrolled access.</p> <p>Incomplete documentation of heritage places and values.</p>	<p>cultural values, and to gain their input into the management of the plan area.</p> <p>Develop a program to progressively assess the plan area for its importance for Aboriginal heritage and implement the program over the period of the FMP 2014-2023.</p> <p>DEC, and proponents where required, will seek to prevent material adverse effects on Aboriginal culture and heritage in the plan area by maintaining and updating policies and guidelines on joint management, customary activities and Aboriginal heritage, and by working with representative Aboriginal groups to identify appropriate opportunities for joint management of areas within the plan area.</p> <p>Develop and implement appropriate policies, guidelines, manuals or instructions for management of 'other Australian' cultural heritage, as required, that consider, and where necessary align with, the State Cultural Heritage Policy, Government Heritage Property Disposal Process, and the Burra Charter.</p> <p>Maintain a central data base of 'other Australian' heritage places and values and use agency procedures to effectively protect during disturbance activities.</p>	
<p>Socio economic benefits<sup>3</sup></p>	<p>To sustain and enhance socio-</p>	<p>Climate change.</p>	<p>DEC will continue to provide for, regulate and monitor the complete range of social and</p>	<p>A socio-economic impact study will be carried out to identify the impact</p>

<sup>3</sup> NOTE. It is acknowledged that the analysis in this section is partly outside the scope of a PER under the *EP Act*. The information has been included in this ESD as it is central to the principles of ESFM which guide the Conservation Commission.

<p><i>Recreation</i></p> <p><i>Amenity</i></p> <p><i>Heritage</i></p> <p><i>Range of economic produce</i></p>	<p>economic benefits to meet the needs of the public.</p> <p>To generate social, cultural and economic benefits through the provision of a range of goods and services that are valued by the community and are produced in a manner taking account of the principles of ESFM.</p>	<p>Maintenance of forest land base and of natural forest ecosystem processes.</p>	<p>economic activities and their effects in the plan area, to seek to ensure they meet the principles of ESFM, within legislative responsibilities.</p> <p>Consideration will be given to management responses to cater for increased demands being placed on forests and other natural areas within the area covered by the Draft plan for tourism and recreation (eg, for off-road vehicle use).</p> <p>Proposed changes to arrangements for the extraction of basic raw materials to seek to reduce impacts.</p>	<p>on those activities of implementing the Draft plan. It will also identify the value of the activities and be made available during the public review period of the Draft plan.</p> <p>Mulholland, T. and Piscicelli, A. (2012) <i>Western Australia Tomorrow – Forecast Profile for Western Australia</i>. Population Report No. 7. Western Australian Planning Commission. February, 2012.</p> <p>Legislative Council Western Australia (2011) <i>Shack Sites in Western Australia</i>, Report 21, Standing Committee on Environment and Public Affairs, Western Australian Government.</p> <p>Legislative Assembly Western Australia (2009) <i>Provision, Use and Regulation of Caravan Parks (and Camping Grounds) in Western Australia</i>, Report 2, Standing Committee on Economics and Industry, Western Australian Government.</p> <p>Legislative Council Western Australia (2010) <i>Recreation Activities within Public Drinking Water Source Areas</i>, Report 11, Standing Committee on Public Administration, Western Australian Government.</p> <p>Department of Sport and Recreation, Department of Environment and Conservation, Department for</p>
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				Planning and Infrastructure, Department of Local Government and Regional Development, Recreational Trailbike Riders' Association WA, Western Australian Planning Commission, Motorcycling Western Australia, Trail Bike Management Australia (2008). <i>Back on Track. WA State Trail Bike Strategy. A report commissioned for the Government of Western Australia.</i>
Plan implementation and management  <i>Ensuring actual management of the land to which the Draft plan applies is carried out in a manner which complies with the Draft plan</i>	Seek to ensure that forest management is undertaken in accordance with the Draft plan, in a systematic manner and is continually improved so as to achieve desired outcomes. <sup>4</sup>	Lack of resources, both financial and appropriately skilled staff.  Lack of appropriate current documentation  Lack of clarity of responsibilities across agencies.	Develop and implement formal working arrangements, consistent with the regulation policy, to among other things, define roles and responsibilities, and establish an agreed process for approving and maintaining the currency of operational guidance documents and procedures.  Results from research, monitoring, audits and adaptive management will be evaluated and relevant subsidiary documentation will be amended as appropriate.  Seek to ensure that staff and contractors involved in regulation, supervision and implementation of disturbance operations are competent, including through common training and accreditation programs, as appropriate.	

