URS

Report

Module 1: Harvesting and Closure

Module 3: Regeneration and Finalisation



Environmental Audit Forest Audit Program 2014

Service order number: 8004360

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ABBREVIATIONS

Abbreviation	Description
ARR	Absolute Risk Rating
Code	Code of Practice for Timber Production 2007
DELWP	Department of Environment, Land, Water and Planning
DEPI or the Department	Department of Environment and Primary Industries
EIA	Environmental Impact Assessment
EPA	Environment Protection Authority
EVC	Ecological Vegetation Class
FAP	Forest Audit Program
FFG Act	Flora and Fauna Guarantee Act 1988
FMA	Forest Management Area
FMP	Forest Management Plan
GMZ	General Management Zone
HSE	Health, Safety and Environment
km	kilometre
m	metre
Management Procedures	Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2009, revised 2012
mm	millimetre
SMZ	Special Management Zone
SPZ	Special Protection Zone
TRP	Timber Release Plan
VBA	Victorian Biodiversity Atlas
WUP	Wood Utilisation Plan



EXECUTIVE SUMMARY

Introduction

The Department of Environment and Primary Industries¹ (DEPI or the Department) engaged Jodie Mason (the auditor) of URS Australia in June 2014 to undertake an environmental audit of timber harvesting in Victoria's State forests. This was commissioned under the DEPI Forest Audit Program (FAP). The objectives of the audit were to:

- 1 Assess and report on compliance with environmental prescriptions and associated environmental performance of:
 - (a) Timber harvesting activities undertaken in the 2013-14 financial year on public land, with relevant environmental legislation, regulations and government policies governing forest management (in accordance with FAP Module 1);
 - (b) Regeneration activities on coupes nominated by VicForests as adequately regenerated in the 2013-14 financial year with relevant environmental legislation, regulations and government policies governing forest management (in accordance with FAP Module 3); and
- 2 Review and report of the effectiveness of the relevant environmental regulatory instruments in the context of the scope addressed by Modules 1 and 3 of the FAP.

DEPI reviewed the FAP in 2013 and released a new manual and associated series of 3 guiding modules in January 2014 that target different aspects of the timber harvesting lifecycle. This was the first audit conducted using the revised 2014 FAP method. Due to differences in the audit criteria, it must be noted that direct comparisons between compliance scores presented in this report and those reported in previous FAP audit reports may not be possible.

At the time of this audit project, timber harvesting operations in Victoria's State forests were managed by two separate entities. VicForests is responsible for planning and managing commercial timber harvesting, the sale of timber products and the regeneration of harvested areas on State forest in the east of the State; and DEPI Forestry Services was responsible for these activities in other parts of the State (predominantly western Victoria). It is noted that the Victorian Government transferred the management responsibilities of DEPI Forestry Services to VicForests in November 2014 to more clearly separate the forestry governance and regulatory role from management of commercial operations. This new management arrangement may have implications for how this report is reviewed, but it is understood that VicForests is now the primary regulated entity, and may respond to this report on behalf of the former DEPI Forestry Services.

¹ Please note that the Department of Environment and Primary Industries (DEPI) was restructured on 1 January 2015 under the incoming Victorian Labor Government. The services associated with environmental regulation of timber harvesting are now provided by the Department of Environment, Land, Water and Planning (DELWP). This report was commissioned under DEPI but has been received by the regulatory officials within DELWP.



In commissioning the audit project, DEPI instructed the auditor to limit the audit to timber harvesting operations that had been conducted in three Forest Management Areas (FMAs), namely the Central, Dandenong and Bendigo FMAs. The following numbers of operations were assessed:

- 18 coupes managed by VicForests from within the Central and Dandenong FMAs;
- 6 coupes managed by DEPI Forestry Services in the Bendigo FMA; and
- 10 coupes that had been managed and regenerated by VicForests from the Central and Dandenong FMAs.

The total number of timber harvesting operations assessed in the audit was therefore 34 coupes.

The sampling of target coupes was conducted by the auditor from a list provided by DEPI of 228 harvesting coupes and 48 regeneration coupes that were relevant to the selected FMAs.

The auditor used a random risk-based methodology that considered attributes present at each coupe including slope, soil erosion hazard, silviculture, and proximity to protected values. The method used is outlined in detail in the report.

The selected targets included four coupes that occur in water supply catchments managed by Melbourne Water.

The audit commenced in late June 2014 with initial document review and field inspections undertaken over a three week period. Of the coupes audited under Module 1 (Coupe Planning, Harvesting and Closure), harvesting was complete on half and the remaining coupes were partially harvested.

The audit was based on document review, site inspections and discussions with VicForests and DEPI Forestry Services personnel. Site inspections included observations and measurements of key parameters; assessment of soil characteristics; and photographs were taken of site conditions to aid in assessment. Compliance or non-compliance was noted for defined audit criteria within five compliance element groups.

Where an instance of non-compliance was identified, the actual or potential environmental impact was determined in accordance with the *FAP Manual* to provide an Environmental Impact Assessment (EIA) risk rating of Severe, Major, Moderate, Minor, Negligible or No impact.

DEPI arranged for three community observation days, where interested stakeholders could observe the audit and interact with the audit team and DEPI representatives.

The auditor has included a series of audit recommendations where she was of the opinion that:

- 1 Documented procedures or practices do not adequately address the intent of the Code or other mandatory requirements and the recommendation can add value in continuing to improve environmental outcomes; or
- 2 Clarification of, or a change to, a prescription is required to reduce the risk of harm to the environment.



Audit findings - Module 1 (Coupe planning, harvesting and closure)

Please note that due to differences in types of forest, landscapes and harvesting intensity at audited coupes managed by VicForests and those managed by DEPI Forestry Services, it is not appropriate to draw direct comparisons between the reported levels of compliance or environmental impact of coupes managed by VicForests and those managed by DEPI Forestry Services.

Table ES 1 summarises audit compliance levels and EIA risk ratings for VicForest and DEPI

 Forestry Services.

Table ES 1 Summary of compliance levels and EIA risk ratings for VicForests and DEPI Forestry Services Forestry Services

AGENCY EIA RISK RATINGS									
	Compliances	Non- compliances	Compliance score (%)	No impact	Negligible	Minor	Moderate	Major	Severe
VicForests	1,065	102	91%	12	14	62	13	1	0
DEPI Forestry Services	99	30	77%	7	9	8	1	5	0
TOTAL	1,164	132	90%	19	23	70	14	6	0

No non-compliances with an EIA risk rating of Severe were identified.

The audit method for Module 1 considered five broad compliance element groups:

- Operations
- Infrastructure
- Biodiversity
- Water and soils
- Roading

Operations

Operations had the highest level of overall compliance with 98% for VicForests and 100% for DEPI Forestry Services. This group of audit criteria addressed requirements such as wet weather and seasonal restrictions; and protection of exclusion areas and boundaries. An isolated instance of use of a landing in wet conditions (Minor EIA); and an incident of a bulldozer having cleared understorey vegetation outside a coupe boundary (Minor EIA) were identified as non-compliances for VicForests' coupes; otherwise the harvesting activities were found to have been managed appropriately.



Infrastructure

The *Infrastructure* compliance element group addressed coupe landings, snig tracks and boundary tracks.

VicForests' coupes had a compliance score of 96%. Infrastructure was assessed as being generally minimised and rehabilitated appropriately, and a number of landings on adjacent coupes had been reused. A small number of exceptions included isolated instances of failure to remove topsoil before using a landing (Moderate EIA); inadequate rehabilitation of a landing (Moderate EIA); discharge of sediment into a waterway and a buffer from snig tracks (Moderate and Minor EIAs); and inadequate drainage of sections of snig tracks and boundary tracks, mainly on steeper slopes (Negligible and No impact EIAs).

DEPI Forestry Services' coupes scored 96%, being generally compliant with the few relevant *Infrastructure* requirements, with the exception of the inappropriate siting of a track within a drainage depression (Negligible EIA).

Biodiversity

VicForests' coupes scored 97% compliance with the applicable criteria for the *Biodiversity* compliance element group (biodiversity planning, forest health, rainforest, old growth forest and threatened species). The auditor observed that areas of rainforest had been identified and excluded from harvesting and machinery disturbance in a conservative manner; threatened species records were managed in accordance with documented requirements; and VicForests was collaborating with DEPI to detect Myrtle Rust. Areas of non-compliance included systemic weaknesses identified with pathogen risk assessment (Moderate EIAs) and instances of hygiene controls to prevent the spread of weeds not having been implemented (Negligible EIAs).

DEPI Forestry Services' coupes were in compliance with the few applicable *Biodiversity Conservation* requirements; with the compliance score influenced by one systemic issue of failure to survey for the presence of weeds before harvesting (No impact EIAs). The compliance score was therefore reduced to 60%.

Despite the low incidence of non-compliance, the audit includes recommendations for potential improvement in both work practices and the regulatory framework to reduce the risk of environmental harm, in the areas of threatened species detection and pathogen risk assessment.

Water and soils

The *Water and soils* compliance element group addressed classification and exclusion of waterways from harvesting activities; slope and special water catchment restrictions; and management of in-coupe machinery maintenance areas and waste. This group of audit criteria had the lowest of VicForests' compliance scores at 86%, due to a combination of a relatively low number of applicable audit criteria and systemic non-compliances including those related to waste disposal by contractors (Minor EIAs); and the lack of assessment of risk of mass soil movement on steep slopes (Minor EIAs).



DEPI Forestry Services' coupes had a compliance rate of 65% for the *Water and soils* group, influenced largely by two systemic non-compliances relating to waste disposal by licensees (Minor EIAs); and not having undertaken water quality risk assessments (Negligible EIAs). Good practice was noted in the conservative classification of drainage lines; prohibiting excavation of erosive subsoils; and protection of soil close to active erosion points.

Roading

The *Roading* compliance element group addressed the planning, design, construction, maintenance and temporary and permanent closure of roads used during timber harvesting. Roading was generally found to be managed appropriately by VicForests, with a compliance rate of 87%. Good practices observed included some reuse of temporary road alignments, minimisation of waterway crossings in most cases, avoidance of construction in steep areas, and an efficient approach to road closure applications and traffic management planning. Culverts at three coupes were assessed as constituting a barrier to the passage of fish (Major and Minor EIAs). A number of systemic issues affected multiple coupes, including failure by VicForests to assess the risk of transmission of Phytophthora (*Phytophthora cinnamomi*) through quarry materials (Minor EIAs); issues relating to closure of temporary roads (Negligible and No impact EIAs); and erosion and sedimentation of road surfaces and unstable fill disposal areas and embankments (Moderate and Minor EIAs). The auditor also considered that the field assessment process for detecting significant flora on VicForests' road alignments was not adequate to comply with requirements and manage risks (Minor EIAs), although no evidence of actual impact was evident during the audit.

DEPI Forestry Services' coupes had a compliance rate of 14% for *Roading*, influenced by the low number of requirements relevant to their operations, as they have not undertaken any road construction or maintenance activities. A small number of non-compliances with relatively high risk ratings was identified with traffic control and road closure processes (Major EIAs).

Audit findings - Module 3 (Regeneration and finalisation)

The audit found that adequate regeneration of local eucalypt species had occurred at all of the 10 audited coupes.

No non-compliances with Severe, Major or Moderate EIA risk ratings were identified. Three non-compliances with Minor EIA risk ratings were identified where it could not be demonstrated that VicForests had considered spatial distribution of the original species in regeneration plans. Five non-compliances with EIA risk ratings of Negligible were identified for not fully complying with seed provenance requirements; and instances of no undertaking weed assessment and control.

A further nine non-compliances were identified for VicForests not having assessed rehabilitation of infrastructure drainage after ground-based regeneration activities, resulting in Negligible EIA risk ratings; and incomplete records of regeneration details, for which environmental impact assessment was not considered applicable.



Risk of harm to the environment

The environmental impact (observed or potential) was assessed and scored for all 132 noncompliances detected during the audit. Impact scores of "Severe" and "Major" are considered to be especially significant.

No Severe environmental impact scores were recorded for either managing authority.

One "Major" environmental impact scores was recorded for VicForests, being a single instance of a waterway crossing on a permanent road presenting a barrier to the passage of fish. While it was a single instance, two other similar instances having Moderate EIA risk ratings were also identified for VicForests' coupes. In addition to finding non-compliances with the current requirements, this audit report includes a recommendation to DEPI to review the appropriateness of current regulatory requirements regarding types of stream crossing structures in relation to facilitating movement of fish through crossings.

Five "Major" environmental impact scores were recorded for DEPI Forestry Services for failure to adequately close roads or control traffic when falling trees adjacent to minor forest roads. The auditor assessed the potential impact of this issue as "Major" as it represents a safety risk to the users of adjacent minor forest roads. The auditor notes that DEPI Forestry Services has since initiated management actions and a revised harvesting approach to address this issue; and this audit report includes a recommendation to continue to implement changes to ensure compliance.

The audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses listed in Section 2.3 of this report. The assessment of imminent environmental hazards was based on site observations and EIA risk rating assessments of identified non-compliances, using the experience and expertise of the audit team members. The assessment of risk to the listed beneficial uses is based on non-compliances identified and their respective EIA risk ratings at the coupe level and the auditor's judgement, backed by the experience and expertise of the audit team members, as to the significance of audit findings at a landscape level.

Recommendations from this audit

Six (6) recommendations were made for VicForests, relating to:

- Review of application of its process for assessing soil erosion hazard and water quality risk assessment;
- Development and implementation of disease and health risk assessments;
- Expansion of search areas for threatened species values pending review of modelled data;
- Documentation and implementation of procedures to improve assessment for environmentally sensitive values on road alignments;
- Communication of road maintenance requirements amongst relevant staff; and
- Documentation and implementation of a procedure for planning that the regeneration outcome reflects the species mix and spatial distribution of the forest prior to harvest.



Five (5) recommendations were made for DEPI Forestry Services, relating to:

- Provision of specific guidance to forest product licensees regarding felling trees within and adjacent to filters and removal of logs from filters;
- Development and implementation of disease and health risk assessments;
- Expansion of search areas for threatened species values pending review of modelled data;
- Documentation of procedures for threatened species detection; and
- Further development of traffic management and road closure procedures.

Thirteen (13) recommendations were made for DEPI in its role as the environmental regulator of timber harvesting conducted on public land. These relate to:

- Provision of guidance on the location of soil assessments in relation to the coupe and on selecting the appropriate soil horizon to use in determining water quality risk;
- Defining 'steep slopes' in the regulatory documentation;
- Development, in consultation with VicForests, of a robust process for the reporting of threatened species information that has been detected by VicForests and requires zoning amendment;
- Reviewing the threatened flora and fauna models developed in association with the Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines policy to assess applicability for forestry applications and provision to VicForests and DEPI Forestry Services;
- Updating of the Central Highlands Forest Management Plan (FMP) to include all current Flora and Fauna Guarantee Act 1988 (FFG) listed taxa and threatened taxa on the DEPI Advisory List. This should include an update of the conservation status of all taxa in Appendix J and K, and an update of the management prescriptions to align conservation efforts with current conservation significance status;
- Amendment of the Code and/or Management Procedures to include a requirement to assess the risk of spread of pathogens, which would expand on the current Management Procedure requirement that the spread of pathogens (e.g. Armillaria of Phytophthora) must be minimised;
- Review of management prescriptions for the protection of threatened flora within riparian zones to better manage potential impacts associated with construction of waterway crossings;
- Documentation to clarify whether Management Procedures Sections 1.6.1, 2.3.6, and 1.6.3.1 apply to temporary roads that are constructed for timber harvesting operations, or apply only to permanent roads;
- Review of the mandatory requirements for road crossings of waterways and provide better guidance relating to movement of fish through various types of crossing structures;
- Revision to eliminate inconsistencies between Management Procedures Sections 2.3.6 and 1.6.3.1 and the *Road Maintenance Agreement 2014* between the DEPI and VicForests;



- Review of Management Procedures to remove the requirement to utilise topsoil stockpiles to rehabilitate batter slopes. This recommendation is based on technical references relating to low volume road engineering indicating other means of stabilisation are effective and that topsoil placed on slopes steeper than 40 degrees may be subject to sliver fill failure. Topsoil may be more effectively used in rehabilitating recontoured temporary road alignments after harvest;
- Review and revise Code prescriptions relating to suitability of silvicultural methods for regeneration of understorey species to clarify the intended purpose; and also develop and better document standards and methods for the regeneration and assessment of regeneration of understorey species; and
- Modify the scope of Module 3 (Regeneration and Finalisation) audits to include capacity to check whether a backlog of un-regenerated or under-regenerated coupes is developing. The auditor notes that this recommendation is aligned with a recommendation made by the Victorian Auditor General in his 2013 report².

Table ES 2 contains audit summary information as required by EPA Victoria.

² Victorian Auditor-General's Office, 2013, Managing Victoria's native forest timber resources.

Table ES 2 Summary of audit details for EPA Victoria

	SUMMARY INFORMATION REQUIRED
EPA file reference no.	CARMS: 68515-9; Service order number: 8004360
Auditor	Jodie Mason
Auditor term of appointment	15 July 2008 - 14 July 2017
Name of person requesting audit	Hon. Ryan Smith, Minister for Environment and Climate Change
Relationship to premises/location	Portfolio Minister for the environmental regulator (Department of Environment and Primary Industries)
Date of request	10 / 06 / 2014
Date EPA notified of audit	15 / 06 / 2014
Completion date of the audit	11 / 02 / 2015
Reason for Audit	Commissioned under DEPI Forest Audit Program
Description of activity	Timber harvesting and forest regeneration in State forest in Victoria
EPA Region	Gippsland, North West and North East
Dominant – Lot on plan	NA – State forest
Additional – Lot on plan(s)	NA – State forest
Site / Premises name	NA - State Forest areas within the Central, Dandenong and Bendigo Forest Management Areas
Building / complex sub-unit No	NA – State forest
Street / Lot – Lower No.	NA – State forest
Street / Lot – Upper No.	NA – State forest
Street Name	NA – State forest
Street type (road, court, etc)	NA – State forest
Street suffix (North, South etc)	NA – State forest
Suburb	NA – State forest
Postcode	NA – State forest
GIS Coordinate of Site centroid	NA - 34 coupes throughout the Central, Dandenong and Bendigo Forest Management Areas
Members and categories of support team	Tuesday Phelan (Forest science and regulation) Peter Gannon (Terrestrial Ecology)
Outcome of the audit	Audit report with recommendations
Further work or requirements	Six (6) recommendations were made for VicForests, relating to review of application of its process for assessing soil erosion hazard and water que of disease and health risk assessments; expansion of search areas for threatened species values pending review of modelled data; documentation assessment for environmentally sensitive values on road alignments; communication of road maintenance requirements amongst relevant staff; planning that the regeneration outcome reflects the species mix and spatial distribution of the forest prior to harvest.
	Five (5) recommendations were made for DEPI Forestry Services, relating to development and implementation of disease and health risk assess values pending review of modelled data; documentation of procedures for threatened species detection; and further development of traffic management
	Thirteen (13) recommendations were made for DEPI, relating to improvements to the regulatory framework.
Groundwater segment	NA
Surrounding land use	Includes State forest, State park, national park, other Crown land and private property, variously managed for multiple uses including timber harv storage and management and agriculture.

r quality risk assessment; development and implementation tation and implementation of procedures to improve ff; and documentation and implementation of a procedure for

essments; expansion of search areas for threatened species anagement and road closure procedures.

arvesting, recreation, biodiversity conservation, water



1

INTRODUCTION

This report documents the methodology and findings of an environmental audit of timber harvesting and associated forest regeneration in Victoria's State forests. The Timber Harvesting Compliance Unit within the Department of Environment and Primary Industries³ (DEPI or the Department) engaged URS Australia Pty Ltd (URS) to undertake this audit under the DEPI Forest Audit Program (FAP). Jodie Mason (the auditor) of URS led the audit in her capacity as an environmental auditor appointed pursuant to the *Environment Protection Act 1970*.

DEPI is the environmental regulator responsible for setting environmental standards and ensuring timber harvesting operations comply with the legislative and regulatory requirements. The FAP forms an important component to facilitate independent (external) monitoring of timber harvesting compliance.

DEPI finalised a review of the FAP in January 2014 and produced a series of three audit modules intended to assess the environmental impacts of timber harvesting conducted in State forests.

Each of the FAP modules address different regulatory requirements for timber harvesting operations:

- Module 1 covers coupe planning, harvesting and closure;
- Module 2 covers harvest area limits; and
- Module 3 covers the regeneration and rehabilitation of harvested forest.

The objectives of the audit project specified by DEPI were to:

- 1 Assess and report on compliance with environmental prescriptions and associated environmental performance of:
 - i. timber harvesting activities undertaken in the 2013-14 financial year on public land, with relevant environmental legislation, regulations and government policies governing forest management (in accordance with FAP Module 1);
 - ii. regeneration activities on coupes nominated by VicForests as adequately regenerated in the 2013-14 financial year with relevant environmental legislation, regulations and government policies governing forest management (in accordance with FAP Module 3); and
- 2 Review and report of the effectiveness of the relevant environmental regulatory instruments in the context of the scope addressed by Modules 1 and 3 of the FAP.

The FAP documents were provided to the auditor by DEPI. The three procedural documents relevant to this audit are the *FAP Manual; FAP Module 1 – Coupe Planning, Harvesting and Closure;* and *FAP Module 3 – Regeneration and Finalisation* (refer to Appendices A, B and C respectively of this report). Copies of the FAP documents, including the audit workbooks used by the audit team, are available from DEPI on request by emailing DEPI at fpd.reports@depi.vic.gov.au.

³ Please note that the Department of Environment and Primary Industries (DEPI) was restructured on 1 January 2015 under the incoming Victorian Labor Government. The services associated with environmental regulation of timber harvesting are now provided by the Department of Environment, Land, Water and Planning (DELWP). This report was commissioned under DEPI but has been received by the regulatory officials within DELWP.



Management of timber harvesting operations in Victoria

At the time of this audit project, timber harvesting operations in Victoria's State forests were managed by two separate entities:

- VicForests is responsible for planning and managing commercial timber harvesting, the sale of timber products and the regeneration of harvested areas on State forest in the east of the State; and
- DEPI Forestry Services was responsible for management of commercial timber harvesting, sale of products and regeneration of harvested areas in other parts of the State (predominantly in the west).

It is noted that the Victorian Government transferred the management responsibilities of DEPI Forestry Services to VicForests in November 2014 to more clearly separate the forestry governance and regulatory role from management of commercial operations. This new management arrangement may have implications for how this report is reviewed, but it is understood that VicForests is now the primary regulated entity, and may respond to this report on behalf of the former DEPI Forestry Services.

All commercial timber harvesting in Victoria's State forests is governed by the legislative requirements outlined in the *Sustainable Forests (Timber) Act 2004,* including compliance with the *Code of Practice for Timber Production 2007* (the Code). The Code is the key regulatory instrument applicable to commercial timber harvesting and is established under Part 5 of the *Conservation, Forests and Lands Act 1987.* It prescribes the minimum standards to which timber harvesting and subsequent regeneration activities in Victoria must comply. The Code requires that Forest Management Plans are developed for State forests in all Forest Management Areas (FMAs) in Victoria and these plans may contain additional regulatory rules and guidance (see Figure 1-1).

DEPI has recently completed a project to consolidate the relevant rules and regulations that apply to timber harvesting conducted on public land, which has resulted in changes to the regulatory framework and the publication of a new version of the Code of Practice (28 October 2014)

The Management Procedures for timber harvesting operations and associated activities in Victoria's State forests (Management Procedures), developed by DEPI, provide additional guidance to VicForests and DEPI Forestry Services in meeting the requirements of the Code, as well as further environmental standards and operational requirements. The Management Procedures apply to all commercial timber harvesting and related roading and forest regeneration activities undertaken by VicForests and DEPI Forestry Services.

Fire salvage harvesting prescriptions may also apply to provide supplementary prescriptions for salvage harvesting operations in wildfire-affected areas. These typically apply for a period of time following the fire event to provide higher levels of protection and minimise any further negative impacts on an already disturbed environment.





Figure 1-1 The 14 Forest Management Areas established in Victoria (Source: DEPI)

VicForests and DEPI Forestry Services have developed internal procedural documents to assist their staff, contractors and forest produce licence holders in implementing regulatory requirements, including *Utilisation Procedures* (VicForests) and *Timber Harvesting Operator's Procedures* (DEPI Forestry Services).

