

Report

Environmental Audit - Forest Audit Program Module 6 - Harvesting Performance

1 APRIL 2011

Prepared for Department of Sustainability and Environment 8 Nicholson Street Melbourne Victoria

42807504



Project Manager and Environmental Auditor, appointed pursuant to the Environment Protection Act (1970):

Jodie Mason Principal Consultant

Principal-In-Charge:

Andrew Morton Vice President URS Forestry

Author:

/WI

Maria van der Geest Senior Forestry Consultant

Independent Technical Reviewer:

Ashley Lang Senior Principal **URS Australia Pty Ltd**

Level 6, 1 Southbank Boulevard Southbank VIC 3006 Australia T: 61 3 8699 7500 F: 61 3 8699 7550

Date: Reference: Status: **1 April 2011** 42807504/01/01 Final

© Document copyright of URS Australia Pty Limited.

This report is submitted on the basis that it remains commercial-in-confidence. The contents of this report are and remain the intellectual property of URS and are not to be provided or disclosed to third parties without the prior written consent of URS. No use of the contents, concepts, designs, drawings, specifications, plans etc. included in this report is permitted unless and until they are the subject of a written contract between URS Australia and the addressee of this report. URS Australia accepts no liability of any kind for any unauthorised use of the contents of this report and URS reserves the right to seek compensation for any such unauthorised use.

Document delivery

URS Australia provides this document in either printed format, electronic format or both. URS considers the printed version to be binding. The electronic format is provided for the client's convenience and URS requests that the client ensures the integrity of this electronic information is maintained. Storage of this electronic information should at a minimum comply with the requirements of the *Commonwealth Electronic Transactions Act (ETA) 2000.*

Where an electronic only version is provided to the client, a signed hard copy of this document is held on file by URS and a copy will be provided if requested.

*Cover photos by Stephen Colquitt, DSE 2010.

ISBN 978-1-74287-103-5 (online)

Table of Contents

Exec	utive	Summaryv
1	Back	ground1
2	Introc	luction3
3	Audit	Scope
	3.1	Objectives, scope and period of audit5
	3.2	Segment and elements audited5
	3.2.1	Excluded elements6
	3.3	Beneficial uses7
	3.4	Audit criteria7
	3.5	Audit support team7
4	Audit	Approach
	4.1	Audit target selection8
	4.2	Sourcing relevant information8
	4.3	Desktop assessment
	4.3.1	Data review9
	4.3.2	GIS analysis10
	4.3.3	Mapping accuracy and GPS precision11
	4.4	Environmental impact assessment
	4.5	DSE stakeholder consultation
	4.6	Reporting audit findings
5	Audit	Findings14
	5.1	Summary of data review findings14
	5.2	Summary of overall compliance14
	5.3	Wood Utilisation Plans
	5.3.1	Audit criteria17
	5.3.2	Data review19
	5.3.3	Level of compliance20
	5.4	Timber Release Plans23
	5.4.1	Audit criteria24
	5.4.2	Data review26
	5.4.3	Level of compliance27



Table of Contents

	5.5	Harvest limits in Melbourne's water supply catchments	30
	5.5.1	Audit criteria	30
	5.5.2	Data review	32
	5.5.3	Level of compliance	33
	5.6	Harvest limits in Special Management Zones	36
	5.6.2	Audit criteria	37
	5.6.3	Data review	40
	5.6.4	Level of compliance	42
	5.7	Summary of recommendations	14
6	Conc	lusion4	15
	6.1	Overall assessment of compliance	15
	6.2	Risks to beneficial uses	15
7	Gloss	sary4	17
8	Limita	ations5	51

Tables

Table 1	Summary information in accordance with EPA Publication 1147v
Table 3-1	Audit criteria for each Compliance Element7
Table 5-1	Number of coupes and area harvested by DSE in 2008/09 18
Table 5-2	WUP Compliance Element - data review findings and implications for the audit
Table 5-3	WUP Compliance Element - summary of compliance
Table 5-4	Number of coupes and area harvested by VicForests in 2008/0925
Table 5-5	TRP Compliance Element - data review findings and implications for the audit
Table 5-6	TRP Compliance Element - summary of compliance
Table 5-7	Summary of the spatial harvest limits in Melbourne's water supply catchments
Table 5-8	Melbourne's water supply catchments Compliance Element – data review findings and implications for the audit
Table 5-9	Summary of annual harvested areas in Melbourne's water supply catchments 1999/00 – 2008/09
Table 5-10	Timber harvest limits and conditions in relevant <i>Flora and Fauna Guarantee Act 1988</i> Action Statements