<sup>4</sup> There is a hierarchy of elements that together, combine to serve the purpose and intent of a system for environmental management. This includes

- i) the legislation that the Conservation Commission, DEC and FPC administer and other legislation that they operate within, various policies, guidelines, manuals, codes of practice and other documents that are subsidiary to and referred to in various sections of the plan;
- ii) the various goals, proposed operations (management activities), and key performance indicators, including their targets and reporting arrangements identified in various sections of the Draft plan; and
- iii) risk assessment, planning and approvals processes, and operational controls that apply to environmental aspects of disturbance operations, that seek to protect identified values and minimise identified threats.
- iv)

			Monitor application of silvicultural practices, and conduct a review of silvicultural practices in second half of this plan.	
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### THE PRINCIPLES OF ESFM

The proposed operations (management activities) included in this Draft plan are guided by the principles of ecologically sustainable forest management, as described in section 19(2) Act), and set out in the table below, with comments identifying how a particular principle is being addressed in the Draft plan(PER).

Principle	Relevant	Means of consideration
<p style="text-align: center;"><b>Precautionary principle</b></p> <p>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</p>	yes	The Draft plan (PER) identifies areas of potential environmental impact and includes activities to address these. Areas of potentially serious or irreversible damage are given the most consideration, for example factors that take many decades to restore such as damaged soil and legacy elements of habitat. The Draft plan (PER) identifies key values and threats to these values. The Draft plan (PER) also considers the cost effectiveness of measures.
<p style="text-align: center;"><b>Sustainability principle</b></p> <p>That the decision-making process should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations</p>	yes	Decision-making that integrates both long-term and short-term economic, environmental, social and equitable considerations is commonly recognised as sustainable development, or as complying with principles of sustainability. The Draft plan (PER) will provide for a range of socio-economic benefits including timber harvesting, the utilisation of other forest produce and recreational activity, within the limits of a sustainable yield
<p style="text-align: center;"><b>Principle of Intergenerational Equity</b></p> <p>The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations</p>	yes	Along with the rights to use the resources available, this principle imposes certain obligations to care for ecosystems so that they retain their health and productive capacity This principle is addressed in the chapters on ' <i>Productive Capacity</i> ' and ' <i>Ecosystem Health and Vitality</i> '.

Principle	Relevant	Means of consideration
<p><b>Conservation of Biological Diversity and Ecological Integrity</b></p> <p>The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making</p>	yes	<p>Central to the conservation of biological diversity in the Draft plan (PER) is the establishment and maintenance of a CAR system of ecologically viable protected areas, integrated with the management of all other areas, including timber and other forest production systems. This principle is addressed in the chapters on <i>'Biological diversity'</i> and <i>'Ecosystem Health and Vitality'</i>.</p>
<p><b>Principles of improved valuation, pricing and incentive mechanisms</b></p> <p>Improved valuation; pricing and incentive mechanisms should be promoted.</p>	yes	<p>The Conservation Commission has a statutory role to provide advice on the application of this principle to the Minister for Environment. The Draft plan (PER) seeks to ensure that proponents causing disturbance bear the cost of measures to minimise any adverse environmental impacts and it also seeks to achieve environmental goals in the most cost effective way.</p>

## Attachment 4

### List of peer reviewed articles on aspects of ecologically sustainable forest management published by departmental authors between July 2004 and July 2011