Benefits of the FAP

FAP audit projects are intended to benefit DEPI as the environmental regulator, the Victorian forestry industry, catchment managers and the community by providing an independent and objective assessment of the environmental performance of timber harvesting operations and the effectiveness of the regulatory framework, and assist VicForests and DEPI Forestry Services in their objectives of continual improvement. Public reporting of findings helps to inform the public on the management of State forests and contribute to transparency.

The environmental regulator uses the results of the FAP and other compliance monitoring activities to identify issues and potential improvements to the regulatory framework to achieve appropriate environmental outcomes from timber harvesting operations.



2 AUDIT SCOPE

This section outlines the scope of the audit project, the segment and elements of the environment audited, the beneficial uses considered, audit criteria used, excluded elements, and members of the audit team.

2.1 Scope of the audit project

The scope of the audit project was defined by DEPI in conducting the procurement process to commission URS Australia to undertake the required work.

The scope of the audit was as follows:

Review coupe harvesting, closure and relevant regeneration of timber harvesting undertaken in the Central, Dandenong and Bendigo FMAs.

The required method was as per the *FAP Manual* and Workbooks, which were provided by DEPI in January 2014. The auditor was required to outline any departure from the method provided by DEPI. Assessable compliance elements were outlined in FAP Module 1 - Workbooks 1B (*Water quality, river health and soil protection*); 1C (*Biodiversity conservation*); 1D (*Operational provisions*); 1E (*Roading*); 1F (*Coupe infrastructure*); and also FAP Module 3 Workbook 3A (*Assessment of regeneration coupes*).

Potential audit targets for 2014 included:

- VicForests and DEPI Forestry Services managed timber harvesting coupes in specified FMAs that were subject to harvesting in 2012/13 (71 coupes);
- VicForests and DEPI timber harvesting coupes in specified FMAs that are scheduled to be or are currently being harvested in 2013/14 (161 coupes); and
- Previously harvested timber harvesting coupes in specified FMAs (covering multiple harvesting seasons) that were successfully regenerated by VicForests (as nominated by VicForests)(48 coupes).

Complete desktop and field assessment were required for 34 timber harvesting operations which were broken down into the following categories:

- 18 coupes assessing Module 1 requirements selected from the Central and Dandenong FMAs (VicForests' operations).
 - Of these, at least two coupes were required to be located within Melbourne Water Catchment Areas.
- 10 coupes assessing Module 3 requirements selected from the Central and Dandenong FMAs (VicForests' operations).
- 6 coupes assessing Module 1 requirements selected from the Bendigo FMA (DEPI Forestry Services' operations).

Target coupes were to be selected by the auditor from the list of potential audit targets supplied by DEPI.



The work that was subsequently carried out by the audit team is summarised as follows:

- Review of potential target coupe list provided by DEPI;
- Selection of the 34 target coupes for audit using the risk-based approach outlined in the FAP Manual;
- Office-based review and field assessments, accompanied by auditees, to review the management of the selected coupes; and
- Preparation of an environmental audit report (this report), which considers auditees' comments on factual matters contained in a draft of this report.

2.2 Segments of the environment audited

The segment of the environment covered by this audit is defined as that portion of Victoria in which timber is harvested from public land including adjacent rivers, streams and communities directly affected by that harvesting.

The following elements of the environment (as defined in the *Environment Protection Act 1970*) have been considered in conducting the audit:

- Land;
- Surface water;
- Groundwater;
- Vegetation;
- Aesthetics;
- Wildlife; and
- Fish.

The *FAP Manual* also includes climate as an element relevant to the audit program, however the auditor did not consider it relevant to this audit.

2.3 Beneficial uses

In assessing the risk of harm or detriment to the environment, the following beneficial uses are considered broadly relevant to the audit:

- Life, health and wellbeing of humans;
- Life, health and wellbeing of other forms of life, including the protection of ecosystems and biodiversity; and
- Local amenity and aesthetic enjoyment.



2.4 Audit criteria

The audit criteria used in this audit are contained in the FAP Module Workbooks, which outline the relevant compliance element groups:

Module 1: Harvesting and closure

- Workbook 1B: Water quality, river health and soil protection ("Water and soils")
 - Waterways
 - Buffers
 - Filters
 - Slopes
 - Camp maintenance, fuel storage and waste disposal
 - Water Catchments
 - Chemical contamination
- Workbook 1C: Biodiversity conservation ("Biodiversity")
 - Planning and management
 - Forest health
 - Threatened species
 - Rainforest
 - Old growth
- Workbook 1D: Operational provisions (includes weather-related and seasonal restrictions, boundaries and excluded areas) ("Operations");
- Workbook 1E: Roading ("Roading")
 - General
 - Road planning
 - Road design
 - Road construction
 - Road maintenance
 - Road closure
- Workbook 1F: Coupe Infrastructure ("Infrastructure")
 - General
 - Log landings and dumps
 - Snig and forwarding tracks
 - Boundary trails.



Module 3: Regeneration and finalisation

• Workbook 3B: Audit criteria for regeneration coupes

The workbooks contain criteria selected from the relevant regulatory documents (i.e. Code, Management Procedures, Forest Management Plans (FMPs), etc).

2.4.1 Elements excluded from scope

The FAP Manual lists elements that are specifically excluded from the scope of the audit:

- The development and amendments of the Allocation Order, Timber Release Plans (TRPs) and Wood Utilisation Plans (WUPs);
- Development of Forest Management Plans and broader forest management planning processes. Note that this exclusion does not relate to the assessment of compliance against relevant prescriptions contained in such planning documents (e.g. those relating to forest operational planning, roading, harvesting and regeneration practices);
- Compliance with rules, regulations or guidelines that relate to Occupational Health and Safety (OH&S) matters;
- Timber harvesting practices undertaken on private (freehold) land (e.g. private plantation forestry);
- Roading activities conducted on public land that are not associated with timber production;
- Silvicultural practices conducted on public land that are not associated with commercial timber production (i.e. fire recovery silviculture and ecological thinning);
- Land use decisions and associated "forest industry policy";
- Assessing planning, management, impact or potential impact of timber harvesting on aboriginal heritage values in State forest;
- Practices associated with the production and collection of domestic forest produce (including domestic firewood) across all land tenures;
- Recreational activities undertaken on public land;
- Livestock grazing activities undertaken on public land;
- Apiary activities undertaken on public land; and
- Fire suppression and management practices undertaken on public land (e.g. fuel reduction burning and habitat enhancement burning). This does not include exclusion of use and outcomes of any post-harvest regeneration burning (which falls within the scope of the FAP).



2.4.2 Audit team members

The following personnel were involved in the audit:

- Jodie Mason (Lead Auditor, Principal Consultant, URS)*
- Peter Gannon (Principal Ecologist, Ecocentric)*;
- Tuesday Phelan (Principal Consultant Forester)*;
- Andrew Morton (Vice President, URS Forestry);
- Con Psiroukis (Forestry Consultant, URS): and
- Dr Harry Grynberg (Senior Principal URS).

*Undertook field work

3 AUDIT APPROACH

3.1 Audit overview

Initial document review and field inspections were conducted over a three week period from 30 June to 17 July 2014, with document review and reporting continuing into the weeks and months following.

The auditor held a short briefing meeting with VicForests and DEPI Forestry Services auditees at the start of the field program to introduce the audit team, outline the audit process and confirm logistical arrangements. The audit team completed field inspections of two to three coupes each day and at the completion of each assessment reviewed the findings with operational staff on site. A debriefing session with auditees was also held at the conclusion of the field program in each of the relevant FMAs, to provide a preliminary assessment of compliance for each coupe and to identify any issues where further evidence or clarification was required.

3.2 Target selection

The FAP Manual outlines the risk-based process to be used for selecting audit targets.

3.2.1 Module 1 (Coupe Planning, Harvesting and Closure)

The Department compiled and provided to the auditor a Master Coupe List of 138 coupes from the Central and Dandenong FMAs and 90 coupes from the Bendigo FMA, which represented all potential target coupes that underwent harvesting during the 2012/13 and 2013/14 financial years (excluding domestic firewood coupes). The auditor then selected the required number of coupes (24) using a risk-based approach that considered the following risk factors to determine an Absolute Risk Rating (ARR) for each coupe:

- Slope (S);
- Soil erosion hazard (SE);
- Silvicultural system (SS);
- Special land protection requirements (PR); and
- Compliance Themes (CT).

The ARR is determined by the following formula:

ARR (coupe) = S x SE + SS + PR + Σ (CT)

- where 'Σ' means 'the sum of'

"Compliance Themes" are intended to allow for an adjustment of the focus of audits year to year by increasing the likelihood of selecting coupes that are relevant to the chosen Compliance Theme. The Department advised the auditor that as the geographic range for the audit had already been limited, no Compliance Theme would be applied for this audit.



Once ARRs were assigned to all coupes, coupes were allocated accordingly into High, Moderate and Low risk categories. The 18 Central and Dandenong FMA coupes were selected at random from the Master Coupe List to fit the following risk distribution prescribed by the *FAP Manual*:

- 60% from the High risk group;
- 25% from the Moderate risk group; and
- 15% from the Low risk group.

The risk based selection processes selected four coupes within Melbourne Water catchments so no further adjustment was required.

Due to the relatively flat terrain and low variability in risk profile among coupes from the Bendigo FMA, only Moderate and Low risk groups were identified. Five coupes were selected from the Moderate risk group; and one from the Low risk group.

3.2.2 Module 3 (Regeneration and Finalisation)

The Department provided a Master Coupe List of 48 coupes within the Central and Dandenong FMAs nominated by VicForests in October 2013 as being adequately regenerated. The *FAP Manual* required audit targets be stratified by reported stocking levels, then randomly selected to reflect the proportion of coupes with a reported stocking of greater than 75%; and less than or equal to 75%. Audit targets were selected to also proportionally represent the forest types and silvicultural systems used. The auditor then selected the required number of coupes (10). All selected coupes were larger than 10 ha in size.

3.3 Coupe assessment

The auditing of selected coupes was undertaken during June and July 2014 (winter), using a combination of document review, site inspections and interviews with relevant personnel. Representatives of the auditee organisations accompanied the audit team on all Module 1 coupes during site inspections; and representatives accompanied the audit team to the Module 3 coupes, but did not join the audit team within the coupes in all cases.

Copies of Forest Coupe Plans and the original coupes files for each audited coupe were provided by the relevant managing agency, VicForests or DEPI Forestry Services, for the duration of the audit.

Of the 24 coupes assessed under Module 1, there was no harvesting active during the audit. At the time of the audit, harvesting had been completed on 12 of the coupes; and 12 coupes were partially harvested.

3.3.1 Audit workbooks

The audit team completed FAP workbooks for each coupe according to the evidence observed and collected by the audit team. In the rare event that the audit team found an audit criterion provided in a workbook that did not adequately reflect the relevant prescription, the regulatory prescription was used. The auditor has provided feedback to DEPI regarding this issue with the objective of continual improvement of the audit toolbox.



Non-compliance was recorded against a criterion if no or insufficient evidence was available to demonstrate that an audit criterion had been appropriately implemented. Where the auditor identified a deficiency that the auditee had already noted in the coupe diary and addressed, it was not recorded as a non-compliance, except in cases where the auditor considered it had not been addressed adequately or had an Environmental Impact Assessment (EIA) risk rating of Minor, Moderate, Major or Severe.

The auditor reviewed the coupe diaries to identify compliance issues identified by the auditees and the records of actions taken. The most commonly encountered issue identified was the relatively low risk issue of single trees being accidentally felled across boundary areas. Such instances were noted by the audit team on eleven of the 24 coupes.

3.3.2 Field assessments

During site inspections of audited coupes, measurements of key parameters were taken in accordance with *FAP Module 1 Harvesting and Closure*, and recorded in coupe workbooks. Observations and photographs were also taken of site conditions to aid in assessment of compliance. Parameters that were subject to measurement included the following:

- Roads;
- Snig and forwarding tracks;
- Boundary tracks;
- Buffers (streamside, rainforest, landscape, significant habitat);
- Filters; and
- Habitat trees.

The auditor undertook soil assessments at all audited coupes for comparison with results obtained by auditee organisations. The auditor adopted the same methodology as used by VicForests, which is described in the VicForests Instruction, *Soil Assessment, March 2013.*

3.4 Environmental impact assessment

For each non-compliance identified, except in relation to planning criteria, the auditor made a qualitative assessment of actual or potential environmental impact using the Environmental Impact Assessment (EIA) tool outlined in Annex C of the *FAP Manual*.

The EIA tool is a useful mechanism for assessing the environmental significance of a noncompliance and provides additional context to findings. It seeks to assess the significance of a non-compliance objectively within the following environmental impact categories: Negligible, Minor, Moderate, Major or Severe. It can consider the actual impact observed or the potential risk and environmental impact that may be caused by a non-compliance. Where the auditor considered that there was no actual or potential environmental impact associated with a noncompliance, an additional category of "No impact" was used. It should be noted that the EIA tool does not provide an absolute measure of environmental impact (such as a parts per million sedimentation concentration impact on water quality).



The EIA risk rating is based on a review of the following factors:

- Extent/potential extent of impact or disturbance (i.e. localised versus widespread impact);
- Duration/potential duration of impact (short term versus longer term impact);
- Likelihood of recovery from impact/potential impact; and
- The nature of the environmental asset value(s) impacted/potentially impacted.

For non-compliance issues encountered in the coupe planning criteria and for some other noncompliances where the EIA tool was not considered applicable, a simplified classification was used, in accordance with the *FAP Manual*:

- Severe risk poses a severe threat to human life, or irreversible or extensive impact to the environment;
- **Major risk** poses a potential threat to human life, or significant impact to the environment;
- Moderate risk poses a moderate impact to the environment;
- **Minor risk** poses a minor impact to the environment, however further risk reduction opportunities exist;
- **Negligible risk** poses little impact to the environment and/or provides for continuous improvement; and
- **No impact** poses no impact to the environment and/or provides for continuous improvement.

DEPI advised the auditor that the environmental impact ratings inform its response as the regulator to instances of non-compliance as follows:

- Severe risk requires detailed consideration of case and corrective action by regulator;
- Major risk requires consideration of case and corrective action by regulator;
- **Moderate risk** may be of a significance that requires consideration/corrective action by regulator or may be included under broader continual improvement program;
- Minor risk included under broader continual improvement program;
- Negligible risk included under broader continual improvement program; and
- **No impact** generally no further action.

3.5 Stakeholder consultation

Community observation days

DEPI arranged for three community observation days to be held during the audit, where stakeholders could attend and observe an audit being performed and interact with the audit team and DEPI representatives. These days were held near Powelltown (11 July) and Bendigo (17 July), and a rescheduled event at Toolangi (13 August) that occurred after the completion of the field component of the audit project.



3.6 Reporting of audit findings

At the conclusion of the field inspections, debrief meetings were held with each of VicForests and DEPI Forestry Services staff to present preliminary findings and provide opportunity for the discussion of issues and provision of further relevant information.

Section 4 of this report presents findings at the coupe level. As outlined in Section 1.1 of the *FAP Manual* the FAP focuses on the performance of the authorities managing timber harvesting operations and "it is not intended that the FAP scrutinise the performance of individual harvesters". To protect the identities of individuals in this report, each audited coupe has been allocated a unique identifier from C1 to C24 (Module 1) and R1 to R10 (Module 3). DEPI and the auditees have been provided with a matching list of coupe names to facilitate their consideration of and response to findings. A summary list of the coupes audited is attached as Appendix D.

Where the auditor considered that there was duplication between the audit criteria in the FAP workbooks, for example a similar criterion in both the Code and Management Procedures, or was duplicated across compliance elements, compliance or non-compliance has only been recorded once to avoid 'double-counting'.

Audit recommendations have been provided by the auditor in a small number of cases where documented procedures or practices do not adequately address the audit criteria and the recommendation can add value in continuing to improve environmental outcomes; or where the auditor considers that clarification of, or a change to, a prescription is required to reduce the risk of harm to the environment.

A priority of High, Medium or Low was allocated by the auditor to each recommendation, based on the auditor's assessment of environmental risk; and whether the non-compliances were systemic or only individual instances. The matrix (developed by the auditor) that was used for determination of priority in these instances is shown as Table 3-1.

RECOMMENDATION PRIORITY								
EIA risk rating	Severe	Major	Moderate	Minor	Negligible	No impact		
Systemic non- compliance	High	High	High	High	Medium	Low		
Individual non- compliance	High	Medium	Medium	Medium	Low	Low		

Table 3-1 Matrix used to assign priorities to recommendations

Source: URS

For recommendations not directly related to a non-compliance (for example, an observed weakness in a process in the absence of a corresponding observed non-compliance or actual environmental impact), priorities have been assigned based on potential environmental impact in the absence of implementing the recommendation, based on **Table 3-1**.

Coupe files, including Forest Coupe Plans and diaries for each audited coupe were reviewed during the audit. A list of other documents reviewed by the audit team is provided in Appendix E.



A draft of this report was provided to VicForests and DEPI Forestry Services for comment on factual matters and comments received were considered for incorporation into this report. Auditee responses that did not lead to a material change to the draft are presented in Appendix F.



4 AUDIT FINDINGS – MODULE 1 (COUPE PLANNING, HARVESTING AND CLOSURE)

This section provides a summary of the audit findings as well as detailed findings for each Compliance Element.

4.1 Harvesting practices

Plate 4-1

VicForests - The 18 coupes assessed were either clear-fell or seed tree retention operations, with the exception of one thinnings coupe. No fire salvage harvesting coupes were considered in this audit. In most cases, felling was mechanised, with a small number of coupes or proportions of coupes manually felled. Log extraction was generally undertaken using skidders or bulldozers and processing of logs occurred on specially constructed landings using mechanised excavators.

DEPI Forestry Services – The six coupes audited were all harvested using single tree selection methodologies, using manual falling of individual trees marked for either removal or retention by DEPI Forestry Services Forest Officers. Log extraction to the roadside was usually done either using a farm tractor or a 4-wheel-drive vehicle. In some cases, logs were partially processed within the coupe then collected with a small truck or 4-wheel-drive vehicle with a trailer. Low harvest volumes resulted in low intensity traffic and minimal soil disturbance and little to no exposure of the subsoil. Due to the relatively flat terrain and low intensity harvesting methods used, there was no soil excavation required and no road, track or landing construction.

Plate 4-1 shows a comparison of typical operations observed by the audit team as managed by VicForests and DEPI Forestry Services.

for a) VicForests; and b) DEPI Forestry Services a) VicForests b) DEPI Forestry Services

Typical topography, soil disturbance and harvest intensity of the audited coupes





There were large differences observed in the types of forest, landscapes and harvesting intensity at audited coupes managed by VicForests and those managed by DEPI Forestry Services. Generally the auditor recognised that DEPI Forestry Services managed coupes were less intensive and had lower overall risk of environmental impact. VicForests coupes generally occurred on steeper topography and had more intensive harvesting systems. In addition, the number of criteria applicable to DEPI Forestry Services coupes was significantly lower than those applicable to coupes managed by VicForests; which results in each instance of non-compliance having a larger percentage impact on the overall compliance score than those reported for VicForests.

Due to these differences, it is not appropriate to draw direct comparisons between the reported levels of compliance or environmental impact of DEPI Forestry Services-managed coupes and those managed by VicForests.

4.2 Level of compliance - summary

Audited coupes were assessed as generally being in compliance with the majority of audited criteria, achieving an overall compliance rate of 90%.

Coupes managed by VicForests had an overall compliance score of 91%.

Coupes managed by DEPI Forestry Services had an overall compliance score of 77%

Table 4-1 shows the number of compliances, non-compliances, percentage compliance and the number of coupes audited for each of VicForests and DEPI Forestry Services.

Table 4-1 Level of compliance with the audit criteria for VicForests and DEPI Forestry Services

AGENCY	COUPES AUDITED	COMPLIANCES	NON- COMPLIANCES	COMPLIANCE (%)	
VicForests	18	1,065	102	91%	
DEPI Forestry Services	6	99	30	77%	
TOTAL	24	1,164	132	90%	



4.2.1 Summary of findings by compliance element groups

The following section provides compliance scores and a summary of findings for each of the five compliance element groups.

Table 4-2 shows the compliance levels and the distribution of EIA risk ratings for each compliance element group for VicForests coupes.

	S	S	COMPLIANCE SCORE	EIA RISK RATINGS					
	COMPLIANCE	NON- COMPLIANCE		No impact	Negligible	Minor	Moderate	Major	Severe
Water and soils	223	36	86%	2	1	32	1	0	0
Biodiversity	153	5	97%	0	2	0	3	0	0
Operations	131	2	98%	0	0	2	0	0	0
Roading	350	51	87%	8	9	27	6	1	0
Infrastructure	208	8	96%	2	2	1	3	0	0
Total	1,065	102	91%	12	14	62	13	1	0

Table 4-2 Compliance scores and EIA risk ratings for VicForests coupes for each compliance element group

Table 4-3 shows the compliance levels and the distribution of EIA risk ratings for each compliance element group for DEPI Forestry Services coupes.

Table 4-3 Compliance scores and EIA risk ratings for DEPI Forestry Services coupes for each compliance element group

	ទ	S	COMPLIANCE SCORE	EIA RISK RATINGS					
	COMPLIANCE	NON- COMPLIANCE		No impact	Negligible	Minor	Moderate	Major	Severe
Water and soils	31	17	65%	0	8	8	1	0	0
Biodiversity	9	6	60%	6	0	0	0	0	0
Operations	35	0	100%	0	0	0	0	0	0
Roading	1	6	14%	1	0	0	0	5	0
Infrastructure	23	1	96%	0	1	0	0	0	0
Total	99	30	77%	7	9	8	1	5	0



Operations

Of the five compliance element groups, *Operations* had the highest level of compliance overall, with 98% for VicForests and 100% for DEPI Forestry Services. This group addressed requirements such as wet weather and seasonal restrictions; and protection of exclusion areas and boundaries. An isolated instance of landing use in wet conditions; and an incident of a bulldozer having cleared understorey vegetation outside a coupe boundary were identified as non-compliances for VicForests' coupes; otherwise the harvesting activities were found to have been managed appropriately.

Infrastructure

The *Infrastructure* compliance element group addressed landings, snig tracks and boundary tracks. VicForests' coupes had a compliance score of 96%. Infrastructure was assessed as being generally minimised and rehabilitated appropriately, and a number of landings on adjacent coupes had been reused. A small number of exceptions included isolated instances of failure to remove topsoil before using a landing; inadequate rehabilitation of a landing; discharge of sediment into a waterway and a buffer from snig tracks; and inadequate drainage of sections of snig tracks and boundary tracks, mainly on steeper slopes.

DEPI Forestry Services' coupes scored 96%, being generally compliant with the few relevant *Infrastructure* requirements, with the exception of the inappropriate siting of a track within a drainage depression.

Biodiversity

VicForests' coupes scored 97% compliance with the applicable criteria for the *Biodiversity* compliance element group. The auditor observed that areas of rainforest had been identified and excluded from harvesting and machinery disturbance in a conservative manner; and threatened species records were managed in accordance with documented requirements. Areas of non-compliance included systemic weaknesses identified with pathogen risk assessment and instances of hygiene controls to prevent the spread of weeds not having been implemented.

DEPI Forestry Services' coupes were in compliance with the few applicable *Biodiversity* requirements; with the compliance score influenced by one systemic issue of failure to survey for the presence of weeds before harvesting. The compliance score was therefore reduced to 60%.

Despite the low incidence of non-compliance, the audit includes recommendations for potential improvement in both work practices and the regulatory framework to reduce the risk of environmental harm, in the areas of threatened species detection and pathogen risk assessment.



Water and Soils

The *Water and soils* compliance element group addressed classification and exclusion of waterways from harvesting activities, slope and special water catchment restrictions, management of in-coupe machinery maintenance areas and waste. This group of criteria had the lowest of VicForests' compliance scores at 86%, due to a combination of a relatively low number of applicable audit criteria and systemic non-compliances including those related to waste disposal by contractors and the lack of assessment of risk of mass soil movement on steep slopes.

DEPI Forestry Services' coupes had a compliance rate of 65% for the *Water and soils* group, influenced largely by two systemic non-compliances relating to waste disposal by licensees; and not having undertaken water quality risk assessments.