Table of Contents

Table 5-11	SMZ Compliance Element - data review findings and implications for the audit
Table 5-12	Summary of SMZ areas harvested in FMAs for the period 1999/00 to 2008/09
Table G-1	Summarised forest type
Table G-2	Summarised water catchment name
Table L-3	Summary of the forest types harvested in SMZs 1999/00 to 2008/09

Figures

Figure 1	Summary of compliance for each Compliance Element	vii
Figure 1-1	Map of Forest Management Areas and responsibilities in Victoria's State forests	1
Figure 5-1	Summary of compliance for each Compliance Element	. 15
Figure 5-2	Number of the non-compliant coupes and area harvested	. 22
Figure 5-3	Number of non-compliant coupes and area harvested	. 29
Figure L-1	Summary of the forest types harvested within SMZs 1999/00 to 2008/09	

Figure L-2 Summary of the silviculture systems used in SMZs 1999/00 to 2008/09

Appendices

Appendix A	Forest Audit Program Module 1 - Overview
Appendix B	Forest Audit Program Toolbox Module 2 – Audit Process
Appendix C	Forest Audit Program Toolbox Module 6 – Harvesting Performance
Appendix D	Forest Audit Program Toolbox Module 6 – Workbooks
Appendix E	Auditee Responses to Matters of Fact
Appendix F	List of databases audited and reference documents
Appendix G	GIS analysis methodology
Appendix H	Detail of non-compliance with the WUPs
Appendix I	Detail of non-compliance with the TRPs
Appendix J	Map of Melbourne's water supply catchments
Appendix K	Harvest limits in Special Management Zones
Appendix L	SMZ GIS analyses
Appendix M	Alternate audit approach for the SMZ Compliance Element



Abbreviations

Abbreviation	Description
AO	Allocation to VicForests Order 2004 (as amended) – generally referred to as the "Allocation Order" $% \left(\mathcal{A}^{(1)}_{1}\right) =0$
CAP	Corrective Action Plan
CIS	Coupe Information System
Code	Code of Practice for Timber Production 2007
DSE or The Department	Department of Sustainability and Environment
EIA	Environmental Impact Assessment
EPA	Environment Protection Authority
FAP	Forest Audit Program
FCP	Forest Coupe Plan
FFG Act	Flora and Fauna Guarantee Act 1988
FMA	Forest Management Area
FMP	Forest Management Plan
FMZ	Forest Management Zone
GIS	Geographic Information System
GMZ	General Management Zone
GPS	Global Positioning System
HSE	Health, Safety and Environment
Management Procedures	Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007
SAP	Special Area Plan
SFMS	Sustainable Forests Management System
SFRI	State-wide Forest Resource Inventory
SMZ	Special Management Zone
SOP	Standard Operating Procedure
SPZ	Special Protection Zone
SWSC	Special Water Supply Catchment Area
TRP	Timber Release Plan
WUP	Wood Utilisation Plan
The Act	The Sustainable Forests (Timber) Act 2004
The EP Act	The Environment Protection Act 1970

This report documents the methodology and findings of an environmental audit of timber production in State forests in Victoria for the 2008/09 financial year. The objective of the audit is to assess and report on the operational performance of timber harvesting operations with regards to the area harvested, for the 2008/09 financial year in State forests, against spatial limits established under various legislative planning processes and government policies aimed at achieving sustainable forest management. The audit was undertaken in accordance with the scope and methodology developed by the Department of Sustainability and Environment (DSE) through its *Forest Audit Program* (FAP).