#### Data sourced from Science Division Annual Research Activity Report and contents search of Nuysia

##### 2004

- Abbott I, Burrows N (2004) Monitoring biodiversity in jarrah forest in south-west Western Australia: the ForestCheck initiative. In *Conservation of Australia's Forest Fauna*. - 2nd ed. (ed. D Lunney), pp. 947-958. Royal Zoological Society of New South Wales, Sydney.
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- Meyer C, Beer T, Müller J, Gillett R, Weeks I, Powell J, Tolhurst K, McCaw L, Cook G, Marney D, Symons R (2004) Dioxin emissions from bushfires in Australia. Department of Environment and Heritage, Canberra. National Dioxins Program Technical Report 1
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- Whitford K, Stoneman G (2004) Management of tree hollows in the jarrah, *Eucalyptus marginata*, forest of Western Australia. In *Conservation of Australia's Forest Fauna*. - 2nd ed. (ed. D Lunney), pp. 807-829. Royal Zoological Society of New South Wales, Sydney.
- Wills AJ, Burbidge TE, Abbott I (2004) Impact of repeated defoliation on jarrah (*Eucalyptus marginata*) saplings. *Australian Forestry* **67**, 194-198.

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- Burrows N (2005) Effets de la diversité des feux sur un hotspot de la biodiversité en Australie. *Forêt Méditerranéenne* **26**, 243-250.
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Eleven peer-reviewed scientific papers were published, after June 2011, on the results of monitoring of the impacts of timber harvesting on biodiversity. This was a package of papers on the five year review of results from FORESTCHECK.

## Attachment 5:

### MATTERS NOMINATED BY THE EPA IN REPORT 1362 ON THE MID-TERM AUDIT AS REQUIRING SPECIFIC ATTENTION

Item	Matters that the EPA considers need to be addressed
1	The implications to the health of the forest ecosystems under changing conditions, including a drying climate, in the short to long term
2	Whether continued logging in the low and adjacent medium rainfall zones, especially in the northern forest, would meet ESFM principles and objectives
3	Governance over forest planning, management and operations – the existing statutory roles and responsibilities of the Conservation Commission, DEC and FPC in relation to the FMP need to be reviewed and improved
4	Compliance by contractors with the FMP, and their relationship with FPC in terms of compliance and enforcement
5	The environmental implications of whole bole logging and removal in the jarrah forest (e.g. Yabberup block) and whether the impacts arising from that approach have been adequately considered, including public concern
6	A review of silvicultural policies and practices within an ESFM framework that reflects current and reasonably foreseeable environmental conditions, including the practice of 'notching' of trees and aesthetic and conservation implications of different thinning regimes
7	The whole issue of the sustainable yield of jarrah, karri and other species in the forest. Many submissions argued that the levels should be reviewed immediately while others want current levels to be maintained during the life of this plan. Associated with this are growth rates of potential log trees and also the effectiveness of regeneration following treatment of State Forest areas
8	Improving the application of Fauna Habitat Zones and the importance of ecological linkages through State Forest areas
9	Under a drying climate, whether management of the forest to promote higher stream flows for water supply is realistic and environmentally desirable (e.g. Wungong catchment trial and research)
10	The full impacts and management of forest diseases, including all <i>Phytophthora</i> species in jarrah, marri and tuart forest and <i>Armillaria</i> in karri forest, and other pests
11	Improved public understanding of the basis of and data supporting key settings being considered during the process (e.g. sustained timber yield)
12	Genuine and effective public involvement in the process

## **Attachment 6**

### **Forest Management Plan 2014 - 2023 - DEC Non-Statutory Consultation**

Department of Mines and Petroleum (with a follow-up meeting)  
Department of State Development (with a follow-up meeting)  
Department of Water (DoW)  
Peel Development Commission  
Forest Products Commission  
Department of Sport and Recreation  
Western Australian Local Government Association (WALGA)  
Office of the Environmental Protection Authority (OEPA)  
South West Development Commission (SWDC)  
Shire of Manjimup  
Shire of Bridgetown-Greenbushes  
Water Corporation  
Department of Indigenous Affairs  
Tourism WA  
Department of the Premier and Cabinet  
State Gravel Supply Strategy meeting  
Forest Industries Federation of Western Australia. (FIFWA)  
South West Aboriginal Land and Sea Council (SWALSC)  
Institute of Foresters (WA)  
Conservation Council of WA (with a follow-up meeting)  
Western Australian Forest Alliance (WAFA)  
The Wilderness Society  
Chamber of Minerals and Energy and Australian Petroleum Production and Exploration Association (joint meeting)  
Regulatory Gatekeeping Unit, Department of the Treasury  
Centre of Excellence in Forest Health, Woodlands and Climate Change  
Alcoa  
Curtin University  
Bauxite Resources Limited (BRL)  
Edith Cowan University

## **Attachment 7**

### **KEY SUBSIDIARY DOCUMENTS TO THE DRAFT FMP 2014-2023**

The purpose of this attachment is to provide the key policies and guidelines within the Draft FMP 2014-2023. The documents are available to the public on DEC's website at <http://www.dec.wa.gov.au/> or by request to [Forest.Info@dec.wa.gov.au](mailto:Forest.Info@dec.wa.gov.au)

Current at: 26 March, 2012 .