Roading

The *Roading* compliance element group addressed the planning, design, construction, maintenance and temporary and permanent closure of roads used during timber harvesting. Roading was generally found to be managed appropriately by VicForests, with a compliance rate of 87%. Good practices observed included some reuse of temporary road alignments, minimisation of waterway crossings in most cases, avoidance of construction in steep areas, and an efficient approach to road closure applications and traffic management planning. A number of systemic issues affected multiple coupes, including failure by VicForests to assess the risk of transmission of Phytophthora (*Phytophthora cinnamomi*) through quarry materials; issues relating to closure of temporary roads; and erosion and sedimentation. The auditor also considered that the field assessment process for detecting significant flora on VicForests' road alignments was not adequate to fully comply with requirements and manage risks, although no evidence of actual impact was evident during the audit.

DEPI Forestry Services' coupes had a compliance rate of 14% for the *Roading* Compliance Element group, influenced by the low number of requirements relevant to their operations, as they have not undertaken any road construction or maintenance activities. A small number of non-compliances with relatively high risk ratings was identified with traffic control and road closure processes.

4.2.2 Summary of findings by environmental impact

The actual or potential environmental impact was assessed for all instances of noncompliance identified during the audit.

Figure 4-1 graphically summarises the level of compliance and EIA risk ratings for noncompliances identified for each compliance element (VicForests and DEPI Forestry Services combined).



Figure 4-1 Compliance levels and EIA risk ratings for identified non-compliances for each compliance element



Below is a summary of the findings of the EIA scores for each non-compliance. Details of each non-compliance are included in Section 4.3 of this report.

Severe

No non-compliances with an environmental impact score of Severe were recorded during the audit.

Major - VicForests

One non-compliance with an environmental impact score of Major was determined for a VicForests coupe. This non-compliance resulted from the placement of a culvert outlet above a stream in a new alignment of permanent road, presenting a long term barrier to the passage of fish.

Major – DEPI Forestry Services

Five instances of systemic non-compliance with road closures and traffic control requirements when harvesting adjacent to roads were identified, with environmental impact scores of Major.


Moderate - VicForests

Thirteen non-compliances with Moderate environmental impact scores were determined including construction of a stream crossing that could have been avoided with more consideration during planning; erosion from unstabilised road fill batters on two roads; culverts outlets suspended above the streams and presenting barriers to the passage of fish on two temporary roads; erosion on a length of permanent road; and sediment entering a stream from a snig track crossing. There was one instance where inadequate road design resulted in scouring of table drains and erosion of fill at a series of culvert outlets. Landing issues included failure to remove topsoil from one landing before use; and inadequate standard of rehabilitation on another. On three coupes, risk of vegetation loss from Phytophthora had not been assessed; and was assessed during the audit as a moderate risk.

Moderate – DEPI Forestry Services

One non-compliances with a Moderate environmental impact score was determined for DEPI Forestry Services' coupes for failure to identify and mark a drainage line and erosion gully in the Forest Coupe Plan and in the field.

Minor - VicForests

Sixty-two non-compliances with Minor environmental impact scores were determined, including one instance of a bulldozer operating outside the coupe boundary (but causing minimal soil disturbance); apparent use of one landing in wet conditions; inadequate drainage of sections of roads and snig tracks; and one instance of a fill batter covering the base of a tree.

The majority of these non-compliances resulted from systemic issues that were relevant to several or all audited coupes, including:

- Not having undertaken assessment of risk of mass soil movement on coupes with steep slopes (discussed in Section 4.3.1.1 of this report);
- Not having undertaken assessment of risk of the transmission of Phytophthora through use of quarry (rock and gravel) materials at coupes (discussed in Sections 4.3.4.1 of this report);
- Not having undertaken adequate field surveys for the presence or absence of certain environmental values prior to road construction (discussed in Section 4.3.2.1 of this report); and
- Lack of evidence to demonstrate wastes (e.g. litter, waste oils, discarded machinery parts) were removed to an approved disposal facility and no evidence that this had been communicated as a requirement to harvesting contractors (discussed in Section 4.3.1.1 of this report).



Minor – DEPI Forestry Services

Eight non-compliances with Minor environmental impact scores were identified for DEPI Forestry Services coupes, resulting from an unauthorised crossing of a filter; failure to identify and mark a drainage line on one coupe; and lack of evidence to demonstrate wastes (e.g. litter, waste oils, discarded machinery parts) were removed to an approved disposal facility and that this had been communicated as a requirement to harvesting licensees (discussed in Section 4.3.1.1 of this report).

Negligible - VicForests

Fourteen non-compliances with Negligible environmental impact scores were identified during the audit, mainly in relation to roading and coupe infrastructure. These non-compliances included ineffective stabilisation of a fill slope; pooling of water in a table drain; an instance of soil movement resulting from road rehabilitation; and two instances of inadequate drainage on snig and boundary tracks. A small area of steep slope that exceeded the specified 30 degree limit had been harvested on one coupe; in two instances, machinery wash down was identified as required, but not undertaken; and six instances were identified where topsoil was not used to rehabilitate batter slopes after road construction (refer to Section 4.3.4.3 of this report for a recommendation that this requirement be considered for removal).

Negligible - DEPI Forestry Services

Nine non-compliances with Negligible environmental impact scores were identified. They related to the use of a drainage depression as a vehicular track; incorrect marking of drainage lines in the field; and deficiencies in the classification of the erosion hazard of subsoils.

No impact – VicForests

Twelve non-compliances with a "No impact" environmental impact score were determined, where practices were not in compliance, however the outcomes were assessed as not resulting in environmental impact in these instances; or non-compliances were administrative in nature and environmental impact was not expected. Non-compliances included two instances of inadequate snig and boundary track drainage for the soil erodibility classification determined by VicForests (but adequate for the classification determined by the auditor); a soil assessment having been undertaken a long distance from the coupe (but having the same outcome as the auditor's assessment within the coupe); slope limit in the Forest Coupe Plan for one coupe not reflecting slope limits of the catchment (but slopes exceeding the limit did not exist on the portion of the coupe that was within the catchment); and culverts not having been removed on road closure (but still functioning effectively). Administrative non-compliances included deficiencies in documentation about road closures and intention to keep temporary roads open.

No impact – DEPI Forestry Services

Seven non-compliances with "No impact" environmental impact scores included not having undertaken pre-harvest weed assessments on any of the six coupes (but no weeds were observed during the audit); and an administrative deficiency in a traffic management plan.



4.3 Detailed findings for Module 1 (Coupe Planning, Harvesting and Closure)

Details of audit findings for each compliance element are discussed in the following sections.

4.3.1 Water and soils

4.3.1.1 VicForests' coupes

Less than half the river health, water quality and soil protection audit criteria were assessable for VicForests' audited coupes. Reasons why the criteria were not applicable included that some coupes did not fall within recognised water supply catchments, or where chemical use, log culverts, high water quality risks, and slopes over 30 degrees were not present at some of the audited coupes. Compliance with requirements to locate toilets and refuelling sites away from sensitive areas could not be assessed at the audited coupes due to the timing of the audit in relation to harvesting activities and lack of relevant documentation.

VicForests' overall compliance with river health, water quality and soil protection requirements was assessed by the auditor as generally good. Two systemic compliance issues affected all coupes, with a failure to ensure wastes from timber harvesting operations were removed to an approved disposal facility; and failure to assess the potential for mass soil movement on steep coupes.

Table 4-4 summarises the compliance findings for the Water and soils compliance element group.

COMPLIANCE ELEMENT	WATER AND SOILS							
	Overall	Waterways	Buffers	Filters	Slopes	Camp maintenance	Water catchments	Chemical contamination
Total compliance	223	117	53	12	17	17	7	NA
Total non-compliance	36	2	0	0	14	18	2	-
Non-compliance EIA breakdown								-
Severe	0	0	-	-	0	0	0	-
Major	0	0	-	-	0	0	0	-
Moderate	1	1	-	-	0	0	0	-
Minor	32	0	-	-	14	18	0	-
Negligible	1	0	-	-	0	0	1	-
No impact	2	1	-	-	0	0	1	-

Table 4-4Summary of compliance findings for the Water and soils compliance element
group - VicForests



Waterways

Waterways within and immediately adjacent to the coupes were found to have been accurately identified in the Forest Coupe Plans and classified correctly in accordance with the Code prescriptions. Buffers and filters applied by VicForests in the coupes were also assessed (see *Buffers* and *Filters* sections below for details).

Road stream crossings were audited at four coupes (C2, C4, C8 and C9). Crossings at three of the coupes were found by the auditor to be compliant with the Code requirement to minimise crossings. A non-compliance was recorded at one coupe (C4) as the auditor considers that the waterway crossing constructed at this coupe could have been avoided, had greater consideration been given during planning. VicForests' initial haulage route for this coupe involved constructing a stream crossing to access the landing site. The crossing could have been avoided as another access route was subsequently constructed to the same landing without crossing the stream. The EIA rating for this non-compliance was assessed as Moderate due to the creation of an avoidable source of stream sedimentation. It is also relevant that the crossing at coupe C4 is located within a Spotted Tree Frog catchment; and the auditor considers that construction of an appropriately located and well-managed landing would have resulted in less stream sedimentation than from the waterway crossing. Further discussion of this issue is provided in Section 4.3.4.1 *Road planning*.

The non-compliance associated with management of this crossing is reported in Section 4.3.5.1 *Snig and forwarding tracks*, which addresses the impacts of sedimentation caused by the crossing. Other issues associated with this crossing are also discussed in Section 4.3.4.1 *Road design*.

The auditor assessed soil erosion hazard and water quality risk in the field using VicForests' methodology, which addresses the Code criteria of soil erodibility and permeability, rainfall erosivity, topography and coupe infrastructure. All coupes assessed by the auditor were found to have low or moderate water quality risk. The audit measured higher water quality risk than VicForests at one site (C8), where VicForests had determined it to be low and the audit found it to be moderate. As this variance in measurements made no difference to the application of waterway protections, it was not recorded as a non-compliance.

The audit also recorded a different soil erosion hazard to VicForests at ten coupes (C1, C2, C3, C5, C8, C10, C13, C14, C15 and C16), with the audit results showing higher soil erosion hazard at five of these coupes. Some differences between the audit and VicForests' results were due to assessment of soil dispersability. In several instances the audit identified transcription errors had occurred when entering field results into Vicforests' coupe database. The auditor notes that VicForests has since made changes to the soil assessment form that will likely reduce transcription errors.

Soil erosion hazard is used to determine spacing of road and track drainage, and batter construction requirements. The audit used VicForests' soil erosion classification to assess compliance with these requirements. Compliance with these elements is addressed in Section 4.3.4.1 *Road Design;* Section 4.3.5.1 *Snig and forwarding tracks* and *Boundary tracks*. Drainage spacings were also checked for consistency with the auditor's soil assessment results, and no additional issues were identified.



It was also observed during the audit that a field assessment for determining water quality risk had been conducted approximately 700 metres (m) from one of the coupes (C18). The Code provides no guidance on where field assessments need to be conducted in relation to the coupe, however it is the auditor's interpretation that field assessments should be conducted either within the coupe or on exposed soil profiles immediately adjacent the coupe. On this basis, a non-compliance was recorded for failing to conduct an appropriate water quality risk assessment. This was determined to have an EIA risk rating of No impact as the assessment that was used provided a result that was consistent with the auditor's assessment.

<u>Recommendation VF1:</u> It is recommended that VicForests reviews the consistency of application of its process for assessment of soil erosion hazard and water quality risk assessment. The review should include a focus on determination of soil dispersability and appropriateness of sampling location, to determine whether intervention such as further training or peer review would improve consistency of outcomes.

Priority: Low

Rough heaping was observed at 16 of the 18 VicForests coupes assessed. In all cases rough heaping was found to be compliant with the requirement to keep such material at least 3 m from relevant exclusions.

Buffers

Buffers were assessed as having been appropriately marked, retained and managed. All samples of buffers measured were assessed as being at least the minimum width and often wider than specified in the Code and harvesting activity, debris and machinery had been excluded. A total sample length of 4,600 m of buffers was assessed across the 14 VicForests coupes where buffers existed, with good compliance recorded (all found to have been retained intact to the minimum prescribed widths).

Buffers were found to be clearly marked in the field, appropriate to the waterway classification and water quality risk on site, and where applicable, appropriate for protection of biodiversity values and habitat. No trees were observed by the auditor to have been felled from within the buffer zones, with one exception, where two trees were felled from within a buffer zone to facilitate safe access to and from the waterway crossing (C9). The removal of these trees was documented in the coupe diary and approved by VicForests as required, so did not represent a non-compliance.

There were records in the coupe diaries of trees (C3, C4 and C17), a log-butt (C1) and a head of a tree (C9) having crossed boundaries into buffer zones. Evidence was provided to the auditor that the removal of these was authorised by the relevant VicForests Forest Officer. The auditor observed the sites and determined that no material impact had been caused to the values within the buffer zones. As such, these five incidents were not recorded as non-compliances.



There were also records in the coupe diaries of trees (C4, C5, C12, C13, C15, C16 and C18), a seed-tree (C10), heads (C2), a rootball (C2) and a log (C11) having crossed into exclusion zones (crossing over established boundary tapes). Evidence was provided to the auditor that the retrieval of this vegetation from the exclusion zones things had been considered by VicForests and authorised by the relevant VicForests Forest Officer. There were no sites observed by the auditor where this had resulted in a material impact to the values within the exclusion zones or neighbouring coupes. As such, these incidents on 11 of the audited coupes were not recorded as non-compliances.

Filters

Filters were applied in four of the 18 audited coupes and were assessed as having been managed appropriately, including meeting minimum width specifications and providing appropriate protection of biodiversity values and habitat. A total sample length of 800 m of filter was assessed across the four VicForests coupes, all of which was found to be marked correctly in the field and with soil and understorey disturbance generally having been minimised.

There was a record in a coupe diary (C14) of a fallen tree having crossed into a filter strip. Evidence was provided to the auditor that the removal of this tree was authorised by the relevant VicForests Forest Officer and that it was removed with no impact to the values within the filter zone. This incident was not recorded as non-compliance event.

Slopes

Based on guidance within Code section 2.4.2 *Road design*, the auditor determined that requirements for steep slopes were relevant to coupes with slopes greater than 20 degrees. The requirements were applicable for 14 of the 18 VicForests coupes audited (but not at C5, C7, C10 and C13). Management of harvesting on slopes of over 30 degrees was relevant for four coupes (C1, C2, C3 and C9).

The auditor notes as a positive observation VicForests' general practice of excluding areas with slopes over 30 degrees within coupes. With one exception (non-compliance described in Section 4.3.1.1 *Water Catchments* of this report), harvesting complied with the requirement to exclude operations from areas with slopes of over 30 degrees.

Fourteen non-compliances were associated with a systemic failure to assess potential for mass soil movement for coupes with steep slopes, as required by the Code (Section 2.2.1). No instances of mass movement were observed on any of the coupes where these non-compliances apply. The audit determined that the potential environmental impact of these non-compliances was minor.

Camp maintenance, fuel storage and waste disposal

Overall, VicForests' camp maintenance, fuel storage and waste disposal appears to have been managed appropriately, with the exception of one systemic issue relating to waste disposal. Auditing was however limited to criteria that could be observed following harvesting or through documentation. As harvesting was not actively occurring at any site during the audit, management of toilet wastes, machinery servicing and petroleum products could not be assessed. At one coupe (C9), evidence of environmental contamination could not be assessed due to a ground cover of snow throughout the coupe.



The audit team observed no obvious environmental pollution, waste oil, empty drums or discarded machinery parts associated with harvesting activities at any VicForests coupe. Litter was present on some coupes, however the general nature and location of this litter suggests it could have been deposited by persons other than those conducting timber harvesting operations. A systemic non-compliance was identified for VicForests against the Code requirement (Section 3.2.1) to ensure that waste oils, drums, discarded machinery parts and all other waste is removed to an approved disposal facility. There was no evidence that VicForests effectively communicates or enforces this requirement with timber harvesting contractors. The audit determined that the potential environmental impact of these non-compliances was Minor, in accordance with the descriptions in Section 3.4 of this report. However the auditor notes that this assessment is based on limited information as the fate of the waste is unknown. The auditor notes that a recommendation to address this issue was raised during the 2012/2013 audit (Sinclair Knight Merz, 2013).

Water catchments

Additional requirements apply to protect water supply catchments, with more onerous prescriptions for steep slopes, seasonal closures and stream buffer widths. These applied at eight of the 18 audited VicForests coupes (C1, C2, C3, C4, C13, C15, C16 and C17). One coupe (C17) had "Special Area Plan" requirements, as outlined in the Management Procedures (Schedule 7).

The audit identified two non-compliances. At coupe C1 approximately 0.1 hectares of harvesting occurred on a slope of between 30 and 35 degrees. This coupe is within the Upper Goulburn Catchment where a maximum slope limit of 30 degrees applies. The EIA risk rating was determined to be Negligible as the impacted area was small and located over 50 m from the nearest waterway. Vegetation recovery on the site is expected to occur within a short period which further reduces the risk of soil erosion and sedimentation.

In coupe C17, the Forest Coupe Plan did not reflect the maximum slope limit of 25 degrees associated with the Bunyip River Special Area Plan. A 'No impact' EIA risk rating applies as slopes occurring in the coupe (within the Bunyip River catchment) did not exceed 25 degrees.

Chemical contamination

VicForests confirmed during the audit that there were no instances of chemical use at any of the audited coupes. As the auditor found no evidence to contradict this information during the audit, requirements relating to chemical use were determined to be not applicable to the audit.

4.3.1.2 DEPI Forestry Services' coupes

Over three quarters of requirements in the *Water and soils* compliance element group were either found not to be applicable to DEPI Forestry Services activities in the Bendigo FMA or were not able to be assessed due to various reasons discussed further in this report. The majority of DEPI Forestry Services coupes in this FMA were relatively flat and did not occur within prescribed water catchments. The requirements that apply to steep slopes, water supply catchments and permanent and temporary streams were therefore not relevant.



A breakdown of DEPI Forestry Services' compliance with water and soils requirements is presented in **Table 4-5**. Because the total number of assessable compliance elements is low, the ratio of compliant to non-compliant requirements is significantly affected by two systemic issues found during the audit, specifically in relation to assessment of water quality risk; and removal of wastes from timber harvesting operations to an approved disposal facility.

Table 4-5 summarises the compliance findings for the Water and soils compliance element group.

COMPLIANCE ELEMENT	WATER AND SOILS							
	Overall	Waterways	Buffers	Filters	Slopes	Camp maintenance	Water catchments	Chemical contamination
Total compliance	31	22	NA	3	NA	6	NA	NA
Total non-compliance	17	10	-	1	-	6	-	-
Non-compliance EIA breakdown								
Severe	0	0	-	0	-	0	-	-
Major	0	0	-	0	-	0	-	-
Moderate	1	1	-	0	-	0	-	-
Minor	8	1	-	1	-	6	-	-
Negligible	8	8	-	0	-	0	-	-
No impact	0	0	-	0	-	0	-	-

Table 4-5Summary of compliance findings for the Water and soils compliance element
group - DEPI Forestry Services

Waterways

The audit inspected waterways and drainage depressions at all six coupes for compliance with waterway classification requirements. A total sample length of 2,055 m of waterways identified in Forest Coupe Plans was also assessed for compliance with protection requirements. Waterways requiring protection by buffers or filters were identified by the auditor in four of the six Bendigo FMA coupes (C21-24).

The auditor observed as a positive practice that DEPI Forestry Services had classified and protected drainage lines at three coupes (C21, C22 and C24) in accordance with definitions and prescriptions in the Code, rather than with the Management Procedures definition, which affords less protection.



Six non-compliances were associated with assessment of potential risk to water quality. The outcomes of water quality risk assessments were not documented in two coupe plans (C20 and C23). The audit found that DEPI Forestry Services determined soil erosion hazard ratings for four of the coupes (C19, C21, C22 and C24) based on visual inspection of the coupe for areas of active erosion. The Code requires that potential risk to water quality be determined through consideration of soil erodibility, soil permeability, rainfall erosivity, topography and location of coupe infrastructure.

DEPI Forestry Services' methodology does not consider soil permeability and rainfall erosivity, nor does it provide an overall water quality risk rating. Hence the coupes where this process was used were found to be non-compliant with the Code requirements for assessment of water quality risk.

The auditor applied the same methodology to assess soil erodibility and water quality risk in the Bendigo FMA as was used in auditing VicForests' coupes. The audit found higher subsoil erosion categories than were recorded in Forest Coupe Plans at three sites (C21, C22 and C24). Subsoils were generally found to range between moderate and high erosion classifications. These measurements are consistent with the instances of erosion observed in the audited coupes where the subsoil had been exposed. The auditor notes that DEPI Forestry Services was clearly aware of these risks and had taken the initiative to introduce several additional erosion control measures to minimise risks of further erosion. These include prohibiting construction of extraction tracks and blading off within coupes and prohibiting removal of trees within 10 m of active erosion points. The audit found DEPI's controls to be effective in preventing subsoil exposure during harvesting operations. It is therefore appropriate to use the topsoil water quality risk assessments to determine waterway protection mechanisms. The environmental impact score for the non-compliances were determined as Negligible.

The audit found three instances of inaccurate classifications of waterways. On one coupe (C21) a 50 m section of a waterway was not correctly classified as a drainage line. Although harvesting had not yet occurred adjacent to the waterway, the potential EIA risk rating was determined as 'Minor' to capture the potential/likely risk had the audit not identified the issue. The extent of any impact from harvesting would be likely to be limited and short to medium term recovery would be expected. At a second coupe (C23), 75 percent of one waterway and 18 percent of another were not classified correctly as a drainage line. A 30 m section of one drainage line was an active erosion gully with banks greater than 0.5 m high, which the Management Procedures specify requires protection through the creation of an exclusion zone. These non-compliances resulted in an EIA risk rating of Moderate due to the extent of the impact from harvesting and the erosion potential at this site. DEPI Forestry Services had recently updated the Forest Coupe Plan and marking for this coupe with accurate classifications in preparation for further harvesting.

Three filter width measurements at one coupe (C21) and one at another coupe (C24) were less than the required 10 metres from the edge of the waterway channel. Harvesting had not occurred in the surrounding area. The EIA rating for both coupes was assessed as Negligible to capture the likely risk had the audit not identified the issue. The extent of any impact from harvesting would be likely to be limited and short term recovery would be expected.

At another coupe (C22) filter widths could not be fully assessed due to the inability of audit team and DEPI Forestry Services staff to locate the waterway because the location did not match the position recorded on the map, and could not be located in the field.



The auditor notes that inaccurate mapping is potentially non-compliant with Forest Coupe Planning requirements specified in the Code to map areas within the coupe that are to be excluded from harvesting, or to which special prescriptions apply. As this compliance requirement was not within the scope of the audit, it has not been recorded as a non-compliance but should be addressed.

Buffers

The use of buffers to protect waterways applied at one coupe (C22). The audit team could not assess harvesting compliance with buffer requirements at this site as the buffer could not be located in the field due to mapping inaccuracies, as discussed in the *Waterways* section of this report (see above).

Filters

Waterway protection with filters applied at four of DEPI Forestry Services' audited coupes (C21 to C24). Compliance of harvesting operations with filter requirements could not be assessed at two coupes (C22 and C23) as harvesting had not yet occurred adjacent to the filters. Requirements to protect filters from rough heaping were not relevant for any of the operations in the Bendigo FMA.

Trees had been felled into filter strips at both coupes (C21 and C24). The auditor could not reliably determine whether the felling of trees into the filter was avoidable, as this would have required more detailed discussion with the forest produce licensee (the harvester). The auditor considers directional felling practices in and around filters to be an area for improvement due to the considerable numbers of trees observed to have been felled into marked filters.

At one coupe (C21) the auditor observed evidence consistent with an instance of unauthorised filter crossing by a small rubber-tyred tractor. The environmental impact score for this non-compliance was Minor due to the limited extent of the soil disturbance impact and high potential for recovery. Within the same filter, numerous instances of minor soil disturbance apparently linked to log removal were also noted. Given the high erodibility of subsoils in the area, consideration should be given to improving guidance on log removal practices when harvesting occurs in and adjacent to filters, to minimise soil disturbance.

<u>Recommendation DFS1</u>: It is recommended that DEPI Forestry Services considers providing specific guidance to forest product licensees regarding felling trees within and adjacent to filters to minimise the number of trees fallen into filters; and removal of logs from filters to minimise soil disturbance.

Priority: Low

Slopes

Requirements for management of steep slopes were not applicable for any of the audited coupes in the Bendigo FMA. No slopes greater than 20 degrees were present.



Camp maintenance, fuel storage and waste disposal

Overall, DEPI Forestry Services' coupes were found to be in compliance with half of the applicable *camp maintenance, fuel storage and waste disposal* criteria. Auditing was however limited to criteria that could be observed following harvesting or through documentation. As harvesting was not actively occurring at any site during the audit, management of toilet wastes, machinery servicing and petroleum products could not be assessed.