Summary information required			
EPA file reference no.	68515-2		
Auditor	Jodie Mason		
Auditor term of appointment	14 July 2008 - 14 July 2012		
Name of person requesting audit	Stephen Colquitt, Project Manager, Department of Sustainability and Environment (DSE)		
Relationship to premises/location	DSE is the regulator of commercial timber harvesting activities on public land in Victoria		
Date of request	27-Sep-2010		
Date EPA notified of audit	30-Sep-2010		
Completion date of the audit	1-Apr-2011		
Reason for audit	Required by the DSE Forest Audit Program		
Description of activity	Assessment of timber harvesting compliance with spatial harvest limits set for Melbourne's water supply catchments and Special Management Zones and contained in Wood Utilisation Plans and Timber Release Plans		
EPA region	State wide		
Dominant — Lot on plan	N/A - State forest		
Additional — Lot on plan(s)	N/A - State forest		
Site/premises name	Coupes harvested in 2008/09 financial year across Victoria		
 Building/complex sub-unit No. 	N/A - State forest		
Street/Lot — Lower No.	N/A - State forest		
Street/Lot — Upper No.	N/A - State forest		
Street Name	N/A - State forest		
 Street type (road, court, etc) 	N/A - State forest		
Street suffix (North, South etc)	N/A - State forest		
Suburb	N/A - State forest		
Postcode	N/A - State forest		
GIS coordinate of site centroid7	N/A		
o Latitude (GDA94)	N/A		
o Longitude (GDA94)	N/A		
Members and categories of support team utilised	N/A		
Outcome of the audit	Audit report with recommendations		

Table 1 Summary information in accordance with EPA Publication 1147



Summary information required			
Further work or requirements	This audit report includes three recommendations for improvement, including those where current systems, documented procedures or practices do not adequately allow for demonstration of compliance with spatial limits established under various legislative planning processes. They relate to clarification of agreed harvest limits in Melbourne's water supply catchments, clarification of the datasets used to monitor the annual harvesting in Melbourne's water supply catchments and review and revision of the <i>FAP Module 6 Harvesting Performance</i> scope and methodology for assessment of the SMZ Compliance Element		
Groundwater segment	N/A		
Surrounding land use	Surrounding land includes private property, and State forest, State park and national park managed for multiple uses including timber harvesting, recreation, biodiversity conservation and water storage and management		

The scope of the audit is the activities and Compliance Elements included within the FAP *Module 6 Harvesting Performance* and *Module 6* workbooks. The scope involved the assessment of compliance related to monitoring of annual harvesting performance and compliance with the Timber Release Plans (TRPs), Wood Utilisation Plans (WUPs) and cumulative harvest limits. Compliance with the Allocation Order (Compliance Element #1 listed in *FAP Module 6*) was not assessed by the auditor for the 2008/09 period due to the fact that the *Monitoring Annual Harvesting Performance* (MAHP) report for the audit period had been completed. The FAP audit methodology is similar to that used in creating the MAHP report and DSE considered that there was little benefit in the auditor replicating this work.

The audit assessed all coupes harvested by DSE and VicForests in State forests in Victoria in the 2008/09 financial year. The harvested area comprised 357 coupes (5,644 hectares (ha)) harvested by VicForests in eastern Victoria and 94 coupes (3,298 ha) harvested by DSE (predominantly in western Victoria).

Additionally the audit assessed timber harvesting operations conducted between 1999/00 and 2008/09 against spatial harvest limits established for harvesting in Melbourne's water supply catchments and the Special Management Zones (SMZs). The audit assessed a total of 134 timber harvesting coupes (2,470 ha) in Melbourne's water supply catchments and a total of 481 timber harvesting coupes (7,174 ha) in 233 SMZs.

Desktop data assessment, Geographic Information System (GIS) analyses and data interrogation and review of a 10% sample of the datasets, was conducted over a three week period between November and December 2010, with reporting and review of auditee comments on preliminary findings and factual matters occurring between January and March 2011. Compliance or non-compliance was noted for defined audit criteria within the four Compliance Elements.

The audit identified that a large percentage of the area of timber harvesting operations in State forests in the 2008/09 financial year was compliant with the spatial limits established under various legislative planning processes and government policies aimed at achieving sustainable forest management. Figure 1 summarises compliance as assessed for each Compliance Element. The Auditor noted a number of individual examples of compliant and good practices, including instances of:

• Harvesting in accordance with the spatial limits defined in the *Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007* in Melbourne's water supply catchments;

- Harvesting in accordance with the spatial limits defined in the Forest Management Plans in SMZs; and
- Generally consistent recent logging history databases and records.