<b>No.</b>	<b>Title of Policy</b>	<b>Access to document</b>
2	Local Government Authority access to Basic Raw Materials from State forest and timber reserves	DEC website
3	Background paper to Policy 3 Management of Phytophthora	DEC website
3	Management of Phytophthora and disease caused by it	DEC website
9	Conservation of threatened flora in the wild	DEC website
10	Rehabilitation of disturbed land	DEC website
13	Commercial flora harvesting	DEC website
14	Weeds on CALM lands	DEC website
15	Community involvement	Upon request
	Public Participation and Stakeholder Engagement- Policy Statement	DEC website
18	Recreation, tourism and visitor services	DEC website
19	Fire management	Upon request
25	Community education and interpretation	Upon request
27	CALM's role in management of native vegetation in rural areas	Upon request
29	Translocation of threatened flora and fauna	DEC website
31	Management of reserves for the conservation of nature	DEC website
33	Conservation of endangered and specially protected fauna in the wild	DEC website
34	Visual Resource management of lands and waters managed by CALM	DEC website
40	Road management (This policy is under review and some content is no longer current.)	Upon request
45	Environmental monitoring of pesticides used by CALM	Upon request
47	Control of Sirex woodwasp in pine plantations	Upon request
53	Visitor Risk Management in the Department of Environment and Conservation	DEC website
56	Risk management	Upon request
57	DEC Enforcement and Prosecutions Policy 2008	DEC website
62	Identification and Management of Wilderness and Surrounding Areas	DEC website
65	Good Neighbour Policy	DEC website
78	Science Guidelines (1 to 6) relating to Science Policy Statement No 78	Upon request
78	Science Policy	Upon request

## Title of Guideline or other document

Approvals matrix for operations on CALM Act reserves and other lands and waters managed by DEC	Upon Request
<b>Management Guideline No. 1</b> – user Guide for Approvals matrix for operations on CALM Act reserves.	
<b>Management Guideline No. 2</b> – Necessary Operations: A Guide for Managers.	
<b><i>Phytophthora cinnamomi</i> and disease caused by it. Volume 1 – Management guidelines</b>	DEC website
Manual of Management Guidelines for Timber Harvesting in Western Australia	Upon Request
<b>Guideline 1/97</b> - Fire as a silvicultural tool in the jarrah forest	Upon Request
<b>Guideline 4/97</b> - Jarrah regeneration surveys	Upon Request
<b>Guideline 2/97</b> - Karri seed crop assessment and monitoring	Upon Request
<b>Guideline 3/97</b> - Establishment guidelines for karri forest regeneration following harvesting	Upon Request
<b>Guideline 1/88</b> - Regeneration in tuart for conservation.	Upon Request
<b>SFM Guideline No. 1 (2004)</b> – Silvicultural Practice in the Jarrah Forest.	Upon Request
<b>Silviculture Guideline No. 2 (2004)</b> – Silvicultural Practice in Wandoo Forest and Woodland.	Upon Request
<b>Silviculture Guideline No. 3 (2005)</b> – Silvicultural Practice in the Karri Forest.	Upon Request
<b>SFM Guideline No. 4 (2009)</b> - Guidelines for the Protection of the Values of Informal Reserves and Fauna Habitat Zones.	Upon Request
<b>SFM Guideline No. 5 (2009)</b> - Soil and Water Conservation Guideline.	Upon Request
<b>SFM Guideline No. 6 (2010)</b> - Guidelines for the Selection of Fauna Habitat Zones.	Upon Request
<b>Manual of Management Guidelines for Timber Harvesting in Western Australia.</b>	Upon Request
<b>Guidelines for the Management and Rehabilitation of Basic Raw Material Pits</b>	Upon Request
<b>Guidelines for conservation management plans relating to mineral exploration on lands managed by DEC</b>	DEC website
<b>Visual Landscape Management Guidelines</b>	DEC website
<b>Apiary Site Management Guidelines</b>	Upon Request
<b>Management of Commercial Harvesting of Protected Flora in Western Australia 1 July 2008 – 30 June 2013.</b>	Upon Request
<b>Public Participation Manual</b>	Upon Request

## Attachment 8

### Glossary

These definitions have been extracted from the current FMP 2014-2023 unless other indicated.