The auditor observed no obvious environmental pollution, waste oil, empty drums or discarded machinery parts associated with harvesting activities at any coupe. Litter was present on some coupes, however the general nature and location of this litter suggests it could have been deposited by persons other than those conducting timber harvesting operations.

A systemic non-compliance was identified across all audited coupes around the requirement to take waste oils, drums, discarded machinery parts and all other waste to an approved disposal facility. There was no evidence that DEPI Forestry Services has effectively communicated or enforced with timber harvesting licensees the Code requirement (Section 3.2.1) to use an approved disposal facility.

The audit determined that the potential environmental impact of these non-compliances was Minor, in accordance with the descriptions in Section 3.4 of this report. However the auditor notes that this assessment is based on limited information as the fate of the waste is unknown. The auditor notes that a recommendation to address this issue was raised during the 2012/2013 audit (Sinclair Knight Merz, 2013).

Water catchments

No relevant water catchment prescriptions applied to the audited coupes.

Chemical contamination

Chemical contamination requirements were relevant for one audited coupe. At this coupe (C22), DEPI Forestry Services advised that the harvesting licensee was using Phytoclean (active ingredient 100g/L Benzalkonium chloride) as a precaution to prevent the spread of Phytophthora during harvesting operations. Instructions within the Forest Coupe Plan instruct the licensees when to apply chemical, but provide no further direction on following the label or relevant provisions in the *Catchment and Land Protection Act 1994* or the *Agricultural and Veterinary Chemical (Control of Use) Act 1992*. As there were no harvesting operations current during the audit and no records of how and when the chemical had been used, compliance of chemical use with label instructions or provisions could not be assessed. The auditor considers documenting instructions for chemical use, particularly regarding management of risks to aquatic fauna, to be an area for improvement.

4.3.1.3 Potential improvements to the regulatory framework

<u>Recommendation REG1:</u> As discussed under the *Waterway crossings, Waterway classification* and *Water quality risk* headings, the auditor notes some interpretation is required in assessing compliance with the requirements set out in Section 2.2.1 of the Code for field assessments to be used to determine water quality risk. It is recommended that guidance be provided on the location of such field assessments in relation to the coupe and on selecting the appropriate soil horizon to use in determining water quality risk.



Priority: Medium

<u>Recommendation REG2</u>: As discussed in the *Slopes* section, a degree of interpretation is required to determine where requirements for steep slopes apply as the Code and Management Procedures do not provide a definition of 'steep slopes'. The auditor recommends that 'steep slopes' be defined.

Priority: Medium

4.3.2 Biodiversity

4.3.2.1 VicForests' coupes

Operations were generally assessed to be in compliance with biodiversity conservation prescriptions, with good practices identified in conservative marking of rainforest boundaries, and working with DEPI to detect evidence of Myrtle Rust in regeneration coupes. The five instance of non-compliance were all in relation to forest health requirements.

Despite high levels of compliance with prescriptions, the audit identified some areas for potential improvement in the regulatory framework to reduce the risk of environmental harm related to the identification of threatened flora and disease risk assessments.

Table 4-6 summarises the compliance findings for the *Biodiversity conservation* compliance element group.

COMPLIANCE ELEMENT	BIODIVERSITY					
	Overall	Planning and management	Forest health	Rainforest	Old growth	Threatened species
Total compliance	153	33	75	31	NA	14
Total non-compliance	5	0	5	0	-	0
Non-compliance EIA breakdown						
Severe	0	-	0	-	-	-
Major	0	-	0	-	-	-
Moderate	3	-	3	-	-	-
Minor	0	-	0	-	-	-
Negligible	2	-	2	-	-	-
No impact	0	-	0	-	-	-

Table 4-6 Summary of compliance findings for the *Biodiversity* compliance element group – VicForests



Planning and management

All applicable measures relating to planning and management across the audited coupes were assessed as having been implemented appropriately. These measures included protection of exclusion areas from the impacts of prescribed burns and application of the regulatory requirements for the conservation of biodiversity values.

It was found that wildlife corridors provided along waterways to facilitate the movement of fauna within and between coupes met the prescriptions as required in the Central Highlands FMP and the Code.

It was assessed that habitat tree retention was fully compliant with specified requirements in 16 of the 18 coupes audited, with the trees protected from harvesting activities. Habitat trees were generally retained in groups at the edges of coupes, within areas of rocky outcrop where harvesting would be difficult, and were also scattered across the coupe as individual trees. Adequate numbers of habitat trees were found to have been retained at all of the relevant coupes (this element was not audited at coupe C7, which had been reopened for use of the landing by an adjacent coupe, and there was no requirement to retain habitat trees at C8, as this was a roadline coupe, where permanent removal of vegetation occurs to facilitate road construction).

The Code prescriptions also require that all practical measures are to be taken to protect exclusion areas from prescribed burning operations. There was one instance (C15) where a prescribed burn crossed the coupe boundary within a rocky area, and burnt into an adjoining forested area. The result of this was that less than one hectare of understorey vegetation (classified as General Management Zone) was burnt in the adjoining area. The auditor accepts that VicForests took all reasonably practicable measures to contain the burn in this instance, including planning the ignition pattern and construction of a mineral earth firebreak along the coupe boundary.

The Code requires that any control of wildlife causing damage to the forest complies with the provisions of the *Wildlife Act* 1975. VicForests advised the auditor that there had not been significant damage to vegetation by wildlife; and that control measures had not been required on the audited coupes and were generally not carried out within the audited FMAs. This advice was supported by site observations during the audit, with no visual evidence of significant wildlife browsing or damage at any of the audited coupes.

Forest health

The majority of the applicable measures intended to maintain forest health across the audited coupes were assessed as having been implemented appropriately. Applicable measures included identification of noxious weeds and prevention of their spread; identification of soil pathogens and prevention of their spread; and the control of Myrtle Wilt disease caused by the fungus *Chalara australis*. Low levels of noxious weeds were observed by the audit team at the coupes audited, which generally matched the levels reported by VicForests. The auditor assessed that weed management plans, as prescribed by the Management Procedures (Section 1.3.9) were not warranted.

Good practice was identified in VicForests' recently initiated practice of systematically collecting observations about the presence or absence of Myrtle Rust during regeneration surveys and submitting this data to DEPI's Senior Plant Pathologist; who advised the auditor that the disease has not yet been detected in Victoria's forests.



Non-compliances were identified in relation to a systematic failure to identify the presence of, or risk of occurrence of, Phytophthora within State forest areas as required by the Code (Section 2.3.4, identify "known risks") relevant to five coupes; and two instances where washdown procedures were required but had apparently not been implemented.

No records of cleaning of machinery for any coupes, other than ticks against an item (Q100) on the monthly *Coupe Monitoring checklist*, were identified; therefore this assessment is based on limited information. VicForests' *Noxious Weeds, Disease and Pest Management* policy states that "*Foresters must direct contractors to wash down machinery when moving machinery out of any forest area suspected or confirmed to be infected with PC (Phytophthora cinnamomi) or other weeds and diseases*". It was not clear to the auditor how VicForests ensures that all machinery is cleaned between coupes as VicForests advised that the process for wash-down is generally managed by the contractors.

There were two coupes (C4 and C18) where wash-down procedures were identified in the Forest Coupe Plan file as being required in the pre-harvest coupe reconnaissance, but where the wash-down requirement in the Coupe Monitoring Record completed at final clearance was recorded as 'N/A'. It is unknown if the pre-harvest reconnaissance identified wash-down requirements as being necessary for the control of Phytophthora, noxious weeds, or both. The incidence of noxious weeds at both coupes was low (less than 1% cover) (see below for details). An EIA risk rating of Negligible applies to these non-compliances, reflecting the relatively low risk of machinery spreading noxious weeds from these coupes (with observed low rates of weed infestation).

The Code requires that, "Where there is a known risk of introducing or spreading pest plants, pest animals and pathogens to a forest (for example, but not limited to Armillaria or Phytophthora), precautions must be taken and the risk minimised through appropriate treatment of equipment when moving from known infested areas." (Code, Section 2.3.4). At the time of audit there was little evidence that VicForests had undertaken an adequate assessment of the risk of introducing or spreading Phytophthora within the coupes assessed. Although there is no explicit requirement to undertake a risk assessment, the auditor considers that a risk assessment would inform what, if any, action is required to minimise the risk. Refer also to Recommendation REG5 in Section 4.3.2.3.

The auditor notes that the apparent deficiencies in risk assessment may be symptomatic of the paucity of readily available information on the current risk status or known locations of Phytophthora infestations. Discussions with DEPI's Senior Plant Pathologist found that although a lot of information has been generated over many years and that some DEPI district personnel have good local knowledge, there is a general lack of readily available information on known locations of Phytophthora. The Senior Plant Pathologist advised that to help address this deficiency, DEPI is developing a draft risk map as part of a broader effort to publish tools that will assist land managers to identify and manage disease risks. He advised that the intention is to publish the map and accompanying detailed procedural information during 2014 or early 2015. He also advised that the map is able to be used on the Department's intranet at an appropriate scale to identify coupe locations; but that the maps are draft versions and have only recently been made available to VicForests as part of the review process. The auditor notes that the draft map provides indicative risk of vegetation loss through infection by Phytophthora, based on a range of site and species factors, but does not explicitly show known infested areas. Therefore consultation with and/or training by DEPI's Senior Plant Pathologist would be needed to assist in interpreting the map and understanding its value and limitations.



During the audit the DEPI Senior Plant Pathologist provided a copy of the draft map to VicForests showing the location of four quarries used to source road construction materials. The risks associated with Phytophthora and road construction are reviewed in Section 4.3.4.1 *Roading*.

The Audit found that there is a general weakness in the area of systematic health assessment and identification of disease risk at an operational level. The auditor's review of the draft risk maps found that 15 of the 18 coupes were located in areas where there was no predicted risk of vegetation loss through infection by Phytophthora; and three coupes were located in or adjacent to moderate risk areas (C16, C17 and C18). Non-compliances were identified for these three coupes due to the absence of assessment of risk of spreading the pathogen and lack of evidence of implementation of specific control measures to minimise the risk. Potential environmental impact was assessed as Moderate, in accordance with the descriptions in Section 3.4 of this report. No signs of dieback consistent with Phytophthora were noted at any of the coupes during the audit.

Myrtle Wilt disease was not recorded in any of the coupes audited. All Myrtle Beech (*Nothofagus cunninghamii*) identified were retained in buffer zones and exclusion areas and there was no apparent damage to these trees or signs of machine activity within close proximity.

VicForests advised during the audit that there were no instances of new or unknown exotic agents being introduced to its operational sites. This advice was supported by site observations during the audit, with no visual evidence of new or unknown exotic agents being introduced at any of the coupes audited.

<u>Recommendation VF2</u> – It is recommended that VicForests establishes a systematic disease risk and health assessment program for coupes to be harvested, in consultation with DEPI forest health specialists, and include specific assessment of risk of Phytophthora using the most current version of DEPI's Phytophthora risk map as appropriate.

Priority: High

Rainforest

Rainforest, rainforest EVCs (including Cool Temperate Rainforest, Damp Forest and Wet Forest), modelled Rainforest Sites of Significance (RSOS), and EVCs identified as being associated with rainforest (including Montane Riparian Thicket) were all identified as potentially being found within, or adjacent to coupes in 12 of the 18 Forest Coupe Plans reviewed (C2-4, C6, C9, C11, C12 and C14-18). In all cases where they existed, these communities were appropriately identified in the coupes and protected from the impacts of harvesting through the application of appropriate buffers.

Buffer requirements for modelled rainforest, or rainforest associated EVCs (as identified on DEPI GIS spatial layers during the coupe planning process) had been appropriately applied to all sites. Rainforest, as defined by FFG Act Action Statement No. 238 as an ecologically closed (>70% projective foliage cover) broad-leaved forest vegetation with a continuous rainforest tree canopy of variable height, and with a characteristic diversity of species and life forms was not observed by the audit team during the audit at any coupes outside of the areas identified and protected by VicForests. There were no instances of machinery disturbance to, or harvesting of rainforest detected.



The auditor notes as a positive observation that there were three coupes (C3, C4 and C18) with protected areas established by VicForests that were identified as supporting rainforest flora taxa, but which did not meet the FFG Action Statement No. 238 definition of rainforest. These areas were buffered and excluded from harvesting activities as a precautionary approach. Similarly, there was an area in C12 that supported Montane Riparian Thicket flora taxa that was also buffered and excluded from harvesting activities, despite the area not technically meeting the classification as a Montane Riparian Thicket EVC remnant, as detailed in the DEPI *EVC/Bioregion Benchmark for Vegetation Quality Assessment* (DSE, 2004a).

Old Growth Forest

DEPI has established a GIS database that outlines the location of modelled old growth forest, Old growth forest, defined under the Management Procedures as *forest which contains significant amounts of its oldest growth stage in the upper stratum – usually senescing trees – and has not been subjected to any disturbance, and if so the effect of which is now negligible* (Section 1.4.7), was not modelled in the DEPI GIS spatial layers as likely to be present within any of the audited coupes.

Old Growth Forest was not identified as being present at any of the coupes assessed, and therefore none of the related audit criteria were applicable.

Threatened species - fauna

Among the coupes audited, it was assessed that appropriate measures had generally been implemented to protect significant habitat for threatened species; in particular (among others) Barred Galaxias (Galaxias fuscus), Spotted Tree Frog (*Litoria spenceri*) and Leadbeater's Possum (*Gymnobelideus leadbeateri*). Regulatory requirements include the identification and the establishment of exclusion zones; and observance of other relevant FFG Act Action Statement requirements.

The audit identified weaknesses in the existing regulatory documents and the auditor has made some recommendations for improvement.

VicForests demonstrated that it has a procedure for the identification of Leadbeater's possum zone 1A habitat and 1B habitat categories, as defined under the FFG Act Action Statement No. 62 for the Leadbeater's Possum (*Gymnobelideus leadbeateri*), and Table 3.2 of the Central Highlands FMP. VicForests' also highlighted that its operational personnel involved in coupe planning and establishment have also undergone training to identify and classify habitat in the field. The application of this process was assessed at one coupe (C18) where habitat was independently assessed by DEPI staff who had added three potential zone 1A habitat trees (mature Mountain Ash) to the initial exclusion zone established by VicForests' Leadbeater's Possum habitat assessment procedure was also assessed by the audit team at nine other coupes (C2, C3, C4, C6, C9, C13, C14, C16 and C17) and was found to have been implemented adequately.



VicForests had identified Leadbeater's Possum 1A habitat at three coupes (C3, C9 (also a slope exclusion area) and C18) and set these areas aside in exclusion zones. These zones had also been incorporated into VicForests' "Reserves spatial layer" for future rezoning as Special Protection Zone for long-term conservation, as required. However, there was no clear and robust process evident for reporting threatened species information detected at coupes and requiring zoning amendment, to DEPI (responsible for administering and implementing forest zoning changes).

<u>Recommendation REG3</u>: It is recommended that DEPI develops, in consultation with VicForests, a robust process for the reporting of threatened species information that has been detected by VicForests and requires zoning amendment.

Priority: Low

Catchments supporting Barred Galaxias (Galaxias fuscus) and Spotted Tree Frog (*Litoria spenceri*) were also found to have been identified in the GIS spatial layers and in the Forest Coupe Plans for five audited coupes (C2, C3, C4, C5 and C12). Buffer prescriptions and the application of exclusion zones for these taxa were found to be applied in accordance with the relevant FFG Action Statements and the Central Highlands FMP.

Additional fauna taxa of significance that were identified on Forest Coupe Plans as potentially present on one or more audited coupes included Long-footed Potooroo (*Potorous longipes*), Powerful Owl (*Ninox strenua*), Sooty Owl (*Tyto tenebricosa*) and White-bellied Sea-Eagle (*Haliaeetus leucogaster*). For these taxa, the audit found that VicForests had appropriately determined that these values were not present on the audited coupes and no additional specific management actions were required for their protection. The audit found that there are no records in the Victorian Biodiversity Atlas within the audited coupes for Long-footed Potoroo. This species is considered to be restricted in Victoria to two sub-populations: one in East Gippsland and the other straddling the Great Dividing Range in the upper Ovens, Buckland, Buffalo and Wonnangatta catchments (FFG Action Statement No. 58). It is considered unlikely to be found within the surveyed area, and therefore unlikely to be impacted by harvesting operations within the coupes audited.

Habitat for Powerful Owl, Sooty Owl and White-bellied Sea-Eagle has been retained within Special Protection Zones established by DEPI in the forest zoning scheme. These highly mobile species are also considered unlikely by the auditor to be significantly impacted by the harvesting operations within the coupes audited.

Threatened species - flora

Threatened flora such as Tree Geebung (*Persoonia arborea*), Notched Phebalium (*Leionema bilobum*), Pink Bells (*Tetratheca stenocarpa*), Forest Phebalium (*Phebalium squamulosum*) and a hybrid Pittosporum (*Pittosporum bicolor x undulatum*) were identified on a number of the audited coupes using the Victorian Biodiversity Atlas spatial layer and from field observations by VicForests staff during coupe reconnaissance and establishment. The locations of these taxa were identified in the Forest Coupe Plans as required by the Code and individuals identified on site were found to have been protected in exclusion zones in accordance with Appendix J of the Central Highlands FMP.



The auditor notes that there are discrepancies between the Central Highlands FMP Appendix J management prescriptions, and VicForests' *Operating Procedures Regulatory Handbook* (September 2013, Version 1.4) Appendix 2 management prescriptions. For example, Slender Tree-fern (*Cyathea cunninghamii*) – Listed on the FFG Act, and Vulnerable in Victoria - is listed in Appendix J as "Not recorded on State forest. If found, protect individuals where possible"; and in Appendix 2 as "No Further Action. Protection is provided in current Reserve System." This is identified as an area for improvement. The auditor notes that where a threatened flora taxon was identified in the desktop assessment for audited coupes, the management prescriptions applied were in accordance with Appendix J of the Central Highlands FMP, rather than reliance on the internal document.

The Audit found that the current searching methodologies used by VicForests to identify threatened flora appeared to be adequate when detecting taxa in the field that had already been identified as present or potentially present during database searches. However, surveys for threatened flora conducted by VicForests as part of the coupe reconnaissance process and in determining alignments for new roads and landings (see Section 4.3.4.1 *Road planning*, for details) rely largely on pre-identification of target species from the GIS spatial layers. The primary database for this is the Victorian Biodiversity Atlas (VBA) database. The auditor noted that searches for threatened fauna often also include the use of DEPI data that incorporates modelled habitat.

The VBA database is limited in its usefulness for some threatened taxa, particularly flora, as it is only based on actual records of species that have been recorded from searches conducted. The intensity of searches and interest in various target species varies across species and localities. The auditor noted that records are generally more comprehensive for fauna species than for flora. Furthermore, the integrity and utility of the VBA database are reliant on the locations of records being entered accurately and precisely. In the case of particularly rare or threatened flora, or in in the case of flora that are actively collected for commercial trade, the locations of records may be entered at a catchment level rather than as a specific location.

VicForests' standard procedure to search coupes for flora values mapped within 500 m of the coupe may therefore miss values that are mapped at the catchment level (as they may be recorded more than 500 m from the coupe).

The current reliance on the VBA presents a risk that threatened flora present on a coupe are not identified as part of the desktop assessment process, and are therefore not actively searched for during the pre-harvest reconnaissance or in determining new road alignments or landing locations (see also Section 4.3.4.1 *Road planning*). Desktop searches over a broader area, and/or the use of modelled habitat would be expected to reduce this risk.

The auditor understands that DEPI has recently produced over 1,500 threatened flora and fauna models for the purpose of identifying offset requirements under the recently gazetted (December 2013) *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy⁴. Whilst these models were not developed for the purpose or use in a forestry context; they may contain information that is applicable. VicForests currently use modelled habitat data for a number of threatened fauna species, but not for threatened flora.

⁴ <u>http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations</u> 43283795/01/04



<u>Recommendation VF3</u> – It is recommended that VicForests extends its desktop searches for threatened flora values beyond 500 m from the coupe to the broader catchment or landscape level, until such time as threatened flora models are deemed appropriate for use in this context (refer to Recommendation REG4).

Priority: High

The audit has also made recommendations (refer to Section 4.3.2.3 of this report) to revise outdated species lists, conservation status and management actions in the Central Highlands Forest Management Plan (FMP).

4.3.2.2 DEPI Forestry Services coupes

The compliance elements relevant for audit of the coupes managed by DEPI Forestry Services in the Bendigo FMA coupes were *Planning and management; Forest health;* and *Threatened species.* The compliance elements of *Rainforest* and *Old growth* were not applicable to the audited coupes due to the absence of these values in the coupes.

Table 4-7 summarises the compliance findings for the *Biodiversity* compliance element group.

Table 4-7	Summary of compliance findings for the Biodiversity compliance element group -
	DEPI Forestry Services

COMPLIANCE ELEMENT BIODIVERSITY						
	Overall	Planning and management	Forest health	Rainforest	Old growth	Threatened species
Total compliance	9	6	0	NA	NA	3
Total non-compliance	6	0	6	-	-	0
Non-compliance EIA breakdown						
Severe	0	-	0	-	-	-
Major	0	-	0	-	-	-
Moderate	0	-	0	-	-	-
Minor	0	-	0	-	-	-
Negligible	0	-	0	-	-	-
No impact	6	-	6	-	-	-



Planning and management

The one Code prescription in the *Planning and management* compliance element applicable to the audited coupes was in relation to the planning and management of habitat trees. The audit found that the prescribed number and size classes of habitat trees, as defined in the Bendigo FMP, had been retained at all six coupes.

DEPI Forestry Services advised during the audit that there had not been significant damage to vegetation by wildlife and that control measures had not been required on the audited coupes and were generally not carried out within the audited FMA. This advice was supported by site observations during the audit, with no visual evidence of significant wildlife browsing or damage at any of the coupes.

Forest health

One prescription relating to forest health was relevant to the DEPI Forestry Services coupes. A systemic issue, which accounted for all non-compliances relating to forest health, was identified across all six coupes resulting from lack of evidence to demonstrate that pre-harvest weed surveys had been undertaken.

The audit found that pre-harvest weed assessments were not undertaken for any of the six audited coupes. EIA ratings were determined as No impact for all coupes, as no weeds of significance were observed during the audit.

DEPI Forestry Services has used the draft risk map produced by DEPI to assess the risk of transmission of Phytophthora at each coupe. DEPI Forestry Services has also developed a draft standard operating procedure, which includes brushdown / washdown and application of fungicide, for the management of harvesting operations where Phytophthora is assessed as a risk.

None of the audited coupes were assessed by DEPI Forestry Services as presenting either a High, Moderate or Low risk of Phytophthora transmission. These findings were confirmed by the auditor's review of the draft risk map. No signs of dieback consistent with Phytophthora were noted during the audit.

While acknowledging that efforts were made to assess risk on the six audited coupes, there still appears to be a general weakness in the area of systematic health assessment and identification of disease risk at an operational level, perhaps in part due to the absence of readily available tools or methodologies to assess and manage risk systematically. Records of risk findings had also not been recorded in Forest Coupe Plans or files.

<u>Recommendation DFS2</u> – It is recommended that DEPI Forestry Services establishes a systematic disease risk and health assessment program for coupes to be harvested, in consultation with DEPI forest health specialists, including assessment of risk of Phytophthora using DEPI's draft risk map as appropriate.

Priority: High

Regardless of the risk mapping, due to the presence of a threatened flora species that is susceptible to Phytophthora adjacent to one of the coupes, DEPI Forestry Services implemented hygiene controls during harvesting on that coupe (C22). This issue is discussed further in the *Threatened species* section of this report.



DEPI Forestry Services also has a management procedure for Armillaria (*Armillaria luteobubalina*) within the Mount Cole State Forest. Bendigo Forest Officers have been trained in detection surveys, although the risk of the presence of the pathogen in the area is considered low.

Threatened species

DEPI Forestry Services correctly identified known locations of threatened fauna species at three coupes and threatened flora species adjacent to three coupes, based on the Victorian Biodiversity Atlas spatial information. Two of the three audit criteria relevant to provisions for threatened species were applicable to three of the audited coupes (C21, C22 and C24). The criteria related to compliance with FFG Action Statements and inclusion of relevant requirements in the Forest Coupe Plan. The criterion regarding exemptions to the FFG Act requirements was not applicable to the audited coupes.