However, the audit also identified a small number and area of non-compliant timber harvesting coupes managed by DSE in the WUP Compliance Element and managed by VicForests in the TRP Compliance Element. With regards to the non-compliances, the audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses of the environment (life, health and wellbeing of humans, organisms and ecosystems, local amenity and aesthetic enjoyment), noting that the scope of the audit was limited to desktop review.



Figure 1 Summary of compliance for each Compliance Element

n = total number of coupes / audit requirements for each Compliance Element

The *Wood Utilisation Plan* Compliance Element, which addresses the compliance of timber harvesting operations with the spatial limits established in the WUPs, had a high proportion of compliant harvested area with 94% of the harvested area found to be compliant with the WUPs. Of the 97 coupes harvested on WUP areas, the audit found that 81% of the coupes were compliant with the WUP areas spatial limits including 76 coupes managed by DSE and three coupes managed by VicForests. With an error margin applied to account for Global Positioning System (GPS) accuracy limitations, the audit identified 18 non-compliant coupes, six of which were not on an approved WUP at the time of harvest. The total area of non-compliance was 199 hectares representing 6% of DSE harvested area in 2008/09. The audit also identified a large number of coupes with small areas located outside of the respective WUP areas, suggesting systemic limitations in the accuracy of the WUP mapping. This may be due to the WUP mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes



were not recorded as non-compliances since they were assessed as having been located in accordance with procedural limits. However, 18 coupes with area harvested greater than 50 metres (m) outside of the WUP boundaries including the six coupes that have been harvested on areas not listed on an approved WUP indicate that in these instances the *Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007* (Management Procedures) have not been applied correctly.

The *Timber Release Plan* Compliance Element, which addresses the compliance of timber harvesting operations with the spatial limits established in the TRPs, had a high proportion of harvested area in compliance with 99.9% of the harvested area found to be compliant with the TRPs. Of the 354 coupes harvested on TRP areas, the audit found that 96% of the coupes were compliant with the TRP areas spatial limits. With an error margin applied to account for GPS accuracy limitations, the audit identified 13 coupes that did not comply with the TRP spatial limits or the procedural allowances. The total area of non-compliance was four hectares representing less than 0.1% of VicForests' harvested area in 2008/09. The audit also identified a large proportion of harvested coupes with small areas located outside of the respective TRP boundaries but within the procedural limits, suggesting systemic limitations in the accuracy of the TRP mapping. This may be due to the TRP mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliances since they were assessed as having been located in accordance with procedural allowances. The non-compliant areas and coupes were attributed to 13 instances of incorrect application of the Management Procedures.

The *Harvest Limits in Melbourne's water supply catchments* Compliance Element addresses the compliance of timber harvesting operations in four water supply catchments with the spatial limits established in the Forest Management Plans (FMPs) and Management Procedures. This Compliance Element had relatively few requirements with eight spatial harvest limits defined in the Management Procedures tested to assess compliance. The audit found that harvesting operations did not exceed the harvest limits in all four water supply catchments. As such this Compliance Element achieved 100% compliance in both the harvested area and against the number of requirements.

The *Harvest limits in Special Management Zones* Compliance Element addresses the compliance of timber harvesting operations with the spatial harvest limits established in the FMPs and the *Flora and Fauna Guarantee Act 1988* (FFG Act) Action Statements. The audit found that only eight FMPs and six FFG Action Statements prescribed spatial harvest limits and as such the audit criteria did not allow for a complete assessment within the intended scope and scale of the audit. However, an assessment of the total area harvested in SMZs for each Forest Management Area (FMA) provided an indication of compliance with the FMP harvest limits. Of the 12 FMPs, eight FMPs defined *approximate* spatial harvest limits. These eight requirements were used to assess compliance. No non-compliances were recorded for the SMZ Compliance Element, noting that four FMAs were unable to be assessed due to lack of information in the FMPs. As such this Compliance Element achieved 100% compliance in both the harvested area and against the number of requirements.