<b>Adaptive management</b>	A process of responding positively to change. The term adaptive management is used to describe an approach to managing complex natural systems that builds on common sense and learning from experience, experimenting, monitoring, and adjusting practices based on what was learned.
<b>Biological diversity (Biodiversity)</b> (described in CALM Act)	The variability among living biological entities and the ecosystems and ecological complexes of which those entities are a part and includes: (a) diversity within native species and between native species; (b) diversity of ecosystems; and (c) diversity of other biodiversity components.
<b>Biological diversity component</b> (described in CALM Act)	Includes habitats, ecological communities, genes and ecological processes
<b>Catchment</b>	The surface area from which water runs off to a river or any other collecting reservoir.
<b>Code of practice</b>	A document defining and prescribing practices for economically viable operations and good standards of safe work while protecting the environment.
<b>Criterion</b>	A category of conditions or processes by which sustainable forest management may be assessed. A criterion is characterised by a set of related indicators that are monitored periodically to assess change.
<b>Culling</b>	The deliberate felling, poisoning [notching] or pushing down of unwanted overstorey or understorey species, usually to reduce competition to retained crop trees or establishing regeneration.
<b>Dieback</b>	In the south-west of Western Australia a disease of plants caused by infection by the soil-borne organisms of the genus <i>Phytophthora</i> .
<b>Disturbance</b>	Any range of conditions affecting the condition of a natural area. Disturbance may be natural (e.g. fire) or human induced (e.g. timber harvesting).
<b>Ecologically sustainable forest management (ESFM)</b>	Forest management and use consistent with the principles described in section 19(2) of the CALM Act.
<b>Ecosystem</b>	A community or an assemblage of communities of organisms, interacting with one another and the environment in which they live.
<b>Exotic species</b>	Any species growing or living outside its natural range of occurrence. Normally this refers to species

purposely or accidentally introduced into countries or regions where they do not historically occur.

**Fauna**

The animals inhabiting an area; including mammals, birds, reptiles, amphibians and invertebrates. Usually restricted to animals occurring naturally and excluding feral or introduced animals.

With respect to the Wildlife Conservation Act, fauna is:

- (a) any animal indigenous to any State or Territory of the Commonwealth or the territorial waters of the Commonwealth;
- (b) any animal that periodically migrates to and lives in any State or Territory of the Commonwealth or the territorial waters of the Commonwealth; and
- (c) any animal declared as fauna pursuant to subsection (2),

and includes in relation to any such animal –

- (d) any class or individual member thereof;
- (e) the eggs, larvae or semen;
- (f) the carcass, skin, plumage or fur thereof, but does not include any prescribed animal or prescribed class of animal.

**First grade sawlog jarrah**

A log cut from the bole of a jarrah tree that is a minimum of 2.1 metres in length, has a minimum under bark diameter of 200 mm and has a minimum of 50% millable timber on the worst end face.

**First grade sawlog karri**

A log cut from the bole of a karri tree that is a minimum of 2.4 metres in length, a minimum under bark diameter of 300 mm and has a minimum of 50% millable timber on the worst end face. NB: this is the normal specification and individual contracts will vary.

**Fire regime**

The combination of season, intensity, interval, extent and patchiness of fire in a given area over a period of time.

**Flora**

The plants growing in an area; including flowering and non-flowering plants, ferns, mosses, lichens, algae and fungi. Usually restricted to species occurring naturally and excluding weeds.

With respect to the Wildlife Conservation Act flora is any plant (including any wildflower, palm, shrub, tree, fern, creeper or vine) which is: (a) native to the State or (b) declared to be flora pursuant to subsection (4), and includes any part of flora and all seeds and spores thereof.