The audit found that Forest Management Plan and Action Statement prescriptions had been implemented appropriately for the threatened species Swift Parrot (*Lathamus discolor*) on two coupes (C21 and C22) and Brush-tailed Phascogale (*Phascogale tapoatafa*) on two coupes (C22 and C24).

DEPI Forestry Services had also identified that hygiene controls for the minimisation of the risk of spread of Phytophthora were required on one coupe (C22), due to the presence of a threatened flora species, Scented bush-pea (*Pultenaea graveolens*), in an adjacent area. The audit team was not able to verify whether the controls had been implemented appropriately, as harvesting was not occurring at the time of the audit and there were no records of implementation or monitoring.

The auditor suggests keeping records of implementation of Phytophthora hygiene controls and monitoring of implementation by DEPI Forestry Services as areas for improvement.

The Audit found that the current searching methodologies used by DEPI Forestry Services appeared to be adequate when detecting threatened species in the field that have been identified as present or potentially present during database searches. Identification of significant flora and fauna values rely in part on pre-identification of target species from the Bendigo FMP and the VBA; however there has also been support from DEPI's biodiversity specialists during the review of the Wood Utilisation Plan (WUP) and when required to address specific queries from DEPI Forestry Services.

The VBA database is limited in its usefulness in detecting threatened taxa, particularly flora. This is because it is based on actual records of species arising from searches; and the intensity of searches and interest in target species has varied across localities, resulting in generally more comprehensive records for fauna species than for flora. Furthermore, the integrity and utility of the VBA database are reliant on the locations of records being entered accurately and precisely. DEPI Forestry Services has access to a restricted dataset that contains higher quality location data for some species than the publicly available data, which helps to counter some areas of weakness. DEPI Forestry Services' advised that its procedure for the audited coupes was to search the coupe for flora values mapped within 1 km of the coupes and for fauna values within 2 km of the coupes, which may miss values mapped at a catchment level more than these distances from the coupe.



Under the current reliance on the VBA, there is a risk that there may be threatened taxa present on a coupe that have not been identified as part of the desktop assessment process, and which are therefore not being actively searched for during the pre-harvest planning. Desktop searches over a broader area, and/or the use of modelled habitat would be expected to reduce this risk.

<u>Recommendation DFS3</u> – It is recommended that DEPI Forestry Services extends its desktop searches for threatened flora and fauna values beyond 1 and 2 km respectively from the coupe to the broader catchment or landscape level, until such time as threatened species models are deemed appropriate for use in this context (refer to Recommendation REG4).

Priority: High

The auditor also notes that, at the time of the audit, there appeared to be close collaboration between DEPI Forestry Services staff and DEPI biodiversity specialists within the Bendigo office in identifying and managing for threatened taxa, however office and field-based procedures for detection of values are not well documented. The auditor understands that how the DEPI Forestry Services group will be managed in the future is still to be determined by DEPI, and that staff changes have occurred since the audit field work was completed.

<u>Recommendation DFS4</u> – It is recommended that DEPI Forestry Services documents its procedures for office and field based detection of environmental values, in consultation with DEPI biodiversity specialists.

Priority: High

4.3.2.3 Potential improvements to the regulatory framework

As discussed in Sections 4.3.2.1 and 4.3.2.2, the auditor understands that DEPI has recently produced over 1,500 threatened flora and fauna models for the purpose of identifying offset requirements under the recently gazetted (December 2013) *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy⁵. These models may be applicable or provide a basis to better inform modelled habitat for threatened flora.

<u>Recommendation REG4</u> – It is recommended that DEPI reviews threatened flora and fauna models developed in association with the *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy to assess the applicability for forestry applications; and if appropriate, they be made available for use by VicForests and DEPI Forestry Services.

Priority: High

The auditor notes that Appendix J of the Central Highlands FMP was compiled 16 years ago (1998). The Flora Information System (FIS) database (1995) is cited as the source for records. The FIS has been superseded by the VBA and the conservation status of some of the flora listed has since been revised. For example, Crimson Spider Orchid (*Caladenia concolor*) is listed in Appendix J as vulnerable at a State level. The conservation status of this species has been elevated to Endangered at a State level, it is now also listed as Vulnerable at a Federal level. There are other, similar examples, including (but not limited to) Tree Geebung (*Persoonia arborea*) elevated to Vulnerable at a State level, and Slender Tree-fern (*Cyathea cunninghamii*) also elevated to Vulnerable conservation status at a State level. The conservation status, and the data source, of flora identified in Appendix J are now out-dated.

⁵ <u>http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations</u> 43283795/01/04 42



Similarly, the audit team identified outdated data in Appendix K of the Central Highlands FMP. Discrepancies include that the conservation status of Smoky Mouse (*Pseudomys fumeus*) has changed to being Endangered at a Federal level, FFG-listed, and Near Threatened at State level; but shown in Appendix K as Vulnerable.

Furthermore, the Code requires that "Forest management planning and all forestry operations must comply with measures specified in relevant Flora and Fauna Guarantee Action Statements and Flora and Fauna Guarantee Orders." The auditor notes that Action Statements or Guarantee Orders have not yet been developed for many threatened species. In the absence of Action Statements, the management prescriptions in the FMP need to be reviewed and amended to ensure they are adequate and current - to reflect the current conservation significance status of each species.

Recommendation REG5 – It is recommended that the Central Highlands FMP be updated to:

- Ensure that Appendix J and K include all current FFG listed taxa and threatened taxa on the DEPI Advisory List, including but not limited to, VBA entries since 1995;
- Update the conservation status of all taxa in Appendix J and K to reflect the DEPI Advisory list and/or the EPBC Advisory list; and
- Update the management prescriptions to align conservation efforts with current conservation significance status.

The auditor notes that VicForests and DEPI Forestry Services may need to reassess the suitability of their on-ground species detection methodologies to ensure they are appropriate for detection of all target species. Changes required may include additional training; more targeted field methodologies; searching by specialists; and seasonal searches.

Priority: High

<u>Recommendation REG6</u> – Although the Management Procedures contain prescriptions for management of spread of pathogens from areas of known risk, there is no explicit requirement to undertake a risk assessment to determine risk.

It is recommended that the Code or Management Procedures be amended to include a requirement to assess the risk of spread of pathogens.

Priority: High

4.3.3 Operations

The *Operations* audit criteria address Code and Management Procedure prescriptions pertaining to the cessation of machinery operations during wet conditions and seasonal closures; containment of harvesting to within coupe boundaries; protection of excluded areas; and the harvesting of minor forest produce. Six of the audit criteria (Criteria 5, 7, 9, 11, 14, 15) relating to records of the cessation of operations (listed in dot points below) were not assessed because the auditor considered the criteria may provide a biased measure of compliance – because, for example, records of harvesting having ceased due to wet conditions had been produced; however, it would be unlikely that records would have been generated had harvesting continued and not been detected by VicForests or DEPI Forestry Services. Instead, compliance with the Code and Management Procedure prescriptions was determined based primarily on the audit criteria that consider site observations (Criteria 6, 8, 10, 16).



Specifically, the criteria that were unable to be assessed in a balanced manner were: the presence of records to demonstrate:

- Suspension of timber harvesting operations that involve machine traffic when significant rutting is likely to be caused (unless actions are taken to reduce the risk such as cording and matting);
- Suspension of timber harvesting operations when water begins to flow along tracks, threatening water quality or soil values (unless appropriate remedial actions are taken to protect those values);
- Suspension of landing operations when continuation would result in significant deterioration of the landing surface such as soil mixing and compaction;
- Suspension of timber harvesting at the request of an Authorised Officer;
- Suspension of timber harvesting when flooding is present; and
- Closure of roads in persistent wet or dry conditions that pose a threat to water quality.

4.3.3.1 VicForests coupes

The criteria relating to operations were assessed as having been generally managed appropriately, with two instances of non-compliance identified.

Table 4-8 summarises the compliance findings for the Operations compliance element.

Table 4-8 Summary of compliance findings for the Operations compliance element -VicForests

COMPLIANCE ELEMENT	OPERATIONS
Total compliance	131
Total non-compliance	2
Non-compliance EIA break	down
Severe	0
Major	0
Moderate	0
Minor	2
Negligible	0
No impact	0
Not assessable	0

VicForests and its contractors have been proactive in using coupe diaries to record trees felled across coupe boundaries. Fourteen of the 18 coupes audited had coupe diary notes relating to trees having slid or been fallen across coupe boundaries, all of which were judged by VicForests to have occurred accidentally. Given the steepness of the terrain and forest types involved, the auditor considers that this is generally a reasonable assessment.



Exclusion areas and boundaries were found to have been appropriately excluded from harvesting activities in all but one instance, which is discussed in this section of the report below. Seven of the coupes adjoined SPZ and one contained SMZ within the coupe boundary, all of which were found to have been managed appropriately.

A non-compliance relating to machinery operating outside a coupe boundary was identified (C13), with an EIA rating of Minor. VicForests had previously been notified of the issue by the contractor and had followed up with an investigation, notification of DEPI, and implementation of a procedural change with the aim of preventing a recurrence. At the time of the audit, there was minimal soil disturbance, no overstorey vegetation had been impacted and the understorey species were beginning to re-establish. The area outside the coupe boundary that was impacted was classified as General Management Zone and was a dozer-width track of about 200 m in length.

On 16 of the 18 coupes audited, there was no visible evidence of use of snig tracks or landings in wet conditions. On a roadline coupe (C8) observations of the snig tracks were unable to be made due to the road having been constructed where the snig track had previously been.

The audit found one instance of apparent use of landing in wet conditions (C4), resulting in soil mixing and compaction. This non-compliance was assessed as having a Minor EIA. Topsoil had also not been removed from this landing prior to use. This issue is discussed further in Section 4.3.5.1 *Landings* of this report.

Five of the coupes were subject to seasonal closures and all were found to be compliant with the relevant restrictions.

There was no evidence observed of harvesting of minor forest produce or ferns from any of the audited coupes.

4.3.3.2 DEPI Forestry Services coupes

The criteria relating to operations were assessed as having been managed appropriately on the audited coupes, with no non-compliances identified.

Table 4-9 summarises the compliance findings for the Operations compliance element.



Table 4-9 Summary of compliance findings for the Operations compliance element – DEPI **Forestry Services**

COMPLIANCE ELEMENT	OPERATIONS
Total compliance	35
Total non-compliance	0
Non-compliance EIA break	down
Severe	-
Major	-
Moderate	-
Minor	-
Negligible	-
No impact	-

There was no evidence during the audit to indicate operations had been conducted during wet or persistently dry conditions that would threaten water quality. None of the coupes were subject to seasonal closure requirements. No soil damage was evident during the audit to indicate continuation of operations during wet conditions.

One coupe (C20) had adjacent SPZ, which was found to have been appropriately excluded from harvest activities; and three coupes (C21, C22 and C23) had areas of SMZ within the coupe area, all of which had been appropriately managed.

Firewood, classified as minor forest produce by the Management Procedures, was being harvested as part of a commercial operation on three of the audited coupes (C19, C22 and C23). Harvesting of firewood is compatible with the Bendigo Forest Management Plan, which states "Firewood availability is an important issue, with the Box-Ironbark forests and woodlands playing a significant role in meeting local community heating and cooking needs. Firewood can continue to be supplied from integrated harvesting operations (i.e. in conjunction with sawlog harvesting) and thinnings undertaken for future sawlog production and for ecological purposes."6

The audit has assessed the commercial firewood harvesting (which is limited to live trees) as generally being compatible with SMZ plan objectives; not compromising forest health; and having a silvicultural purpose in achieving a target basal area, as required by the Management Procedures.



4.3.4 Roading

4.3.4.1 VicForests coupes

Roading was generally found to have been managed appropriately during the audit, with audited coupes assessed as compliant with 87 percent of applicable requirements. Of note were the good practices observed around re-use of previous temporary road alignments, minimal construction of stream crossings, avoidance of new road construction in steep areas, remedial sediment control works at a stream crossing (C8) and an efficient integrated approach to road closure applications and traffic management planning.

Road planning, design, construction and closure requirements were assessed for coupes where new temporary roads were constructed directly to the coupe from the permanent road network. The audit also assessed the adequacy of road maintenance and closures for temporary roads and permanent roads that were part of VicForests' haulage network at the time of the audit and associated with the harvesting of audited coupes.

Table 4-10 summarises the compliance findings for the *Roading* compliance element group.

COMPLIANCE ELEMENT	ROADING					
	Overall	Road planning	Road design	Road construction	Road maintenance	Road closure
Total compliance	350	69	83	130	15	53
Total non-compliance	51	14	3	23	2	9
Non-compliance EIA breakdown						
Severe	0	0	0	0	0	0
Major	1	0	0	1	0	0
Moderate	6	0	1	4	1	0
Minor	27	14	2	10	1	0
Negligible	9	0	0	8	0	1
No impact	8	0	0	0	0	8

Table 4-10	Summary of compliance findings for the Roading compliance element group -
	VicForests



Drainage requirements and slope limitations were assessed over a total length of 6,200 m of temporary road accessing 15 coupes. The auditor found 10 of the temporary roads were fully compliant in respect to these requirements. Distances between drainage structures exceeded the maximum prescribed at one coupe (C8). Examples of ineffective structures were observed at four other coupes (C9, C12, C13 and C18). Non-compliances and EIA risk ratings are presented in more detail in the *Road design* section of this report for two coupes (C8 and C9). The remaining ineffective structures are associated with road rehabilitation and are not considered to be non-compliances as the distance between adjacent effective structures complies with drainage spacing prescriptions.

The effectiveness of road drainage was also assessed on two sections of permanent road totalling 700 m in length that were managed by VicForests as part of its timber haulage network. These permanent road sections were audited because there was insufficient length of temporary road to assess VicForests' compliance with road maintenance requirements within the boundaries of the coupes (C7 and C15). At one coupe (C7) a table drain in the permanent road accessing the coupe was found to pool water for 10 m upstream of a culvert. This was determined to be a non-compliance in relation to the requirements of the Management Procedures that table drains must allow water to flow without ponding. Furthermore, the *Road Maintenance Agreement 2014* specifies that ponding in table drains should be no more than 0.3 m in dimension before maintenance is required. The auditor determined this non-compliance to have an EIA risk rating of Negligible as there was no visual evidence of deterioration of the road surface or water quality.

Road drainage structures at C15 were found to be spaced well in excess of specified maximum distances, resulting in erosion of the road pavement. This issue and the related EIA risk rating are discussed in the *Road maintenance* section of this report.

Detailed findings relating to other roading prescriptions are presented in the following sections of this report: *Road planning*; *Road design*; *Road construction*; *Road maintenance*; and *Road closure*.

The audit found that a number of non-compliances were repeated across multiple coupes. These include:

- Absence of adequate field surveys to identify all environmentally sensitive locations on road alignments;
- Lack of stabilisation of cut and fill batters;
- Drainage discharge onto exposed and erodible soil;
- Barriers to passage of native fish;
- Absence of assessment of risk of transmission of Phytophthora;
- Absence of protection of culverts at stream crossings from erosion; and
- Absence of documentation of temporary roads intended to remain open to access other coupes.



The auditor was unable to assess the requirements listed below at any coupe due to the timing of the audit in relation to operations and /or availability of records:

- Notification and management of snigging operations or heavy machinery movement affecting roads;
- Erosion and sediment control measures applied during construction;
- Suspension of road construction operations when rainfall and soil conditions risk erosion and impacts on water quality;
- Clearing of new road alignments before road formation;
- Long term adverse environmental effects from disposal of excess fill;
- Method of road surface construction and level of consolidation of road subgrades;
- Compliance with requirements to prevent adverse impacts from road blading off activities;
- Implementation of temporary road closures for heavy timber harvesting traffic when persistent wet or dry weather or road stability compromise road surface quality, drainage or water quality;
- Implementation of temporary closures of roads to general traffic when timber production activities pose a risk to road users; and
- Cartage outside of approved hours.

Some audit elements were also difficult to assess due to the wording of the prescription. These and other issues relating to the adequacy of the regulatory framework relating to construction and management of timber haulage roads are addressed in **Section 4.3.4.3** of this report.

Road planning

Road planning requirements were assessed for the 14 coupes where new temporary roads were constructed directly to the coupe from the permanent road network. Road planning requirements were not applicable at four coupes (C6, C10, C11 and C12) as new roads were not constructed at these sites.

The auditor found that in most instances road planning was conducted in an appropriate manner. Good practices observed during the audit included re-use of previous temporary road alignments and landings, minimal construction of stream crossings in most cases and avoidance of new road construction in steep areas.



In one instance (C4), a crossing that could have been avoided, with more consideration during planning, was constructed across a waterway within a Spotted Tree Frog catchment. The Central Highlands Forest Management Plan 1998 refers to an internal report '*Water Quality Protection Measures for the Conservation of the Spotted Tree Frog*⁷ for prescriptions relating to management of roading within Spotted Tree Frog catchments. This document indicates that it is good practice to avoid construction of stream crossings within Spotted Tree Frog catchments greater than one kilometre (km) upstream of recorded Spotted Tree Frog sites, as was the case for this coupe. As this crossing could have been avoided and was observed during field audit to be causing sedimentation of the stream (discussed further in Section 4.3.4.1 *Road design*), the auditor considers that road planning within Spotted Tree Frog catchments is an area for improvement.

Fourteen non-compliances resulted from a systemic issue with the Code requirement for field surveys to identify all environmentally sensitive locations on road alignments. The audit found that VicForests interrogated the Victorian Biodiversity Atlas (VBA) and conducted field reconnaissance to identify environmental values relevant to the new roads, but documented procedures do not specifically require that these surveys be undertaken along road alignments. A discussion of the limitations with use of the VBA in timber harvesting planning activities is discussed in Section 4.3.2 *Threatened species* of this report.

VicForests advised that its field reconnaissance involves walking through the proposed coupe during the planning phase to inspect values identified through the VBA database searches and to assess access feasibility and options. The final road alignment is generally walked by the harvesting supervisor and contractor prior to coupe commencement. VicForests' planning and operational staff demonstrated sound skills in identifying a number of major environmental values during the audit, and it is expected that the processes described above would be satisfactory for identifying visually obvious and known environmental values.

Road construction activities by necessity completely remove vegetation and topsoil from new road alignments. New road alignments at some of the audited coupes (C2, C4, C8 and C9) also traversed riparian areas. Riparian areas are noted to be habitat for a number of threatened plants in the Central Highlands. The auditor considers that some threatened plants are difficult to detect without the use of targeted field survey.

Field surveys involve systematic sampling of a site, or in this case a road alignment, to determine the presence and location of targeted values using methods that are most likely to detect those values. There was insufficient evidence that VicForests had conducted detailed field surveys of the final alignment of the audited roads. The auditor therefore finds the field survey processes used for new road alignments to be insufficient and non-compliant with the Code prescription that "*Plans for roads must be based on field surveys to ensure that all environmentally sensitive locations are identified.*" (p27). The potential impact of these non-compliances was assessed as Minor, in accordance with Section 3.4 of this report.

<u>Recommendation VF4</u> – It is recommended that VicForests reviews, revises and implements its documented procedures to ensure that its operations systematically comply with the Code prescription that "*Plans for roads must be based on field surveys to ensure that all environmentally sensitive locations are identified*"; and that records are kept of findings (including nil findings) and management actions taken in response to findings.

Priority - High

⁷ O'Shaughnessy and Associates, 1995. Water Quality Protection Measures for the Conservation of the Spotted Tree Frog'. 43283795/01/04



Road design

Road design elements were assessed for the 14 VicForests coupes where new temporary roads were constructed directly to the coupe from the permanent road network. The auditor noted a high level of compliance with road design requirements, with only three non-compliances identified. Good practices were observed in the avoidance of road alignments across slopes of 30 degrees or more.

The design of drainage spacing could only be assessed for new temporary roads in coupes that had not been rehabilitated prior to the audit (C2, C3, C7, C8, C14 and C17). In these coupes, drainage was generally found to be appropriate, however a non-compliance resulting from a number of related issues was identified at one coupe (C8).

On the road associated with C8, two drainage structures exceeded the maximum specified spacing for the soil, rainfall and slope characteristics. Ten of the 12 measured culverts were observed to discharge directly onto either unconsolidated fill or other exposed soil. Soil scouring and sediment trails commonly around 20 m in length were evident at the culvert outlets and protective structures had not been installed. The audit found the road resign did not adequately address the potential for these impacts. The EIA rating of this non-compliance was assessed as Moderate.

Soil erosion from road drainage onto unconsolidated fill was also observed at another coupe (C14). At this site, drainage had discharged onto erodible soil, scouring the outlet and breaking through a soil bar situated at the end of the catch drain. Sediment from this outlet was observed to flow to within 5 m of a waterway. This non-compliance was assessed to have an EIA risk rating of Minor.

Drainage was found to be non-compliant on a 25m-long flat section of road constructed at the northern end of the landing at another coupe (C9). At this location the audit team observed considerable water ponding in association with discharge from a snig track. This non-compliance was assessed as having an EIA risk rating of Minor due to the potential duration of the impact, which will continue until remediation works occur to address this issue.

New roads were constructed within 20 m of waterways at five coupes (C2, C4, C7, C8 and C9). The auditor found sediments were prevented from entering waterways through appropriate road drainage and sediment control structures at three sites (C2, C7 and C8). Extra measures such as thick, coarse gravel, table drain armouring and sediment traps were observed around the crossing at C8, where sediment potential was high due to soil characteristics, rainfall and slope.

At C9, the audit team observed road drainage discharging onto an unstabilised fill batter above the downstream outlet of the crossing. Site conditions prevented assessment of sediment entry into the stream. The design of sediment control at another coupe (C4) also could not be assessed due to the disturbance of the road shape from snigging activities.

Design requirements for stream crossings were relevant for four coupes (C2, C4, C8 and C9) where culverts had been installed. The audit found three of these stream crossings were designed appropriately, according to traffic requirements, the nature, size and period of stream flow and the characteristics of the stream bed and banks.



At C4, the crossing design failed to account for a spring in an adjacent stream bank. Evidence of water movement across the road was observed at this site during the audit. Gravel had not been used to protect the crossing, and as the road had recently been converted to a snig track, the pavement was significantly disturbed at the time of the audit. Sediment trails were observed flowing from the disturbed road surface to the stream. Several other issues were identified at this stream crossing. These are discussed in Sections 4.3.4.1 *Roading* and *Road Construction* and Section 4.3.5.1 *Snig and forwarding tracks* of this report, with an overall EIA risk rating presented in Section 4.3.5.1 *Snig and forwarding tracks*. The auditor also notes that sediment management is of particular importance at this crossing as it is within a Spotted Tree Frog catchment.

In three instances (C2, C8 and C9), stream crossing design was found to impede fish passage as a result of culverts projecting above streams. The EIA risk rating for these non-compliances is reported with related issues in Section 4.3.4.1 *Road construction*.

Road construction

The audit found the 14 coupes where road construction requirements were applicable generally complied with plans, designs and other related requirements. A total of 23 non-compliances arose from management of embankments and fill, risks related to Phytophthora, and creation of barriers fish passage.

Three non-compliances resulted from failure to plan for and / or stabilise fill disposal areas and embankments. Almost vertical batters were cut along a 100 m section of new road at one coupe (C2) and a 150 m section at another (C4). Soil erosion was evident along the batters at both coupes. Neither of these batters was rehabilitated with topsoil stockpiled from construction activities as required by the Management Procedures. The EIA risk rating for both coupes is Moderate, owing to the length of the affected batters and the auditor's assessment that stabilisation by vegetation will occur gradually.

Soil erosion was also observed in steep batters around three culvert intakes at a third coupe (C8). The EIA risk rating associated with failure to stabilise the cut batters at this coupe is presented with other related drainage issues at C8 in Section 4.3.4.1*Road Design* of this report.

Evidence of ineffective stabilisation of fill batters was observed at another coupe (C9), where a large tension crack had opened up on the fill batter edge of a truck turning area. The auditor determined the environmental impact of this non-compliance to be Negligible due to its limited extent, good recovery potential and distance from waterways.

Non-compliances arose through failure to use topsoil from road construction to rehabilitate batter slopes at six coupes (C1, C3, C5, C8, C14 and C17). The auditor determined an EIA risk rating of Negligible appropriate as there was no evidence of any significant soil movement from batters at these sites. The auditor notes that the effectiveness and value of this prescription is questionable, as soil placed on batters of over 40 degrees may be subject to sliver fill failure (see Recommendation REG11) and that topsoil may be better used in rehabilitation of the road after harvesting is complete.