This audit report includes three recommendations for improvement, including those where current systems, documented procedures or practices do not adequately allow for demonstration of compliance with spatial limits established under various legislative planning processes. They relate to clarification of agreed harvest limits in Melbourne's water supply catchments, clarification of the datasets used to monitor the annual harvesting in Melbourne's water supply catchments and review and revision of the *FAP Module 6 Harvesting Performance* scope and methodology for assessment of the SMZ Compliance Element.

The Auditor notes that it is not appropriate for the reader to draw direct comparisons between the level of compliance or environmental impact of the four Compliance Elements since differences between in forest types, the landscape and other forest values within which they occur and the harvest intensity between the audited coupes managed by VicForests and those managed by DSE differ significantly throughout State forests. Further, due to differences in audit criteria, it is not appropriate for the reader to draw direct comparisons between compliance scores presented in this first audit report against the new FAP and those reported for the annual audit process managed by EPA Victoria in the period from 2003 to 2007.



Background

The Department of Sustainability and Environment (DSE or The Department) is the regulator of timber harvesting activities in State forests in Victoria and DSE is responsible for planning and managing domestic and commercial timber harvesting and sale of timber products in State forests in the west of the state. VicForests is responsible for planning and managing commercial timber harvesting and the sale of timber products from State forest in the east of the state; as depicted in Figure 1-1 below.





(DSE FAP Module 1, 2010)

As the regulator, DSE manages an independent audit program to ensure that timber harvesting in State forests throughout Victoria is conducted in accordance with regulatory requirements. In 2007, EPA Victoria commissioned a review of the suite of audits undertaken across the timber production cycle by all parties and made recommendations to improve the audit program. As part of this review, EPA Victoria's consultant sought input from stakeholder and community groups for consideration in the report.

In response to the findings of the report, the Minister for Environment and Climate Change requested that DSE develop a new *Forest Audit Program* (FAP). Public and other stakeholder consultation was undertaken by DSE to determine what compliance elements were to be included and how future audits would be conducted. Stakeholder information sessions were held between 27 January and 5 February 2010 by DSE to provide opportunity for input into the new FAP. The sessions focussed on discussing the following issues.

- Audit Target Selection including sampling percentage, theme versus area focus, risk based selection or use of past performance;
- Audit Continuity including how this affects target selection;



1 Background

- Audit Methodology and Approach including alignment with existing environmental audit expectations outlined in the *Environmental Protection Act 1970* for the assessment of the protection of beneficial use;
- Report Format including consideration of alignment with the expectations outlined in Section 53V of the *Environmental Protection Act 1970* and other DSE input requirements;
- Nature of Findings/Scoring including consideration of risk-based scoring and clarity of findings for close-out and management of non-compliance; and
- Resourcing and Timing including consideration of desktop and site-specific compliance elements, staff resourcing and deployment.

In 2010, DSE finalised the development of the new FAP which included a series of five audit modules intended to assess, in an open and transparent manner, the environmental impacts of activities associated with timber harvesting conducted in State forests. The first two *FAP Modules* are procedural and provide background information which describes the intended audit process. The other five modules address activities throughout the planning, roading, harvesting, regeneration, monitoring and finalisation stages of the forest harvesting cycle. The FAP Modules are listed below:

- 1. FAP Module 1 Overview;
- 2. FAP Module 2 Audit Process;
- 3. FAP Module 3 Tactical Planning;
- 4. FAP Module 4 Operational Planning;
- 5. FAP Module 5 Harvesting and Closure;
- 6. FAP Module 6 Harvesting Performance; and
- 7. FAP Module 7 Regeneration and Finalisation.

Further information regarding the Forest Audit Program is provided on the DSE website (<u>www.DSE.vic.gov.au</u>).

Introduction

This report documents the methodology and findings of an environmental audit of timber harvesting operations in State forests in Victoria for the 2008/09 financial year. The Department of Sustainability and Environment engaged URS Australia Pty Ltd (URS) to undertake the audit. Jodie Mason (the Auditor) of URS led the audit in her capacity as an environmental auditor appointed pursuant to the *Environment Protection Act 1970*.