**Forest**

An area, incorporating all living and non-living components, that is dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding two metres and with existing or potential crown cover of overstorey strata about equal to or greater than 20 per cent.

<b>Forest ecosystem</b>	An indigenous ecosystem with an overstorey of trees that are greater than 20 per cent crown cover. These ecosystems should normally be discriminated at a resolution requiring a map-standard scale of 1:100,000. Preferably these units should be defined in terms of floristic composition in combination with substrate and position within the landscape.
<b>Forest operations</b>	Work activities undertaken in the forest to achieve the management objectives for that forest.
<b>Forest produce</b>	For the purposes of the CALM Act includes trees, parts of trees, timber, sawdust, chips, firewood, charcoal, gum, kino, resin, sap, honey, seed, bees-wax, rocks, stone and soil but, subject to the foregoing, does not in Division 1 of Part VIII include minerals within the meaning of the Mining Act 1978.
<b>Forest products</b>	For the purposes of the CALM Act and the <i>Forest Products Act 2000</i> : (1) Subject to subsection (2) trees or parts of trees; timber, sawdust or chips; charcoal, gum, resin, kino or sap; and firewood. If they are located on public land or sharefarmed land. (2) When something referred to in subsection (1) has been removed under contract or arrangement entered into by the Commission, any residues that remain are not forest products for the purposes of this <i>Forest Products Act 2000</i>
<b>Guideline</b>	Principles, standards and practices for meeting goals that have been established as desirable outcomes for management. They can be quantitative or qualitative.
<b>Habitat</b>	A component of an ecosystem providing food and shelter to a particular organism.
<b>Heritage</b>	Something inherited from past generations that is valued.
<b>High rainfall zone</b>	Areas where the average annual rainfall exceeds 1100 millimetres per year.
<b>Hygiene – in relation to dieback</b>	Actions that decrease the risk of the pathogen being introduced spread or intensified.
<b>Indicator</b>	A measure (measurement) of an aspect of a criterion. A quantitative or qualitative variable that can be measured or described and that, when observed periodically, demonstrates trends.
<b>Intermediate rainfall zone</b>	Areas where the average annual rainfall is between 900 and 1100 millimetres per year.
<b>Land category</b>	Section 5 of the CALM Act specifies the categories of land to which the Act applies and section 6 defines those land categories. For the purposes of the plan the land categories are; State forest, timber reserves, national parks, conservation parks, nature reserves, any other land reserved under the Land Act 1933 and vested by order under that Act in the Conservation Commission and any other land other than excluded waters, reserved under Part 4 of the Land

	Administration Act 1997, the care control and management of which are placed by order under that Part with the Conservation Commission.
<b>Landform</b>	All the physical, recognisable, naturally formed features of land having a characteristic shape. Includes major forms such as a plain, mountain or plateau, and minor forms such as a hill, valley or alluvial fan.
<b>Landscape</b>	The visual elements of both the natural and the built environment and including landforms, vegetation, waterform, land-use and architecture.
<b>Landscape Management Unit*</b>	In the Draft FMP 2014-2023, reference is made to Landscape Management Units, which are based on mapping of vegetation complexes by Mattiske Consulting & Havel Land Consultants <sup>5</sup> , to provide a current indication of particular management emphases across the plan area.
<b>Lignotuber</b>	A woody swelling formed at the base of some eucalypts that has the ability to produce new shoots when the existing ones are destroyed.
<b>Low rainfall zone</b>	Areas where the average annual rainfall is less than 900 millimetres per year.
<b>Monitoring</b>	Regular assessment of a management program and of the resources being managed, checking that desired outcomes are achieved, and adjusting the new plan where necessary.
<b>Old-growth forest</b>	Ecologically mature forest where the effects of unnatural disturbance are now negligible. The definition focuses on forest in which the upper stratum or overstorey is in a late mature to senescent growth stage.
<b>Performance measure</b>	Qualitative or quantitative measures developed to assess progress toward attainment of an objective.
<b>Pest</b>	Troublesome or destructive animals including insects, either introduced or native.
<b>Plantation</b>	State forest and timber reserve planted with exotic species.
<b>Prescribed burning</b>	The planned application of fire under selected fuel and weather conditions to a defined area to achieve specific management objectives.
<b>Policy</b>	The course of action to be followed to achieve an organisation's objectives.
<b>Recovery plan</b>	A plan that describes the actions required to achieve the recovery of threatened species or ecological community from the current threat of extinction or destruction.