One non-compliance is associated with a fill batter covering the base of a live tree at one coupe (C2). The EIA risk rating for this non-compliance was determined to be Minor. Topsoil stockpiles from road construction were also placed over the base of single live trees retained within the harvested area at two other coupes (C4 and C7). Non-compliances were not recorded in these instances as topsoil stockpiles are not technically fill batters, and the intention is that the stockpiles are temporary.

Water was observed pooling in the table drain of a permanent access road at one coupe (C7). The EIA rating was determined as Negligible.

The audit found a systematic non-compliance with the requirement to prevent Phytophthora introduction via infected quarry materials. There was no evidence VicForests had assessed the risk of transmission of this disease at any of the nine sites (C2, C3, C4, C5, C7, C8, C14, C17 and C18) where gravel was used during road construction. The potential environmental impact was assessed as Minor, in accordance with Section 3.4 of this report. It was not possible to determine visually if any instances of Phytophthora infection had occurred as a result of gravel use; however no obvious signs of the pathogen were evident during the audit.

Culvert discharges at three coupes (C2, C8 and C9) were found to be non-compliant as they projected above the bed of the stream in a way that is likely to inhibit the passage of native fish. The EIA risk ratings at C2 and C9 were determined to be Moderate as the culverts are a barrier to all upstream habitat until the temporary culverts are removed. The EIA risk rating for the non-compliance at C8 was assessed as Major as the barrier to fish is expected to be long term due to the road being permanent. In all three cases, the stream beds were on gradients and of variable terrain such that installation of culverts without suspended outlets would require considerable excavation and/or result in significant acceleration of water flow. In these cases, a crossing type other than a conventional culvert is likely to be more appropriate (refer to REG8).

Other issues observed with culvert installation were that neither the head nor discharge were protected from erosion as required by the Management Procedures by sandbags, timber or concrete (C2, C4 and C9). Separate non-compliances have not been recorded for this issue as they are associated with other crossing non-compliances reported in the paragraph above (C2 and C9) or in Section 4.3.5.1 *Snig and forwarding tracks* (C4).

Road maintenance

The adequacy of road maintenance was assessed for all temporary roads within the audited coupes. Up to 500 m per coupe of relevant temporary or permanent access roads that were part of VicForests' haulage network at the time of the audit were also assessed. Road maintenance requirements could not be assessed at six coupes (C1, C11, C12, C13, C16 and C18) because temporary roads had been rehabilitated at the time of audit. Additionally, the condition of permanent public roads used for their access could not be attributed exclusively to harvesting operations due to the time since harvest.

Maintenance of haulage roads was generally found to have been managed in compliance with requirements. Good cross drainage practices were observed on four in-coupe temporary roads where harvesting had temporarily ceased.



Non-compliant road maintenance was identified at two coupes (C14 and C15). An ineffective silt trap was observed at another coupe (C14), with the EIA assessment determined as Minor due to the resultant sedimentation of an adjacent permanent stream. At another coupe (C15), the non-compliance arose from failure to minimise erosion along a 450 m length of the permanent access road. The pavement of this road was scoured along the entire extent due to insufficient drainage. The auditor assessed the environmental impact of this non-compliance to be Moderate due to the extent of scouring and the location within a catchment that supplies drinking water to Melbourne.

The auditor noted a lack of clarity within VicForests about responsibilities for maintenance of permanent roads associated with timber harvesting. During the audit, a number of VicForests operational staff claimed that permanent roads listed as part of their timber haulage network were DEPI's responsibility to manage as timber harvesting operations had concluded at the respective sites. This claim was found to be incorrect at several sites as processes required for DEPI to resume road maintenance responsibilities had not occurred. These processes along with road maintenance responsibilities and standards are clearly set out in the *Road Maintenance Agreement 2014* (and previous versions of this document).

This *Road Maintenance Agreement 2014* specifies that timber haulage routes must be managed to standards specified within the Code, regardless of who is responsible for managing the road.

<u>Recommendation VF5</u> - It is recommended that the responsibilities, standards and procedures associated with the *Road Maintenance Agreement 2014* be clearly communicated to VicForests responsible for managing roads in the timber haulage network.

Priority: Medium

Road closure

Approximately two thirds of road closure and traffic management requirements either could not be assessed or were not applicable due to the timing of the audit in relation to operations. Those requirements that were auditable were generally found to be managed appropriately.

The auditor noted as good practice VicForests' approach of combining road closure applications and traffic management planning into an integrated process that addresses all requirements as efficiently as possible.

Despite this streamlined process, the audit identified seven administrative non-compliances (described below). Four non-compliances (at C8, C9, C14 and C17) were identified where arrangements to keep temporary roads open to either access other coupes or become part of the permanent road network were not documented in the Forest Coupe Plan as required. At another two coupes (C5 and C15) the auditor found road closure approval was provided by the local District Manager rather than the Area Manager. Approval documentation for temporary closure of a permanent road was not provided for one coupe (C11).

Potential environmental impact was assessed as Negligible for each of these noncompliances, in accordance with the descriptions in Section 3.4 of this report.



The audit team identified two non-compliances associated with road rehabilitation. Soil was observed moving from a bar used to rehabilitate a temporary road onto the pavement of an adjacent permanent road (C16). An EIA risk rating of Negligible was recorded as the sediments were contained by vegetation on the far side of the permanent road. Another non-compliance was recorded for failure to remove culverts from two temporary roads as soon as possible after final operations at the coupe (C5). The auditor determined this non-compliance to have an EIA risk rating of No impact as the culverts were functioning effectively at the time of audit.

In two instances (C5 and C6) Traffic Management Plan compliance could not be fully assessed due to gaps in information provided for these requirements.

4.3.4.2 DEPI Forestry Services coupes

All audited harvesting activities conducted by DEPI Forestry Services within the Bendigo FMA used existing permanent roads for access into and within coupes. Audit of road planning, design and construction requirements was therefore not relevant for these coupes, and detailed measurements of slope and drainage spacing were not conducted.

Road maintenance and closure requirements were the exclusive focus of audit activities on DEPI Forestry Services' coupes. Less than 13% of audit criteria were audited due to the non-applicability of many criteria (mostly concerning road closure) to the circumstances of the DEPI Forestry Services coupes.

Table 4-11 summarises the compliance findings for the *Roading* compliance element group.

COMPLIANCE ELEMENT	ROADING					
	Overall	Road planning	Road design	Road construction	Road maintenance	Road closure
Total compliance	1	NA	NA	NA	NA	1
Total non-compliance	6	-	-	-	-	6
Non-compliance EIA breakdown						
Severe	0	-	-	-	-	0
Major	5	-	-	-	-	5
Moderate	0	-	-	-	-	0
Minor	0	-	-	-	-	0
Negligible	0	-	-	-	-	0
No impact	1	-	-	-	-	1

Table 4-11 Summary of compliance findings for the *Roading* compliance element group – DEPI Forestry Services



Despite the reasonably good condition of roads in the Bendigo FMA, DEPI Forestry Services' rate of compliance with the assessed roading requirements was generally low. This result reflects the small proportion of assessable compliance elements and the observation of a systemic traffic management issue.

The following sections present detailed findings for these elements and discuss the reasons why particular requirements could not be assessed.

Road maintenance

During the audit, DEPI Forestry Services advised that all roads used to access timber harvesting coupes in Bendigo FMA are maintained through DEPI's general District road program and that no roadworks had been conducted specifically for timber access maintenance at the audited coupes. For this reason, the auditor determined that only two road maintenance audit criteria, associated with blading off, applied to the DEPI Forestry Services coupes.

Neither of these criteria could be reliably assessed due to the shortness of the audit window compared with the duration of the harvesting activities. Consequently there are no compliance elements that can be reported for DEPI road maintenance. Blading off requirements may be better addressed through regular monitoring and quality assurance processes.

The auditor noted that the forest roads associated with the audited coupes have been regularly maintained and are generally in good condition, with a small number of exceptions. During the audit, road drainage systems were observed to be causing erosion and / or discharge of sediment into waterways at three coupes (C21, C23 and C24). This is considered an area of environmental management that DEPI's District road program could improve upon.

Road closure

Very few road closure requirements were found to be applicable and assessable within the Bendigo FMA. Requirements were deemed not applicable if they related specifically to VicForests activities, or to temporary roads, or did not apply to the individual circumstances of the coupe. Compliance with approved cartage hours and temporary closure requirements when conditions are unsuitable for cartage could not be assessed due to the short audit window, the availability of evidence and the impacts of traffic unrelated to timber harvesting on road condition.

The high rate of non-compliance for this audit element is due to the small number of auditable requirements and the influence of a systemic issue relating to management of risks to road users on minor forest roads.


Cut stumps and recent harvesting debris were observed within two tree-lengths of publicly accessible roads and tracks at five coupes (C19, C20, C22, C23 and C24). During the audit, DEPI Forestry Services confirmed that no closures or traffic controls were in place to protect road users from risks associated with these tree felling activities. The operations were therefore assessed as non-compliant with the requirement to temporarily close roads to general traffic or implement traffic management controls when timber harvesting operations near a road present risks to road users. The potential environmental impact for these non-compliances was assessed as Major, in accordance with the descriptions in Section 3.4 of this report, due to the potential risks to road users.

The forest coupe plan for one coupe (C22) included a traffic management plan. This plan was found to be non-compliant with the Management Procedures traffic management plan template as it failed to address communications with emergency vehicles. Being an administrative issue, the potential environmental impact for this non-compliance was assessed as Negligible, in accordance with the descriptions in Section 3.4 of this report.

The auditor notes that DEPI Forestry Services had recently taken the initiative to modify its Forest Coupe Plan template in ways that facilitate improved management of risks to road users. The new plans include a generic traffic risk assessment and management actions such as closing roads when trees have potential to fall on them, road buffering to exclude harvesting within two tree lengths of roads, and use of traffic management plans. Several coupe plans included examples of the use of road buffering around high use public roads. This good practice prevents risks to road users whilst minimising management intervention requirements.

It was also observed during the audit that some staff had insufficient understanding of their authority under the *Forests Act 1958*, and the requirements of the *Worksite Traffic Management Standard AS 1742.3* and the *Code of Practice for Worksite Safety – Traffic Management*. In particular there was insufficient knowledge of situations where traffic management plans are required, and the authorisation requirements for road closures, traffic management plans and traffic controllers.

<u>Recommendation DFS5</u> – It is recommended that DEPI Forestry Services continues to implement improvements in knowledge and implementation of traffic management and road closures.

Priority: High

4.3.4.3 Potential improvements to the regulatory framework

<u>Recommendation REG7</u> – The auditor notes that the management prescriptions for significant flora outlined in Appendix J of the Central Highlands FMP apply to harvesting operations without giving due consideration to roading operations (see also Section 4.3.4.1 *Road planning*, for further details). In particular, the Central Highlands FMP does not specify management actions for species that grow in riparian areas, as it states they are adequately protected by waterway buffers and filters prescribed by the Code. The auditor notes however that roads do impact riparian zones at crossings.

It is recommended that management prescriptions for the protection of threatened flora within riparian zones be reviewed to better manage potential impacts associated with construction of waterway crossings.

Priority: High



<u>Recommendation REG8</u> - During the audit VicForests raised concerns over the applicability of some of the roading requirements to temporary roads. To aid consistency, the auditor recommends that DEPI formally document whether or not the following requirements apply to temporary roads:

- Management Procedures Section 1.6.1, notification and approval requirements for snigging forest produce or moving heavy machinery along or across temporary roads;
- Management Procedures Section 2.3.6, conformance of temporary road construction and maintenance to standards in the Road Management Agreement; and
- Management Procedures Section 1.6.3.1 construction and maintenance of temporary roads in accordance with the Review of Road Classifications, Geometric Designs and Maintenance Standards.

Priority: Low

<u>Recommendation REG9</u> - The auditor recommends that DEPI reviews the requirements for road crossings of waterways and provides guidance relating to movement of native fish through crossing structures. Standard culverts are likely to present barriers for native fish species most often found in catchment headwaters. Appropriate crossing designs and structures can reduce these barriers, enabling natural migration cycles of native fish to continue.

Priority: High

<u>Recommendation REG10</u> - The auditor noted two inconsistencies between regulatory documents referred to from the Management Procedures.

- Management Procedures Section 2.3.6 notification requirements for retention of temporary roads for use in the permanent road network is inconsistent with processes specified in the *Road Maintenance Agreement 2014*.
- The Review of Road Classifications, Geometric Designs and Maintenance Standards (ARRB 2001) document referred to in the Management Procedures section 1.6.3.1 specifies 5D roads should have 1 m wide table drains. The Road Maintenance Agreement 2014 referred to in Management Procedures section 2.3.6 does not specify table drain requirements for 5D roads.

It is recommended that the regulatory documents be revised to eliminate inconsistencies.

Priority: Low

<u>Recommendation REG11</u> – The auditor recommends that the requirement in Section 1.6.3.7 of the Management Procedures to utilise topsoil stockpiles to rehabilitate road batter slopes be reviewed for removal. Technical references relating to low volume road engineering indicate slope design, retaining structures, buttresses, brush layering and drainage are effective means of stabilising exposed batters, and that topsoil placed on slopes greater than 40 degrees may be subject to sliver fill failure. The auditor also considers that stockpiled topsoil would be of greater value in rehabilitating temporary road alignments after they have been reshaped to a more natural profile on completion of harvesting.

Priority: Low



4.3.5 Infrastructure

4.3.5.1 VicForests coupes

The term 'infrastructure' is used in this report to collectively describe log landings and dumps, snig tracks and boundary tracks. Areas occupied by coupe infrastructure were observed to have been generally minimised, as required by the Code. Landings established at a previous time on adjacent coupes were reused for harvesting four of the audited coupes (C6, C10, C12 and C14), which further minimised the total area impacted.

Table 4-12 summarises the overall compliance findings for the *Infrastructure* compliance element group.

Table 4-12 Summary of compliance findings for the Infrastructure compliance element group - VicForests

COMPLIANCE ELEMENT	INFRASTRUCTURE				
	Overall	General	Log landings and dumps	Snig and forwarding tracks	Boundary tracks
Total compliance	208	73	35	76	24
Total non-compliance	8	0	2	4	2
Non-compliance EIA breakdown					
Severe	0	-	0	0	0
Major	0	-	0	0	0
Moderate	3	-	2	1	0
Minor	1	-	0	1	0
Negligible	2	-	0	1	1
No impact	2	-	0	1	1

General

The audit found that rehabilitation of coupe infrastructure had been undertaken progressively on all coupes, and was observed to have been undertaken throughout coupes where harvesting had been completed. Coupe infrastructure was found to have been appropriately located away from exclusion zones and in most instances the locations were considered to have minimised impacts on soil and water quality.

There were, however, a small number of non-compliances with the required standards of infrastructure establishment and rehabilitation were identified, as discussed in the following sections of this report (*Log landings and dumps*; *Snig and forwarding tracks*; and *Boundary tracks*).



Log landings and dumps

The management of landings was generally assessed as appropriate, with a small number of exceptions regarding stockpiling of topsoil and rehabilitation standards. In total, 15 landings were assessed during the audit. Landings could not be assessed at three coupes because one was a thinnings coupe with loading bays (C5); one was a roadline coupe and the logs were processed on several adjacent coupes where landing use was ongoing (C8); and one coupe had been regenerated several years ago and reopened only to allow the landing to be reused for processing logs from an adjacent coupe (C7). Topsoil placement could not be assessed at one coupe (C9) due to the surface being partially obscured by snow.

The four landings that were reused from previously harvested adjacent coupes were outside of the TRP areas for the audited coupes; however they were within TRP areas of the adjacent coupes and the adjacent coupes were found to be listed on TRPs current at the time of harvest.

Harvesting had been completed on 5 coupes (C2, C3, C4, C6 and C12) at the time of the audit and all landings assessed on these coupes had been rehabilitated by ripping and respreading of topsoil, as required, where landings had not been corded. Cording and matting had been used on 3 landings (C3, C10 and C11), one of which had been adequately rehabilitated (C11). One coupe was still being harvested so the landing had not been rehabilitated (C3).

The third landing was one of the reused landings (C10), which was assessed during the audit as not providing suitable conditions for regeneration, with an EIA rating of Moderate. The landing had been heavily disturbed, having been benched during the previous operation, then cording laid then removed, followed by a hot burn of bark heaps and ripping. Because the bark heaps had been burnt, it was not possible to quantify whether the volume of bark at the landing exceeded that allowed by the Management Procedures, however there appeared to have been a large amount. The landing surface had been ripped, however there was a hard layer beneath the surface (between 200 and 400 mm depth) that the ripping had not penetrated, and there was little topsoil evident. The auditor acknowledges the benefits of reusing an already disturbed area and notes that rehabilitation is not as easily achieved as for a landing used for one coupe only.

Of the other 3 landings that had been reused, one had not yet been rehabilitated due to ongoing harvesting (C12). According to VicForests, this landing had been reused for several coupes and a topsoil stockpile was not evident during the audit, although it had obviously been removed from the landing. Only one other reused landing had been rehabilitated and it appeared to provide appropriate conditions for regeneration (C14).

The audit found that topsoil had not been removed and stockpiled at one landing, where harvesting was ongoing (C4), resulting in an EIA rating of Moderate. It was evident that this landing had also been used during wet conditions, as discussed in Section 4.3.3.1 of this report.



Snig and forwarding tracks

Snig tracks were generally assessed as having been managed appropriately, with a small number of minor issues identified with rehabilitation and more significantly, contribution of sedimentation to waterways. The auditor noted an example of good practice in the use of natural cross-slope for drainage, rather than the construction of unnecessary cross-drains throughout one coupe (C18).

Cording was not extensively used on the audited coupes; it was observed on some sections of snig tracks on three coupes (C3, C10 and C18). Due to the cording having already been laid, it was not possible to assess whether any soil damage had occurred through use in wet conditions prior to cording; however there was no visual evidence to suggest any damage. Similarly, there was no visual evidence of blading off of snig tracks on any of the coupes.

Generally, rehabilitation of snig tracks after harvesting was assessed as having been managed well, with appropriate spacing of effective drainage structures. A total length of 3,989 m of snig tracks was assessed across 16 coupes, with 3,900 m assessed as compliant (89 m not compliant). The sampled length of snig track was assessed as compliant on 14 coupes. In some of these compliant coupes, potential for improvement in the design of drainage structures was noted, but due to the soil type and/or topography, were considered adequate and effective. In most of the compliant coupes, rollover drains had been constructed to a high quality, with effective outlets to channel water away from the track.

Four non-compliances were identified across four coupes relating to rehabilitation of snig tracks. The non-compliances on two of the coupes were due to distances between drainage structures being further than the maximum specified in the Utilisation Procedures (C1 and C14). In the first instance (C1), the drainage spacing was appropriate for the majority of the sampled length, but the distance between drains had not been adjusted for a particularly steep section that required closer spacing. The EIA rating was determined as Negligible due to the short length of non-compliant track.

In the second coupe (C14), the Soil Erosion Hazard (SEH) for the subsoil had been assessed by VicForests as High; however the spacing of drains was appropriate for soils of Moderate SEH. The auditor's assessment of the SEH was that the subsoil was of Moderate SEH, therefore the EIA rating was determined as No impact. Discrepancies between VicForests' and the auditor's assessment of SEH have been discussed in Section 4.3.1.1 of this report.

The other two non-compliances relate to instances of sediment entering permanent streams. In one coupe (C4), a major snig track had been initially constructed as an in-coupe road (without the use of gravel, as discussed in Section 4.3.4.1 of this report), and was subsequently used as a snig track. During the audit, water carrying sediment was observed flowing into the stream from two sources: from the top surface of the crossing via a spring on the upstream side; and along the approaching snig track, after having flowed around a large but ineffective cross drain. Movement of sediment was ongoing at the time of the audit. VicForests had correctly identified the stream as being in the Taponga catchment, a significant catchment for the threatened Spotted Tree Frog (*Litoria spenceri*), which is sensitive to stream sedimentation. However there were no known records of the species within one km of the crossing, therefore additional water protection measures were not prescribed. The EIA was determined as Moderate.



In the second coupe where sediment was observed to be actively moving into a permanent stream (C6), a cross drain adjacent to a snig track crossing had failed. The adjacent portion of the buffer had been burnt during the regeneration burn (following a temporary clearance) and sediment had entered the burnt buffer. Turbid water was also observed to be discharging into the buffer from the top of the crossing, having travelled along the snig track from the adjacent cross drain. The EIA in this instance was determined as Minor.

Boundary tracks

Boundary tracks were assessed as having been constructed appropriately and in compliance with the few applicable requirements in the majority of cases. A total length of 3,072 m of boundary tracks was assessed across the 13 coupes where boundary tracks had been constructed, with 2,686 m assessed as compliant (386 m non-compliant). The sampled length of boundary track was assessed as compliant on 11 coupes. The auditor noted that the good practice of using the natural outsloping of the track to assist with drainage was used where possible.

All boundary tracks sampled were found to have been constructed within the coupe TRP boundaries and outside of exclusion areas. In all cases too, harvesting debris outside the coupe boundary as a result of construction was observed to have been minimal, or was identified by VicForests and recorded in coupe diaries. However, a large amount of debris was observed between the boundary track and the taped coupe boundary on two coupes (C1 and C2). In one of the coupes (C1), the regeneration fire had crossed the boundary track and burnt a small area of accumulated slash in the head of a gully (not classified as a drainage line). The auditor acknowledges the difficulties of operating in steep terrain, however considers, as an area for improvement, that some debris could have been lifted back into the coupe at the time the excavator was finalising the boundary track at completion of harvesting.

Two non-compliances were identified, relating to rehabilitation of snig tracks. In the first instance (C9), the drainage spacing was appropriate for the majority of the sampled length, but the spacing of effective drainage structures exceeded the maximum prescribed in a section of steeper boundary track. The EIA rating was determined as Negligible due to the short length of non-compliant track.

In the second coupe (C2), the spacing of effective drainage structures (for a total length of 328 m) exceeded the maximum prescribed distance for the Soil Erosion Hazard (SEH) rating of High determined by VicForests and specified in the Forest Coupe Plan. The auditor's assessment was that the subsoil was of Low SEH, therefore the EIA rating was determined as No impact.

4.3.5.2 DEPI Forestry Services coupes

Only a small proportion of the audit criteria relating to coupe infrastructure was applicable for the DEPI Forestry Services coupes due to the low intensity harvesting operations. One instance of non-compliance was identified.

Table 4-13 summarises the compliance findings for the *Infrastructure* compliance element group.



Table 4-13 Summary of compliance findings for the Infrastructure compliance element group – DEPI Forestry Services

COMPLIANCE ELEMENT	INFRASTRUCTURE				
	Overall	General	Log landings and dumps	Snig and forwarding tracks	Boundary tracks
Total compliance	23	17	NA	6	NA
Total non-compliance	1	1	-	0	-
Non-compliance EIA breakdown					
Severe	0	0	-	-	-
Major	0	0	-	-	-
Moderate	0	0	-	-	-
Minor	0	0	-	-	-
Negligible	1	1	-	-	-
No impact	0	0	-	-	-

General

Landings were not used, and are not considered by the auditor to have been required, on the six coupes (C19 to C24) managed by DEPI Forestry Services, due to the low intensity of the harvesting operations. Boundary tracks were also not required due to the absence of fire in the silvicultural regime.

The one instance of non-compliance was due to a vehicular track having followed a drainage depression on one of the coupes (C19) and its potential to impact water quality or soil during wet conditions. Although some surface compaction was evident, soil disturbance had not resulted and the EIA was determined as Negligible. Infrastructure was found to have been located away from exclusion areas and generally provided adequate conditions for regeneration and growth.

Snig and forwarding tracks

Only one of the prescriptions for the management of snig tracks was considered to apply, due to the inherently minimal impacts of the low intensity harvesting operations. This prescription was that significant rutting is to be avoided. The audit found that there was no significant rutting resulting from dragging logs to collection points.

Log fill crossings were not used and not considered to be required for any of the approved crossing points on the audited coupes; cording and blading off prescriptions were not considered applicable; and drainage of snig tracks was not required following harvesting, as they would not discharge turbid water into streams or drainage lines.



5

AUDIT FINDINGS – MODULE 3 (REGENERATION AND FINALISATION)

The audit assessed VicForests' compliance with regeneration requirements at a total of ten coupes across the Central and Dandenong FMAs. Overall, VicForests' regeneration activities were found to be appropriate, with good regeneration of local eucalypt species observed at all audited coupes.