The objective of the audit is to assess and report on the operational performance of timber harvesting operations, undertaken in the 2008/09 financial year in State forests, against spatial limits established under various legislative planning processes and cumulative area limits established under the Allocation Order, and all other relevant legislation, regulations and government policies aimed at achieving sustainable forest management.

All commercial timber harvesting in Victoria's State forests is subject to the Sustainable Forests (*Timber*) Act 2004, which requires compliance with the Code of Practice for Timber Production (the Code). The Code is the key regulatory instrument applicable to commercial timber harvesting and is developed under the Conservation, Forests and Lands Act 1987. It prescribes the minimum standards to which timber harvesting in Victoria must comply. The Code requires that Forest Management Plans are developed for State forests in all Forest Management Areas (FMAs) in Victoria.

Forest Management Plans (FMPs) are prepared for all FMAs and are intended to provide for the balanced use of State forests. FMPs are prepared using a range of expertise and community input. Each FMP describes a zoning scheme which set priorities and permitted uses in different parts of State forest. The Special Protection Zone (SPZ) is managed for conservation, with exclusion of timber harvesting. The General Management Zone (GMZ) caters for a range of uses with timber production as a high priority. The Special Management Zone (SMZ) is managed for specific features, including the conservation of rare or threatened flora and fauna species, habitat and breeding sites, protection of wetlands and sites of cultural and heritage value, and the protection of landscape values and visual amenity, while catering for timber production under certain conditions. Timber harvesting in SMZs is required to be undertaken with specific conditions such as harvest area limits and temporal limits. Harvesting prescriptions in these areas depends on the described values of the SMZ and are defined in the FMPs and *Flora and Fauna Act 1988* (FFG Act) Action Statements.

The Code also prescribes the timber harvesting planning process and requires medium term harvest area planning and scheduling based on long-tern estimates of sustainable harvesting rates. Threeyearly *Wood Utilisation Plans* are prepared annually for commercial timber harvesting operations in each FMA managed by DSE in western Victoria. Wood Utilisation Plans (WUPs) are prepared in accordance with the relevant FMP and the Code and designate, describe and schedule coupes for harvesting. In eastern Victoria, areas of State forest are allocated by the Minister for Environment and Climate Change to VicForests for the purposes of harvesting and selling timber resources and are published in the Government Gazette *Allocation Order* (AO). VicForests prepares a *Timber Release Plan* that includes a schedule of coupes selected for timber harvesting and associated access road requirements and details the location and approximate timing of timber harvesting in the proposed coupes. Timber Release Plans (TRPs) are prepared by VicForests in accordance with Part 5 of the *Sustainable Forests (Timber) Act 2004* and must be consistent with the FMPs, the AO and the Code. On the publication of a notice of the approval of a TRP in the Victoria Government Gazette, the timber resources to which the approved TRP applies are vested in VicForests.

The Management Procedures for timber harvesting operations and associated activities in Victoria's State forests 2007 (Management Procedures), developed by DSE, provide additional guidance to



2 Introduction

VicForests and DSE in meeting the requirements of the Code, AOs, TRPs and WUPs, as well as providing further environmental and operational requirements including the harvest limits in Melbourne's water supply catchments. The Management Procedures apply to all commercial timber harvesting undertaken by VicForests and DSE.

The audit is intended to benefit DSE 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 assist VicForests and DSE in their objectives of continual improvement. Public reporting of findings will help inform the public and contribute to transparency of the performance of timber harvesting operations on State forests.

This audit was undertaken in accordance with the scope and methodology specified in two procedural modules of the FAP, *Module 1 Overview* and *Module 2 Audit Process* as well as *FAP Module 6 Harvesting Performance*, provided by DSE. These documents are attached as Appendix A, Appendix B and Appendix C, respectively.

The methodology used to undertake this audit is outlined in Section 4 of this report. The audit findings and recommendations are reported in Section 5, with conclusions and a summary of the recommendations presented in Section 6.

The audit was undertaken to assess compliance of timber harvesting activities with the specified components of the existing regulatory framework. The audit did not include assessment of the efficacy of the framework and associated systems and documents.