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<sup>5</sup> Authors: Mattiske Consulting Pty Ltd, Havel Land Consultants *Delineation of landscape conservation units in southwest region of Western Australia* Department of Western Australia Conservation and Land Management, 2002.

<b>Rehabilitation</b>	The process necessary to return disturbed land to a predetermined surface, vegetational cover, land-use or productivity.
<b>Reserve – conservation</b>	An area set aside primarily for the conservation of natural ecosystems but which may allow a level of recreation consistent with the proper maintenance and restoration of the natural environment.
<b>Reserve – formal</b>	One of the land category categories of national park, nature reserve, conservation park, or CALM Act sections 5(1)(g) or 5(1)(h) reserves for the purpose of conservation.
<b>Reserve – informal</b>	An area set aside for conservation under an approved management plan; has had opportunity for the public to comment on changes to reserve boundaries; able to be accurately defined on a map; and is of an area and design sufficient to sustain the values it seeks to protect.
<b>Riparian</b>	Pertaining to the banks of streams, rivers or lakes.
<b>Silviculture</b>	The theory and practice of managing forest establishment, composition and growth to achieve specified management objectives.
<b>Structure</b>	When applied to a forest is the vertical and spatial distribution of the vegetation.
<b>Sustainable timber harvesting*</b>	The timber harvested at a sustained yield
<b>Timber*</b>	CALM Act s3. includes trees when they have fallen or have been felled, and whether sawn, hewn, split or otherwise fashioned
<b>Sustained yield</b>	The yield that a forest can produce continuously at a given intensity of management.
<b>Susceptible taxa</b>	Taxa that are of concern because their range is restricted (typically less than 100 square kilometres) and/or they are found in few locations rendering them prone to the effects of human activities or to introduced plants, animals or diseases.
<b>Taxa (taxon)</b>	A defined unit (for example, species or genus) in the classification of plants and animals.
<b>Thinning</b>	A felling made in an immature stand for the purpose of improving the growth of trees that remain without permanently breaking the canopy and encouraging regeneration.
<b>Threatening process</b>	Those processes which may result in the long-term reduction of biodiversity. Examples include predation and habitat change by introduced animals; competition and displacement by introduced plants and destruction and modification of habitat.
<b>Threatened ecological community</b>	Ecological communities approved by the Minister for the Environment and Heritage as threatened and listed on the Department's Threatened Ecological

Community Database.

<b>Threatened taxa</b>	Taxa that are vulnerable, endangered, critically endangered or presumed extinct. Taxa which are naturally rare or geographically restricted, or have become so as a result of human activities, and are in danger of declining further, or becoming extinct, unless adverse factors acting on them can be identified and ameliorated.
<b>Timber harvesting</b>	The cutting, felling, and gathering of forest timber undertaken as part of a planned sequence of silvicultural activities including the regeneration of the forest.
<b>Treemarking</b>	The silvicultural system in which trees are marked for retention prior to harvesting in a forest.
<b>Turbidity</b>	Discolouration of water due to suspended silt or organic matter.
<b>Vegetation complex</b>	A combination of distinct site vegetation types, usually associated with a particular geomorphic, climatic, floristic and vegetation structural association.
<b>Vulnerable taxa</b>	A taxon is vulnerable when not critically endangered or endangered, but facing a high risk of extinction in the wild in the medium term.
<b>Weed</b>	A plant, often a self-sown exotic, growing where it is not wanted.
<b>Weed – environmental</b>	A naturalised non-indigenous plant species outside the agricultural context that adversely affects the survival or regeneration of indigenous species in natural vegetation communities.
<b>Woodflows</b>	Projected annual supply of timber arising from scheduling the area of forest available and the sequence of harvesting operations over an extended period of time.
<b>Yield</b>	The amount of product produced from the forest by a particular management strategy.
<b>Yield regulation</b>	The process by which the yield of any product is controlled to achieve the stipulated levels in a management plan.