Field assessments were conducted at all audited coupes, with further information gathered through Forest Coupe Plan files and other silvicultural records, and through discussions with VicForests personnel. The rapid field audit method, as described in the Module 3 Workbook 3A: *Audit criteria for regeneration coupes* was used for nine coupes and the intensive method, also described in the workbook, at one coupe (R9). The auditor notes that these survey methods are less intensive than the full Established Seedling Survey methodology used by VicForests, and not well suited to detecting species that comprise a minimal proportion of the canopy composition. It is suggested that the new audit methodology be further refined to address this issue if DEPI wishes the audit process to confirm species composition.

Table 5-1 summarises the compliance findings for the *Regeneration* Compliance Element.

COMPLIANCE ELEMENT	REGENERATION			
Total compliance	124			
Total non-compliance	17			
Non-compliance EIA breakdown				
Severe	0			
Major	0			
Moderate	0			
Minor	3			
Negligible	5			
No impact	6			
Not applicable	3			

Table 5-1 Summary of compliance findings for the *Regeneration* Compliance Element - VicForests

The audit found VicForests to be fully compliant in acting to successfully regenerate all audited coupes, and there was no evidence of clearing for establishment of plantations on these coupes. However, as the audit assessed only those coupes that VicForests has submitted as being finalised, non-compliances with these requirements would not be expected. The auditor recommends that in future regeneration audits, a desktop assessment of compliance of a sample representative of all harvested coupes completed in a given year be undertaken to determine if actions are being taken to successfully regenerate all coupes, not only those submitted as regenerated (see Recommendation REG13).



Silvicultural methods for regenerating canopy species were also found to be appropriate to the forest type and local conditions. At all audited coupes VicForests had used methods recommended in DEPI Native Forest Silviculture Guidelines, and minimised repeated disturbance events wherever possible. The silvicultural methods mainly included natural regeneration following wildfire and high intensity burning and sowing. Mechanical disturbance was undertaken in small areas where initial treatment had failed. The audit team was unable to fully assess whether the silvicultural methods were appropriate for understory species. Further discussion of this issue is provided in Section 5.1.1.1 *Potential improvements to the regulatory framework*.

Seventeen non-compliances arose in the areas of spatial distribution of canopy species, seed provenance, record keeping, track rehabilitation and weed management.

The Code specifies that regeneration must aim to approximate the composition of canopy species prior to harvest, and also their spatial distribution. While the audit confirmed the composition of canopy species was appropriate, there was no evidence that VicForests had considered the spatial distribution of canopy species in regeneration activities at three coupes (R1, R2 and R4). These non-compliances were determined to have a Minor EIA risk rating due to the expectation of a long duration impact on species that originally represented a small proportion of the overall species composition.

At a number of other coupes the auditor only considered the spatial distribution requirement had been met because:

a) Regeneration resulted from natural seed fall following the 2009 bushfires; or

b) Records on Forest Coupe Plan files and forest type maps indicated there was only one canopy species present prior to harvesting.

The auditor notes that as VicForests' documented regeneration procedures do not specifically address the requirement for appropriate spatial distribution of canopy species during regeneration, this is an area for improvement.

<u>Recommendation VF6</u> – It is recommended that VicForests documents and implements a procedure for planning for the regeneration outcome to reflect the species mix and spatial distribution of the forest before harvesting.

Priority: Medium

Three non-compliances were identified with the requirement to use seed from the same, or ecologically similar, provenances to the forest present prior to timber harvesting. The auditor referred to parameters set out in *Native Forest Silviculture Guideline #2 – Eucalypt Seed Collection* (DCNR 1994) to determine if the seedlots used in regeneration activities met this requirement. In two instances (R2 and R7) seed was sourced from sites with parent rock types different to those specified, and at one site (R8) seed from an aspect different to the original was used. As there was no evidence of substantial regeneration failure from use of these seedlots, and the seedlots represented only small proportions of the seed used to regenerate these sites, the auditor determined the EIA risk ratings to be Negligible.



Incomplete records prevented assessment of the suitability of the seedlot provenance at a further two coupes (R4 and R10). The audit recorded two non-compliances for these coupes, as the Code requires that 'the source of seed must be recorded in a manner that allows for future reference'. These non-compliances appear limited to being administrative and were therefore EIA risk ratings were determined not to be applicable.

One non-compliance arose from failure to record the results of a regeneration assessment (R2). The assessment records available for this coupe were relevant to a small area that had been retreated following unsuccessful regeneration. No records were available for the greater coupe area. The auditor also determined the EIA rating for this non-compliance to be not applicable as it is an administrative requirement. The field audit confirmed the area had successfully regenerated.

At six coupes (R2, R4, R5, R6, R7 and R10), the auditor identified non-compliances with the Code requirement to assess the rehabilitation of coupe infrastructure within three years of initial treatment. Coupe infrastructure rehabilitation includes both drainage and revegetation activities. No evidence was provided that coupe infrastructure drainage had been assessed after use during ground based treatments (mechanical disturbance and heap burning). EIA risk ratings of No Impact were determined for these coupes as the drainage structures observed during the audit were found to be intact.

One instance of non-compliance was observed with requirements to prepare a weed management plan and implement a weed control program for weeds introduced during harvesting operations (R9). Scattered blackberries were recorded during the established seedling survey and the pre-harvest weed assessment indicated the site was weed free. Therefore the auditor concludes that the blackberries were introduced during harvesting activities and need to be controlled. The EIA risk rating for this non-compliance was determined to be Negligible as the blackberries were isolated and are expected to be suppressed within several years by the regenerating forest.

In one coupe (R1), the absence of a post-harvest weed assessment resulted in a noncompliance with an EIA rating of Negligible.

Pre-harvest weed assessments were not available at five other coupes (R2, R3, R4, R5 and R7) and negated the auditor's ability to assess this requirement in instances where weeds were found during VicForests' regeneration assessments or audit. It is noted that coupe reconnaissance for the audited coupes was completed prior to the introduction of these requirements in several cases.

5.1.1.1 Potential improvements to the regulatory framework

The audit found the Code prescription 'Silvicultural methods for regeneration must be appropriate to the forest type (including understory species) and local conditions' could not be fully assessed in relation to treatment of understory species.



Understory species have a wide array of ecological requirements. Their compatibility with silvicultural methods considered appropriate in regenerating eucalypt forests is dependent on their regenerative mechanisms, and their tolerance of disturbance methods and the conditions they create. Some late successional understory species are completely incompatible with conventional silvicultural methods. Traditionally these species have been provided for in the reserve system and to some degree within buffers and exclusion areas within coupes. It is unclear whether this prescription is introducing further requirements to provide for these species at a coupe level, or whether it is aimed at the more disturbance tolerant understory species.

It is also noted that the inclusion of standards and methods for regenerating understory species within Victorian native forestry guidelines and manuals would aid consistent interpretation of this requirement, as they are largely focused on overstorey species.

<u>Recommendation REG12</u> - It is recommended that the Code prescription relating to suitability of silvicultural methods for regeneration of understorey species be reviewed and revised to clarify its intended purpose; and that the standards and methods for the regeneration and assessment of regeneration of understorey species are developed and documented.

Priority: Medium

<u>Recommendation REG13</u> - The auditor recommends that in future regeneration audits, a desktop assessment of compliance of a sample representative of all harvested coupes completed in a given year be undertaken to determine if actions are being taken to successfully regenerate all coupes, not only those submitted as regenerated.

Priority: Medium



6 SUMMARY OF AUDIT RECOMMENDATIONS

This section of the report lists the recommendations that are contained within the findings sections for each of Modules 1 and 3, and those relating to potential improvements to the regulatory framework. A total of six recommendations were made to VicForests, five recommendations to DEPI Forestry Services and thirteen recommendations to DEPI as the environmental regulator.

Priorities have been assigned to each recommendation with consideration of a combination of the environmental impact assessment ratings and the number of instances of non-compliance that relate to the recommendation. Recommendations for VicForests and DEPI Forestry Services have the prefixes of 'VF' and 'DFS' respectively, and recommendations for potential improvements to the regulatory framework have the prefix 'REG'.

6.1 Module 1 (Coupe planning, harvesting and closure)

The audit identified five recommendations that apply to VicForests; five recommendations that apply to DEPI Forestry Services; and eleven recommendations aimed at potential improvements to the regulatory framework.

6.1.1 Recommendations for VicForests

<u>Recommendation VF1:</u> It is recommended that VicForests reviews the consistency of application of its process for assessment of soil erosion hazard and water quality risk assessment. The review should include a focus on determination of soil dispersability and appropriateness of sampling location, to determine whether intervention such as further training or peer review would improve consistency of outcomes.

Rationale: The audit also recorded a different soil erosion hazard to VicForests at ten coupes (C1, C2, C3, C5, C8, C10, C13, C14, C15 and C16), with the audit results showing higher soil erosion hazard at five of these coupes, and a higher water quality risk than VicForests at one coupe (C8). Some differences between the audit and VicForests' results were due to assessment of soil dispersability. In several instances the audit identified transcription errors had occurred when entering field results into Vicforests' coupe database. The auditor notes that VicForests has since made changes to the soil assessment form that will likely reduce transcription errors; however the root cause of other error should be investigated. One non-compliance ('No impact' environmental risk score) was identified for the location of the soil assessment being approximately 700 m from the coupe (C18).

Priority: Low

<u>Recommendation VF2</u> – It is recommended that VicForests establishes a systematic disease risk and health assessment program for coupes to be harvested, in consultation with DEPI forest health specialists, including assessment of risk of Phytophthora using DEPI's draft risk map, as appropriate.

Rationale: The Audit found that there is a general weakness in the area of systematic health assessment and identification of disease risk at an operational level.

Priority: High



<u>Recommendation VF3</u> – It is recommended that VicForests extends its desktop searches for threatened flora values beyond 500 m from the coupe to the broader catchment or landscape level, until such time as threatened flora models are deemed appropriate for use in this context (refer to Recommendation REG4).

Rationale: The Victorian Biodiversity Atlas (VBA) database is limited in its usefulness in detecting threatened taxa, particularly flora. VicForests' standard procedure is to search the coupe for flora values mapped within 500 m of the coupe, which may miss values mapped at a catchment level more than 500 m from the coupe. Under the current reliance on the VBA, there is a risk that there may be threatened flora present on a coupe that have not been identified as part of the desktop assessment process, and which are therefore not being actively searched for during the pre-harvest reconnaissance or in determining new road alignments or landing locations (see also Section 4.3.4.1 *Road planning*). Desktop searches over a broader area, and/or the use of modelled habitat would be expected to reduce this risk.

The auditor understands that DEPI has recently produced over 1,500 threatened flora and fauna models for the purpose of identifying offset requirements under the recently gazetted (December 2013) *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy⁸. The models were not developed for use in a forestry context; however they may be applicable. VicForests currently use modelled habitat data for a number of threatened fauna species, but not for threatened flora.

Priority: High

<u>Recommendation VF4</u> – It is recommended that VicForests reviews, revises and implements its documented procedures to ensure that its operations systematically comply with the Code prescription that "*Plans for roads must be based on field surveys to ensure that all environmentally sensitive locations are identified*"; and that records are kept of findings (including nil findings) and management actions taken in response to findings.

Rationale: Road construction activities by necessity completely remove vegetation and topsoil from new road alignments. New road alignments at some of the audited coupes also traversed riparian areas. Riparian areas are noted to be habitat for a number of threatened plants in the Central Highlands. The auditor considers that some threatened plants are difficult to detect without the use of targeted field survey.

Field surveys involve systematic sampling of a site, or in this case a road alignment, to determine the presence and location of targeted values using methods that are most likely to detect those values. There was insufficient evidence that VicForests had conducted detailed field surveys of the final alignment of the audited roads. The auditor therefore finds the field survey processes used for new road alignments to be insufficient and non-compliant with the Code prescription that "*Plans for roads must be based on field surveys to ensure that all environmentally sensitive locations are identified.*" (p27).

Priority: High

<u>Recommendation VF5</u> - It is recommended that the responsibilities, standards and procedures associated with the *Road Maintenance Agreement 2014* be clearly communicated to VicForests staff responsible for managing roads in the timber haulage network.

⁸ <u>http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/native-vegetation/native-vegetation-permitted-clearing-regulations</u>



Rationale: The audit noted a lack of clarity within VicForests about responsibilities for maintenance of permanent roads associated with timber harvesting, in particular regarding the transfer of responsibility between VicForests and DEPI on completion of timber harvesting. These processes along with road maintenance responsibilities and standards are clearly set out in the *Road Maintenance Agreement 2014* (and previous versions of this document).

Priority: Medium

6.1.2 Recommendations for DEPI Forestry Services

<u>Recommendation DFS1</u>: It is recommended that DEPI Forestry Services considers providing specific guidance to forest product licensees regarding felling trees within and adjacent to filters to minimise the number of trees fallen into filters; and removal of logs from filters to minimise soil disturbance.

Rationale: Trees had been felled into filter strips at both coupes (C21 and C24). The auditor could not reliably determine whether the felling of trees into the filter was avoidable, as this would have required more detailed discussion with the forest produce licensee (the harvester). The auditor considers directional felling practices in and around filters to be an area for improvement due to the considerable numbers of trees observed to have been felled into marked filters. At one coupe (C21) numerous instances of minor soil disturbance apparently linked to log removal were also noted. Given the high erodibility of subsoils in the area, consideration should be given to improving guidance on log removal practices when harvesting occurs in and adjacent to filters, to minimise soil disturbance.

Priority: Low

<u>Recommendation DFS2 -</u> It is recommended that DEPI Forestry Services establishes a systematic disease risk and health assessment program for coupes to be harvested, in consultation with DEPI forest health specialists, including assessment of risk of Phytophthora using DEPI's draft risk map, as appropriate.

Rationale: The Audit found that there is a general weakness in the area of systematic health assessment and identification of disease risk at an operational level.

Priority: High

<u>Recommendation DFS3</u> – It is recommended that DEPI Forestry Services extends its desktop searches for threatened flora and fauna values beyond 1 and 2 km respectively from the coupe to the broader catchment or landscape level, until such time as threatened species models are deemed appropriate for use in this context (refer to Recommendation REG4).

Rationale: The VBA database is limited in its usefulness in detecting threatened taxa, particularly flora. DEPI Forestry Services' procedure for the audited coupes was to search the coupe for flora values mapped within 1 km of the coupes and for fauna values within 2 km of the coupes, which may miss values mapped at a catchment level more than these distances from the coupe.



Under the current reliance on the VBA, there is a risk that there may be threatened taxa present on a coupe that have not been identified as part of the desktop assessment process, and which are therefore not being actively searched for during the pre-harvest planning. Desktop searches over a broader area, and/or the use of modelled habitat would be expected to reduce this risk.

Priority: High

<u>Recommendation DFS4</u> – It is recommended that DEPI Forestry Services documents its procedures for office and field based detection of environmental values, in consultation with DEPI biodiversity specialists.

Rationale: The auditor also notes that, at the time of the audit, there appeared to be close collaboration between DEPI Forestry Services staff and DEPI biodiversity specialists within the Bendigo office in identifying and managing for threatened taxa, however office and field-based procedures for detection of values are not well documented. The auditor understands that how the DEPI Forestry Services group will be managed in the future is still to be determined by DEPI, and that staff changes have occurred since the audit field work was completed.

Priority: High

<u>Recommendation DFS5</u> - It is recommended that DEPI Forestry Services continues to implement improvements in knowledge and implementation of traffic management and road closures.

Rationale: Five non-compliances with Major environmental impact assessment ratings were identified in relation to the failure to close roads or manage traffic when harvesting adjacent to roads. It was also observed during the audit that some staff had insufficient understanding of their authority under the *Forests Act 1958*, and the requirements of the *Worksite Traffic Management Standard AS 1742.3* and the *Code of Practice for Worksite Safety – Traffic Management*. In particular there was insufficient knowledge of situations where traffic management plans are required, and the authorisation requirements for road closures, traffic management plans and traffic controllers.

Priority: High

6.1.3 Recommendations for potential improvements to the regulatory framework

<u>Recommendation REG1</u> - It is recommended that guidance be provided on the location of field assessments in relation to the coupe and on selecting the appropriate soil horizon to use in determining water quality risk.

Rationale: As discussed under the *Waterway crossings*, *Waterway classification* and *Water quality risk* headings, the auditor notes some interpretation is required in assessing compliance with the requirements set out in Section 2.2.1 of the Code for field assessments to be used to determine water quality risk.

Priority: Medium

Recommendation REG2 - It is recommended that 'steep slopes' be defined.

Rationale: A degree of interpretation is required to determine where requirements for steep slopes apply as the Code and Management Procedures do not provide a definition of 'steep slopes'.



Priority: Medium

<u>Recommendation REG3</u> - It is recommended that DEPI develops, in consultation with VicForests, a robust process for the reporting of threatened species information that has been detected by VicForests and requires zoning amendment.

Rationale: VicForests had identified Leadbeater's Possum 1A habitat at three coupes (C3, C9 (also a slope exclusion area) and C18) and set these areas aside in exclusion zones. These zones had also been incorporated into VicForests' "Reserves spatial layer" for future rezoning as Special Protection Zone for long-term conservation, as required. However, there was no clear and robust process evident for reporting threatened species information detected at coupes and requiring zoning amendment, to DEPI (responsible for administering and implementing forest zoning changes).

Priority: Low

<u>Recommendation REG4</u> – It is recommended that DEPI reviews threatened flora and fauna models developed in association with the *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy to assess applicability for forestry applications; and if appropriate, they be made available for use by VicForests and DEPI Forestry Services.

Rationale: DEPI has recently produced over 1,500 threatened flora and fauna models for the purpose of identifying offset requirements under the *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy. The models were not developed for use in a forestry context; however they may be applicable.

Priority: High

Recommendation REG5 – It is recommended that the Central Highlands FMP be updated to:

- Ensure that Appendix J and K include all current FFG listed taxa and threatened taxa on the DEPI Advisory List, including but not limited to, VBA entries since 1995;
- Update the conservation status of all taxa in Appendix J and K to reflect the DEPI Advisory list and/or the EPBC Advisory list; and
- Update the management prescriptions to align conservation efforts with current conservation significance status.

Rationale: The auditor notes that Appendix J of the Central Highlands FMP was compiled in 1998. The Flora Information System (FIS) database (1995) is cited as the source for records. The FIS has been superseded by the Victorian Biodiversity Atlas. The conservation status of some of the flora listed has since been revised, for example, Crimson Spider Orchid (*Caladenia concolor*) is listed in Appendix J as vulnerable at a State level. The conservation status of this species has been elevated to Endangered at a State level, it is now also listed as Vulnerable at a Federal level. There are other, similar examples, including (but not limited to) Tree Geebung (*Persoonia arborea*) elevated to Vulnerable at a State level, and Slender Treefern (*Cyathea cunninghamii*) also elevated to Vulnerable conservation status at a State level. The conservation status, and the data source, of flora identified in Appendix J are now out-dated.



Similarly, the auditor identified outdated data in Appendix K of the Central Highlands FMP. Discrepancies include that the conservation status of Smoky Mouse (*Pseudomys fumeus*) has changed to being Endangered at a Federal level, FFG-listed, and Near Threatened at State level; but shown in Appendix K as Vulnerable.

Furthermore, the Code requires that "Forest management planning and all forestry operations must comply with measures specified in relevant Flora and Fauna Guarantee Action Statements and Flora and Fauna Guarantee Orders." The auditor notes that Action Statements or Guarantee Orders have not yet been developed for many threatened species. In the absence of Action Statements, the management prescriptions in the FMP need to be reviewed and amended to ensure they are adequate and current - to reflect the current conservation significance status of each species.

The auditor notes that VicForests and DEPI Forestry Services may need to reassess the suitability of their on-ground species detection methodologies to ensure they are appropriate for detection of all target species. Changes required may include additional training; more targeted field methodologies; searching by specialists; and seasonal searches.

Priority: High

<u>Recommendation REG6</u> - It is recommended that the Code or Management Procedures be amended to include a requirement to assess the risk of spread of pathogens.

Rationale: Although the Management Procedures contain prescriptions for management of spread of pathogens from areas of known risk, there is no requirement to undertake a risk assessment to determine risk.

Priority: High

<u>Recommendation REG7</u> - It is recommended that management prescriptions for the protection of threatened flora within riparian zones be reviewed to better manage potential impacts associated with construction of waterway crossings.

Rationale: The management prescriptions for significant flora outlined in Appendix J of the Central Highlands FMP apply to harvesting operations without giving due consideration to roading operations. In particular, the Central Highlands FMP does not specify management actions for species that grow in riparian areas, as it states they are adequately protected by waterway buffers and filters prescribed by the Code. The auditor notes however that roads do impact riparian zones at crossings.

Priority: High



Recommendation REG8

It is recommended that DEPI formally documents whether or not the following requirements apply to temporary roads:

- Management Procedures Section 1.6.1, notification and approval requirements for snigging forest produce or moving heavy machinery along or across temporary roads;
- Management Procedures Section 2.3.6, conformance of temporary road construction and maintenance to standards in the Road Management Agreement; and
- Management Procedures Section 1.6.3.1 construction and maintenance of temporary roads in accordance with the Review of Road Classifications, Geometric Designs and Maintenance Standards.

Rationale: The audit found that it was unclear whether the requirements are intended to apply to permanent roads only, or also to temporary roads.

Priority: Low

<u>Recommendation REG9</u> – It is recommended that DEPI reviews the requirements for road crossings of waterways and provides guidance relating to movement of native fish through crossing structures.

Rationale: Standard culverts are likely to present barriers for native fish species most often found in catchment headwaters. Appropriate crossing designs and structures can reduce these barriers, enabling natural migration cycles of native fish to continue. Culvert discharges at three coupes were found to be non-compliant as they project above the bed of the stream in a way that is likely to inhibit the passage of native fish. The EIA risk ratings were assessed as Major for one coupe with a permanent road and Moderate for two coupes with temporary roads. In all three cases, the stream beds were on gradients and of variable terrain such that installation of culverts without suspended outlets would require considerable excavation or result in significant acceleration of water flow. In these cases, a crossing type other than a conventional culvert is likely to be more appropriate.

Priority: High

<u>Recommendation REG10</u> - It is recommended that the following regulatory documents be revised to eliminate inconsistencies.

- Management Procedures Section 2.3.6 notification requirements for retention of temporary roads for use in the permanent road network is inconsistent with processes specified in the *Road Maintenance Agreement 2014*.
- The Review of Road Classifications, Geometric Designs and Maintenance Standards (ARRB 2001) document referred to in the Management Procedures section 1.6.3.1 specifies 5D roads should have 1 m wide table drains. The Road Maintenance Agreement 2014 referred to in Management Procedures section 2.3.6 does not specify table drain requirements for 5D roads.

Rationale: The auditor noted two inconsistencies between regulatory documents referred to from the Management Procedures.

Priority: Low



<u>Recommendation REG11</u> – The auditor recommends that the requirement in Section 1.6.3.7 of the Management Procedures to utilise topsoil stockpiles to rehabilitate road batter slopes be reviewed for removal.

Rationale: Technical references relating to low volume road engineering indicate slope design, retaining structures, buttresses, brush layering and drainage are effective means of stabilising exposed batters, and that topsoil placed on slopes greater than 40 degrees may be subject to sliver fill failure. The auditor also considers that stockpiled topsoil would be of greater value in rehabilitating temporary road alignments after they have been reshaped to a more natural profile on completion of harvesting.

Priority: Low

6.2 Module 3 (Regeneration and finalisation)

The audit identified three recommendations for Module 3. One applies to VicForests and two are aimed at potential improvements in the regulatory framework.

6.2.1 Recommendations for VicForests

<u>Recommendation VF6</u> – It is recommended that VicForests documents and implements a procedure for planning for the regeneration outcome to reflect the species mix and spatial distribution of the forest before harvesting.

Rationale: The Code specifies that regeneration must aim to approximate the composition of canopy species prior to harvest, and also their spatial distribution. While the audit confirmed the composition of canopy species was appropriate, there was no evidence that VicForests had considered the spatial distribution of canopy species in regeneration activities at three coupes, and documented procedures do not address spatial distribution.

Priority: Medium

6.2.2 Recommendations for potential improvements to the regulatory framework

The Audit identified one recommendation aimed at improving the ability of the regulatory framework to reduce risk of harm to the environment.

<u>Recommendation REG12</u> - It is recommended that the Code prescription relating to suitability of silvicultural methods for regeneration of understorey species be reviewed and revised to clarify its intended purpose; and that the standards and methods for the regeneration and assessment of regeneration of understorey species are developed and documented.