The audit was conducted under section 53V of the *Environment Protection Act 1970* (EP Act) which provides for and defines environmental audits as an assessment of the nature and extent of harm (or risk of potential harm) to the environment posed by an industrial process or activity, waste, substance or noise. Additionally, the audit has been conducted in accordance with Environment Protection Authority (EPA) publication 953, *'Environmental Auditor Guidelines for Conducting Environmental Audits'*.

Audit Scope

This section outlines the objectives, scope and time period addressed by the audit, the segment and elements of the environment audited, the considered beneficial uses, audit criteria, excluded elements, and the Auditor's support team.

3.1 Objectives, scope and period of audit

The objective of the audit is to assess and report on the operational performance of timber harvesting operations with regards to the area harvested, undertaken in the 2008/09 financial year on State forests, against spatial limits established under various legislative planning processes and government policies aimed at achieving sustainable forest management.

The scope of the audit is activities included within the *FAP Module 6 Harvesting Performance* component of the FAP and 'Compliance Elements' included in *Module 6* workbooks being the assessment of compliance related to monitoring of annual Harvesting Performance and compliance with the Allocation Order, Timber Release Plans, Wood Utilisation Plans and cumulative harvest limits. It includes commercial timber harvesting operations undertaken by VicForests in eastern Victoria and commercial timber and domestic firewood harvesting operations undertaken by DSE in the west of the State.

The work that was carried out is described in the *FAP Module 1 Overview* (Appendix A), *FAP Module 2 Audit Process* (Appendix B) and *FAP Module 6 Harvesting Performance* (Appendix C) and is summarised as follows:

- Sourcing relevant information and evidence;
- Data review process involving interviews with auditee representatives;
- Desk-top assessment of documents, including Geographical Information System (GIS) analyses of spatial datasets;
- Completion of the FAP Module 6 Workbooks; and
- Preparation of this environmental audit report which considers auditees comments on factual matters presented in a draft of this report.

The FAP Module 6 Harvesting Performance workbooks are attached as Appendix D and are listed below:

- Workbook 6A: Allocation Order Compliance;
- Workbook 6B: Wood Utilisation Plans and Timber Release Plans;
- Workbook 6C: Cumulative Harvest Limits in Melbourne's water supply catchments; and
- Workbook 6D: Cumulative Harvest Limits in Special Management Zones.

The audit was conducted in November and December 2010 with reporting and review of auditee comments on preliminary findings and factual matters occurring between January and March 2011.

3.2 Segment and elements audited

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



3 Audit Scope

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 Module 1 Overview* also includes climate as an element relevant to the audit program, however the Auditor did not consider it relevant to this audit.

FAP Toolbox Module 6 Harvesting Performance lists the relevant 'Compliance Elements' associated with audit of Harvesting Performance as:

- 1. Allocation Order (including thinning operations);
- 2. Wood Utilisation Plans (WUPs);
- 3. Timber Release Plans (TRPs);
- 4. Cumulative harvest limits in Melbourne's water supply catchments; and
- 5. Cumulative harvest limits in Special Management Zones (SMZs).

3.2.1 Excluded elements

The audit comprises the assessment of the operational performance of timber harvesting operations against spatial limits established under various planning processes and cumulative area limits established under the Allocation Order (AO).

The *FAP Module 6 Harvesting Performance* lists elements that are specifically excluded from the scope of the audit as:

- The strategic planning and development of the AO by the Department under the Sustainable Forests (Timber) Act 2004 (as amended); and
- The strategic planning and development phase of the Forest Management Plans by the Department.

Additionally, compliance with the AO (Compliance Element #1 listed in Section 3.2 above) was not assessed by the auditor for the 2008/09 period. The decision to not undertake this component of *FAP Module 6* was made by DSE due to the fact that the *Monitoring Annual Harvesting Performance* (MAHP) report for the audit period had been completed. The FAP audit methodology is similar to that used in creating the MAHP report and DSE considered that there was little benefit in the auditor replicating this work. As such, *FAP Module 6 Harvesting Performance Workbook 6A Allocation Order Compliance* was not completed by the Auditor. The MAHP reports are published on DSE's website (www.dse.vic.gov.au).

3 Audit Scope

3.3 Beneficial uses

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

- 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.