Rationale: The audit found the Code prescription '*Silvicultural methods for regeneration must be appropriate to the forest type (including understory species) and local conditions*' could not be fully assessed in relation to treatment of understory species. It is unclear whether this prescription is introducing further requirements to provide for these species at a coupe level, or whether it is aimed at the more disturbance tolerant understory species. It is also noted that the inclusion of standards and methods for regenerating understory species within Victorian native forestry guidelines and manuals would aid consistent interpretation of this requirement, as they are largely focused on overstorey species.

Priority: Medium



<u>Recommendation REG13</u> - The auditor recommends that in future regeneration audits, a desktop assessment of compliance of a sample representative of all harvested coupes completed in a given year be undertaken to determine if actions are being taken to successfully regenerate all coupes, not only those submitted as regenerated.

Rationale: The FAP audits only those coupes that VicForests has submitted as being adequately stocked. There is no check of whether actions are being taken to successfully regenerate all coupes and whether a backlog of unregenerated coupes is accumulating.

The 2013 Victorian Auditor-General's Report, *Managing Victoria's Native Forest Timber Resources*, identified deficiencies in both VicForests' and DEPI's processes of reconciliation of regenerated areas with harvested areas.

Priority: Medium



7 CONCLUSIONS

7.1 Overall assessment of compliance

7.1.1 Module 1 - VicForests

The audit included assessment of 18 coupes in the Central and Dandenong FMAs, including one roadline coupe and one thinnings coupe, selected to be representative of harvesting undertaken in the 2013-14 financial year, with the exception of domestic firewood coupes.

Overall, the audit identified a high level of compliance across all Compliance Element groups, with a total compliance score of 91% for coupes managed by VicForests.

The auditor noted a number of examples of good practice, including:

- Conservative delineation of rainforest boundaries and of areas supporting rainforest and Montane Riparian Thicket EVC flora taxa;
- A general practice of excluding areas steeper than 30 degrees from harvesting at the planning stage;
- Collaboration with DEPI in efforts to detect the spread of Myrtle Rust;
- Reuse of existing landings and road alignments;
- Instances of effective use of natural outslope drainage on tracks;
- Minimal construction of stream crossings;
- Remedial sediment control works at a stream crossing; and
- An efficient integrated approach to road closure applications and traffic management planning.

No non-compliances with Severe EIA risk rating were identified. One non-compliance with an EIA risk rating of Major was identified, for a waterway crossing structure on a permanent road preventing passage of fish.

Thirteen, or 13% of non-compliances had Moderate EIA risk ratings compliance in the *Roading* and *Water and soils* groups, mainly due to systemic issues including lack of assessment of risk of mass soil movement on steep slopes; not requiring or enforcing compliant waste disposal by contractors; weaknesses in methodologies for detecting significant environmental values for road alignments; and road closure and traffic management issues.

The majority (86%) of non-compliances identified were determined as having EIA risk ratings of Minor, Negligible or No impact. The 62 Minor non-compliances were mainly in the following areas:

- Not assessing risk of mass soil movement on coupes with steep slopes;
- Not assessing risk of the transmission of Phytophthora through quarry materials;
- Not undertaking adequate field surveys for environmental values prior to road construction; and
- Not requiring or enforcing compliant waste disposal by contractors.



This audit report includes five recommendations for improvement for VicForests, relating to:

- Review of application of its process for assessing soil erosion hazard and water quality risk assessment;
- Development and implementation of disease and health risk assessments;
- Expansion of search areas for threatened species values pending review of modelled data;
- Documentation and implementation of procedures to improve assessment for environmentally sensitive values on road alignments; and
- Communication of road maintenance requirements amongst relevant staff.

7.1.2 Module 1 – DEPI Forestry Services

The audit included assessment of six coupes managed by DEPI Forestry Services in the Bendigo FMA, selected to be representative of harvesting undertaken in the 2013-14 financial year, with the exception of domestic firewood coupes.

Overall, the audit identified a moderately high level of compliance, at 77%.

The auditor noted a number of examples of good practice, including:

- Conservative classification of drainage lines;
- Prohibiting track construction and blading off on coupes to protect erosive subsoils;
- Prohibiting removal of trees within 10 m of active erosion points;
- Excluding harvest activities along edges of high use public roads as an alternative to traffic management; and
- Apparent close collaboration between DEPI Forestry Services and DEPI biodiversity specialists.

No non-compliances with Severe EIA risk ratings were identified.

The audit found high levels of compliance in the *Operations* and *Infrastructure* Compliance Element groups. Moderate compliance levels were identified in the *Biodiversity* and *Water and soils* groups, mainly due to the low number of applicable audit criteria and systemic issues including lack of assessment of water quality risk and weed presence; and not requiring or enforcing compliant waste disposal by licensees. These non-compliances were assessed as having Minor, Negligible or no environmental impact. One non-compliance with a Moderate EIA was found for not having identified a drainage line and erosion gully before harvesting.

A low percentage level of compliance was identified in the Roading compliance element group, resulting from the small number of audit criteria relevant to DEPI Forestry Services' limited roading activities and systemic non-compliance with road closure and traffic management requirements when harvesting adjacent to minor forest roads. While DEPI Forestry Services had taken some preliminary measures to address this issue at the time of the audit, because of the risks to road users these non-compliances were assessed as having Major potential impacts.



This audit report includes five recommendations for improvement for DEPI Forestry Services, relating to:

- Provision of specific guidance to forest product licensees regarding felling trees within and adjacent to filters and removal of logs from filters;
- Development and implementation of disease and health risk assessments;
- Expansion of search areas for threatened species values pending review of modelled data;
- Documentation of procedures for threatened species detection; and
- Further development of traffic management and road closure procedures.

7.1.3 Module 3 – VicForests

The audit included ten coupes from within the Central and Dandenong FMAs that had been nominated by VicForests as adequately regenerated.

The audit found that adequate regeneration of local eucalypt species had occurred at all audited coupes.

No non-compliances with Severe, Major or Moderate EIA risk ratings were identified. Three non-compliances with Minor EIA risk ratings were identified where it could not be demonstrated that VicForests had considered spatial distribution of the original species in regeneration plans. A recommendation has been made that VicForests documents and implements a procedure to address this issue.

Five non-compliances with EIA risk ratings of Negligible were identified for not fully complying with seed provenance requirements; and instances of not undertaking weed assessment and control.

A further nine non-compliances were identified for not having assessed rehabilitation of infrastructure drainage after ground-based regeneration activities, resulting in Negligible EIA risk ratings; and incomplete records of regeneration details, for which environmental impact assessment was not considered applicable.

7.1.4 Recommendations to DEPI

Thirteen recommendations were made for potential improvements to the regulatory framework, relating to:

- Provision of guidance on the location of soil assessments in relation to the coupe and on selecting the appropriate soil horizon to use in determining water quality risk;
- Defining 'steep slopes';
- Development, in consultation with VicForests, of a robust process for the reporting of threatened species information that has been detected by VicForests and requires zoning amendment;
- Review of threatened flora and fauna models developed in association with the *Permitted Clearing of Native Vegetation: Biodiversity Assessment Guidelines* policy to assess applicability for forestry applications and provision to VicForests and DEPI Forestry Services;



- Updating of the Central Highlands FMP to include all current FFG listed taxa and threatened taxa on the DEPI Advisory List, updating the conservation status of all taxa in Appendix J and K, and updating management prescriptions to align conservation efforts with current conservation significance status;
- Amendment of the Code or Management Procedures to include a requirement to assess the risk of spread of pathogens;
- Review of management prescriptions for the protection of significant flora within riparian zones to better manage potential impacts associated with construction of waterway crossings;
- Documentation of whether Management Procedures Sections 1.6.1, 2.3.6, and 1.6.3.1 apply to temporary roads;
- Review of requirements for road crossings of waterways and provision of guidance relating to movement of native fish through various types of crossing structures;
- Revision to eliminate inconsistencies between Management Procedures Sections 2.3.6 and 1.6.3.1 and *Road Maintenance Agreement 2014*;
- Review of Management Procedures for removal of the requirement to utilise topsoil stockpiles to rehabilitate batter slopes;
- Review and revision of the Code prescription relating to suitability of silvicultural methods for regeneration of understorey species to clarify its intended purpose; and development and documentation of standards and methods for regeneration and assessment of regeneration of understorey species;
- Inclusion in future regeneration audits of a check as to whether a backlog of un- or undergenerated coupes is developing.

7.2 Risks to beneficial uses

The audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses listed in Section 2.3 of this report. The assessment of imminent environmental hazards was based on site observations and EIA risk rating assessments of identified non-compliances, using the experience and expertise of the audit team members. The assessment of risk to the listed beneficial uses is based on non-compliances identified and their respective EIA risk ratings at the coupe level and the auditor's judgement, backed by the experience and expertise of the audit team members, as to the significance of audit findings at a landscape level.

7.2.1 Life, health and wellbeing of humans

The Audit identified a systemic non-compliance in the Bendigo FMA for failure to adequately close roads or control traffic when falling trees adjacent to minor forest roads. The auditor assessed this issue as presenting a Major environmental impact rating, as it represents a risk to users of minor forest roads adjacent to five of the audited coupes. The auditor notes that DEPI Forestry Services has initiated management actions and a revised harvesting approach to address this issue; and this audit report includes a recommendation to continue to implement changes to ensure compliance.



The audit did not identify any other non-compliances that presented an unacceptable environmental risk to the life, health and wellbeing of humans.

7.2.2 Life, health and wellbeing of other forms of life, including the protection of ecosystems and biodiversity

The Audit did not identify any non-compliances with an EIA risk rating of Severe. Other than the traffic management issue referred to in Section 7.2.1 of this report, one non-compliance with an EIA risk rating of Major was identified, due to a permanent road stream crossing preventing the passage of fish. Two similar instances on temporary roads were also identified with lower EIA risk ratings; however compliant stream crossings were also identified on other coupes. In addition to finding non-compliances with the current requirements, this audit report includes a recommendation to DEPI to review the appropriateness of current regulatory requirements regarding types of stream crossing structures in relation to facilitating movement of native fish through crossings.

Thirty-one non-compliances with Moderate EIA risk ratings were identified across a range of Compliance Elements. With the exception of the identified non-compliances that are considered to be the result of systemic deficiencies within VicForests' management systems (monitoring and management of noxious weeds) all are considered to be isolated instances. Of the systemic issues identified, only one instance of noxious weed infestation resulted in an EIA risk rating of Moderate. All others were Minor, Negligible or No impact.

Based on these audit findings the audited activities are not considered to present an unacceptable risk to life, health and wellbeing of other forms of life, including the protection of ecosystems and biodiversity, within the context of approved timber harvesting on Victorian public land.

7.2.3 Local amenity and aesthetic enjoyment

Landscape buffers were not assessed as necessary on any of the audited coupes. One coupe had a landscape SMZ overlay; however DEPI requested and authorised harvesting inconsistent with the SMZ in order to maintain utility of the fire tower adjacent to the coupe. The auditor considers this trade-off of values to be based on intent to minimise overall long term environmental harm and provides an acceptable outcome.



8

GLOSSARY

Auditee

An auditee is a person or organisation being audited. DSE administers audits of organisations or individuals whose activities relate to Victorian timber harvesting in State forest. Relevant timber harvesting operations include those managed by VicForests in eastern-Victoria, as well as those managed by DSE in other parts of the State

Auditor

A highly qualified and skilled individual with extensive experience in environmental science and or engineering, as well as environmental auditing appointed pursuant to the *Environment Protection Act 1970* to conduct an independent and objective assessment of the nature and extent of harm (or risk of harm) to the environment posed by a process or activity, waste, substance or noise.

Biodiversity

The natural diversity of all life: the sum of all our native species of flora and fauna, the genetic variation within them, their habitats, and the ecosystems of which they are an integral part.

Compliance Element

The subject, activity or operational component being assessed for compliance against the regulatory framework.

Compliance Theme

Topics and/or issues deemed to overlap a number of compliance elements and/or auditing modules that may require additional focus on a recurring basis. Themes can be seasonal or regional, associated with biodiversity, coupe or forest type and/or other special prescriptions.

Clear-felling

Silvicultural method of harvesting a coupe whereby all merchantable trees, apart from those to be retained for wildlife habitat, are removed.

Coupe

An area of forest of variable size, shape and orientation from which logs for sawmilling or other industrial processing are harvested.

Erosion risk

The likelihood of erosion occurring due to soil erodibility, rainfall erosivity, slope and soil disturbance.

Forest Coupe Plan

A plan that must be prepared for each harvesting operation in public native forest and will contain a map identifying the area and a schedule incorporating the specifications and conditions under which the operation is to be administered and controlled.



Forest Management Area (FMA)

Basic units for forest planning and management in Victoria. Currently Victoria is divided into 15 Forest Management Areas as defined in the Forests Act 1958.

Forest Management Plan (FMP)

Forest Management Plans are produced by DEPI to address the full range of values and uses in FMAs, which have been designated as the units for planning forest management activities.

General Management Zone (GMZ)

A zone within a State forest defined as an area of land that will be managed for the sustainable production of timber and other forest products.

Habitat Tree

A tree identified and protected from harvesting to provide habitat or future habitat for wildlife. A habitat tree may be living or dead, and often contains hollows that are suitable shelter and/or nesting sites for animals such as possums and parrots.

Regeneration

The renewal or re-establishment of native forest flora by natural or artificial means following disturbance such as timber harvesting or fire.

Rehabilitation

The restoration and revegetation of a site of disturbance usually associated with landings and other within-coupe infrastructure.

Regulator

A government agency, typically a statutory authority. In the context of the FAP, DEPI as the regulator is responsible for ensuring that commercial timber harvesting activities Victoria's State forests are compliant with Victoria's regulatory framework. This includes compliance with relevant legislation, regulations and guidelines, including those specified in the Code of Practice for Timber Production 2007.

River health

An ecologically healthy river is one where the major natural features, biodiversity and/or functions of the river are still present and will continue into the future. Some change from the natural state may have occurred to provide for human use.

Special Management Zone (SMZ)

A zone within a State forest defined as a zone which will be managed to conserve specific features, while catering for timber production under certain conditions. Areas included cover a range of natural or cultural values, the protection or enhancement of which require modification to timber harvesting or other land-use practices rather than their exclusion. The zone contributes substantially to the conservation of important species, particularly fauna.



Special Protection Zone (SPZ)

A zone within a State forest defined as a zone which will be managed for conservation, and timber harvesting will be excluded.

Special Water Supply Catchment

A catchment that has been officially declared under Schedule 5 of the Catchment and Land Protection Act 1994.

State forest

As defined in Section 3 of the Forests Act 1958, State forest comprises publicly owned land which is managed for the conservation of flora and fauna; for the protection of water catchments and water quality; for the provision of timber and other forest products on a sustainable basis; for the protection of landscape, archaeological, historical and other cultural values; and to provide recreational and educational opportunities.

Thinning

The removal of part of a forest stand or crop, with the aims of increasing the growth rate and/or health of retained trees and, in commercial thinning, obtaining timber from trees that would otherwise eventually die before final harvest.

Timber Release Plan (TRP)

The Timber Release Plan (TRP) is prepared by VicForests in accordance with Part 5 of the Sustainable Forests (Timber) Act 2004. The TRP provides a schedule of coupes selected for timber harvesting and associated access road requirements; identifies the location and approximate timing of timber harvesting in the proposed coupes; and identifies the location of any associated access roads. It includes coupe details and maps. VicForests prepares TRPs that cover a rolling five-year period.

Victorian Biodiversity Atlas (VBA)

The VBA is the web-based information system designed to manage information about wildlife in Victoria. The system includes species attribute information, including origin and conservation status, along with more than six million records of species distribution and abundance from systematic surveys and general observations. The VBA replaces several of the Department's legacy systems, including the Flora Information System, the Atlas of Victorian Wildlife, the Aquatic Fauna Database and the VROTPop system.⁹

Water supply catchment

A catchment from which water is used for domestic water supply purposes.

Waterway

A permanent stream, temporary stream, drainage line, pool or wetland as defined in the Code of Practice for Timber Production 2007 (as amended).

⁹ Department of Environment and Primary Industries website: <u>http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/victorian-biodiversity-atlas</u>



Wood Utilisation Plan (WUP)

A Wood Utilisation Plan (WUP) is prepared by DEPI to detail the type and quantity of wood to be produced and to allocate wood to processors in western Victoria. The plan is prepared annually and covers a rolling three-year period, with detailed specifications for the first year and indicative specifications for the following two years.



9

LIMITATIONS

Jodie Mason along with her support team within and outside URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of the Victorian Department of Environment and Primary Industries.

It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Report. It is prepared in accordance with the scope of work and for the purpose outlined in the contract dated 10 June 2014.

The methodology adopted and sources of information used by Jodie Mason and the support team are outlined in this report. Jodie Mason and the support team have made no independent verification of this information beyond the agreed scope of works and we assume no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to Jodie Mason and the expert support team was false.

This report was prepared based on documents reviewed, interviews conducted and activities and conditions observed at the audited sites during visits between 30 June and 17 July 2014 and is based on the conditions encountered and information reviewed at the time of preparation. Jodie Mason, URS and the support team disclaim responsibility for any changes that may have occurred after this time, whether they are hazardous or otherwise.

This investigation is limited to visual observation of conditions at the audited sites, interviews with personnel and other selected stakeholders and a review of records and procedural documents. Opinions and recommendations contained in this report are based upon data provided by representatives of the Department of Environment and Primary Industries and VicForests, information gained during site inspections and interviews with personnel and other selected stakeholders. This approach reflects current professional practice for environmental audits. No warranty or guarantee of property conditions is given or intended.

This Report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This Report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Except as required by law, no third party may use or rely on this Report unless otherwise agreed by URS in writing. Where such agreement is provided, URS will provide a letter of reliance to the agreed third party in the form required by URS.

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Any estimates of potential costs which have been provided are presented as estimates only as at the date of the Report. Any cost estimates that have been provided may therefore vary from actual costs at the time of expenditure.



APPENDIX A FOREST AUDIT PROGRAM MANUAL

Available from DEPI on request at fpd.reports@depi.vic.gov.au



APPENDIX B MODULE 1 - COUPE PLANNING, HARVESTING AND CLOSURE

Available from DEPI on request at fpd.reports@depi.vic.gov.au



APPENDIX C MODULE 3 – REGENERATION AND FINALISATION

Available from DEPI on request at fpd.reports@depi.vic.gov.au



APPENDIX D SUMMARY LIST OF AUDITED COUPES

Module 1 coupes

COUPE NUMBER	FOREST MANAGEMENT AREA	COUPE NUMBER	FOREST MANAGEMENT AREA
C1	Central	C13	Dandenong
C2	Central	C14	Dandenong
C3	Central	C15	Dandenong
C4	Central	C16	Dandenong
C5	Central	C17	Dandenong
C6	Central	C18	Central
C7	Central	C19	Bendigo
C8	Central	C20	Bendigo
C9	Central	C21	Bendigo
C10	Central	C22	Bendigo
C11	Central	C23	Bendigo
C12	Central	C24	Bendigo

Module 3 coupes

COUPE NUMBER	FOREST MANAGEMENT AREA	COUPE NUMBER	FOREST MANAGEMENT AREA
R1	Central	R6	Central
R2	Central	R7	Central
R3	Central	R8	Dandenong
R4	Central	R9	Central
R5	Central	R10	Central



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APPENDIX F AUDITEE COMMENTS ON FACTUAL MATTERS IN THE DRAFT AUDIT REPORT

F.1 VicForest's comments

Both VicForests and DEPI Forestry Services provided comments on the draft report, which were considered by the auditor in the finalisation of the audit report. The table below details those comments that did not lead to a material change to the audit report.

DRAFT AUDIT REPORT WORDING	AUDITEE COMMENTS
Section 4.3.1.1	
The audit team observed no obvious environmental pollution, waste oil, empty drums or discarded machinery parts associated with harvesting activities at any VicForests coupe. Litter was present on some coupes, however the general nature and location of this litter suggests it could have been deposited by persons other than those conducting timber harvesting operations. A systemic non-compliance was identified for VicForests against the requirement to ensure that waste oils, drums, discarded machinery parts and all other waste is removed to an approved disposal facility. There was no evidence that VicForests effectively communicates or enforces this requirement with timber harvesting contractors. The EIA could not be assessed for these instances of non- compliance as the fate of the waste is unknown.The audit determined that the potential environmental impact of these non-compliances was Minor , in accordance with the descriptions in Section 3.4 of this report. However the auditor notes that this assessment is based on limited information as the fate of the waste is unknown.	While VicForests accept this is a requirement of the code, it is impractical to implement and prove on a coupe basis. "Household" rubbish is often disposed of along with the contractors' domestic rubbish. Industrial rubbish is often disposed of by suppliers or taken to disposal facilities/ drum muster on an annual basis. These factors make proof of compliance with this requirement particularly difficult.
Section 4.3.1.1	
A non-compliance was recorded at one coupe (C4) as the waterway crossing constructed at this coupe could have been avoided. VicForests' initial haulage route for this coupe involved constructing a stream crossing to access the landing site. The crossing could have been avoided as another access route was subsequently constructed to the same landing which did not use the stream crossing. The EIA rating for this non-compliance was assessed as Moderate. It is also relevant that the crossing at coupe C4 is located within a Spotted Tree Frog catchment.	This crossing could only have been avoided by constructing a second landing. The intent of the original plan was to minimise soil disturbance, which is the primary issue in preventing sedimentation of the stream. Not to construct a crossing would have resulted in the need to construct two landings and additional side-cuts.



DRAFT AUDIT REPORT WORDING

AUDITEE COMMENTS

Section 4.3.4.1

In one instance (C4), a crossing that could have been avoided was constructed across a waterway within a Spotted Tree Frog catchment. The Central Highlands Forest Management Plan 1998 refers to an internal report 'Water Quality Protection Measures for the Conservation of the Spotted Tree Frog' for prescriptions relating to management of roading within Spotted Tree Frog catchments. This document indicates that it is good practice to avoid construction of stream crossings within Spotted Tree Frog catchments greater than one kilometre (km) upstream of recorded Spotted Tree Frog sites, as was the case for this coupe. As this crossing was avoidable and was observed during field audit to be causing sedimentation of the stream (discussed further in Section 4.3.4.1 Road design), the auditor considers that road planning within Spotted Tree Frog catchments is an area for improvement.	While we accept how we demonstrate consideration of this issue could at times be better documented, we disagree that this crossing should not have been constructed, as discussed in comment on page 25.
Section 4.3.2.1 DEPI is developing a draft risk map [for Phytophthora] as part of a broader effort to publish tools that will assist land managers to identify and manage disease risks. He advised that the intention is to publish the map and accompanying detailed procedural information during 2014 or early 2015. He also advised that the map is able to be used on the Department's intranet at an appropriate scale to identify coupe locations; but that the maps are draft versions and have only recently been made available to VicForests as part of the review process. The draft map provides indicative risk of vegetation loss through infection by Phytophthora, based on a range of site and species factors.	This information is still in development from DEPI. The basis of the risks assigned is still unclear to VicForests and may have been misinterpreted by the auditors.



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AUDITEE COMMENTS

4.3.2.1

The VBA database is not considered to be a This is the recognised database of the Victorian Government. This is an official database which is reliable record of threatened flora. This is because it is reliant on records being entered into supplied to VicForests for us to use to manage the database which is itself dependant on surveys these issues. being conducted. Furthermore, the integrity and If this database is considered to be unreliable, we utility of the VBA database are reliant on the would suggest a recommendation for the locations of records being entered accurately and database to be improved, as this will result in precisely. In the case of particularly rare or better outcomes for all users of the database. threatened flora, or in in the case of flora that are actively collected for commercial trade, the locations of records may be entered at a catchment level rather than as a specific location. Under the current reliance on the VBA, there is a risk that there may be threatened flora present on a coupe that have not been identified as part of the desktop assessment process, and which are therefore not being actively searched for during the pre-harvest reconnaissance or in determining new road alignments or landing locations Section 4.3.4.1 There was insufficient evidence that VicForests You may not have seen our instructions: had conducted detailed field surveys of the final 1. Coupe Reconnaissance alignment of the audited roads. The auditor 2. Coupe Planning therefore finds the field survey processes used for new road alignments to be insufficient and non-These instructions (in conjunction with others) compliant with the Code prescription that "Plans detail how Foresters are to conduct field for roads must be based on field surveys to inspections including transects which help identify ensure that all environmentally sensitive locations the presence of threatened species. Training is are identified." (p27). also provided to Foresters in the identification of key species in their area.



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