3.4 Audit criteria

Any audit must utilise a benchmark or framework against which the risks, systems and performance of the audited operations are referenced. As discussed above, there are four Compliance Elements that were assessed under the audit of *Harvesting Performance*. Each Compliance Element has its own regulatory framework and related documents against which a measurement of compliance is referenced. Table 3-1 lists the documents that have been utilised as audit criteria for each Compliance Element. Audit criteria documents are further discussed in Sections 3.4 below.

Compliance Element	Audit criteria and relevant source documents	
Compliance with WUPs	Spatial limits defined in WUPs, FMPs and the Code	
Compliance with TRPs	Spatial limits defined in TRPs and FMPs	
Compliance with cumulative harvest limits in Melbourne's water supply catchments	Spatial limits defined in Management Procedures - Schedule 6: Water Supply Catchments and advice from Melbourne Water (2005)	
Compliance with cumulative harvest limits in SMZs	Spatial limits defined in FMPs and <i>Flora and Fauna Guarantee</i> <i>Act 1988</i> Action Statements	

Table 3-1 Audit criteria for each Compliance Element

The Auditor notes that it is not appropriate for the reader to draw direct comparisons between the level of compliance or environmental impact of the four Compliance Elements since differences between in forest types, the landscape and other forest values within which they occur and the harvest intensity between the audited coupes managed by VicForests and those managed by DSE differ significantly throughout State forests. Further, due to differences in audit criteria, it is not appropriate for the reader to draw direct comparisons between compliance scores presented in this first audit report against the new FAP and those reported for the annual audit process managed by EPA Victoria in the period from 2003 to 2007.

In Section 5 of this report, the audit criteria for each Compliance Element are presented and discussed.

3.5 Audit support team

In completing this audit, the following personnel provided support to the auditor:

- Andrew Morton (Vice President, URS Forestry);
- Maria van der Geest (Senior Forestry Consultant, URS);
- Sam Schroder (GIS Analyst and Senior Environmental Scientist, URS);
- Andrew Piper (Forestry Consultant, URS); and
- Ashley Lang (Senior Principal, URS).



The audit was undertaken according to DSE *FAP Modules 1, 2* and 6 and as outlined in this report. Assessment under the audit of *FAP Module 6 Harvesting Performance* was undertaken at the strategic level and all relevant harvested areas in Victoria in the 2008/09 financial year were assessed.

FAP Module 6 includes four workbooks which outline the audit criteria, the relevant instrument, the audit protocol and methodologies. As an audit against the AO was not undertaken (as discussed in Section 3.2.1) only three *FAP Module 6 Workbooks* were completed, being:

- 1. Workbook 6B: Wood Utilisation Plans and Timber Release Plans;
- 2. Workbook 6C: Cumulative Harvest Limits in Melbourne's Water Supply Catchments; and
- 3. Workbook 6D: Cumulative Harvest Limits in Special Management Zones.

Desktop data assessment, GIS analyses and data interrogation was conducted over a three week period between November and December 2010. The Auditor presented the preliminary findings of the audit to the auditees and a draft of this report was provided to VicForests and DSE for comment on factual matters. All comments received were considered for incorporation into this report. Auditee comments on matters of fact are presented in Appendix E.

4.1 Audit target selection

A specific target selection process is not required under *FAP Module 6* as assessment is to be undertaken at a strategic level and all relevant areas that were harvested on State forests during the 2008/09 financial year period in Victoria were assessed.

A list of relevant coupes and verified spatial logging history information was provided by DSE to the Auditor.

The number and area of relevant timber harvesting areas conducted by VicForests in eastern Victoria in the 2008/09 financial year period was 357 coupes and 5,644 hectares (ha).

The number and area of relevant timber harvesting areas conducted by DSE (predominantly in western Victoria) in the 2008/09 financial year period was 94 coupes and 3,298 ha.

4.2 Sourcing relevant information

Information was collected from an examination of documentation, interviews with key DSE and VicForests personnel and observations of the planning activities, tools and results. Information gathered through interviews was verified, where practicable, with supporting information from independent sources.

Appendix F lists the documents and databases used in the audit.

4.3 Desktop assessment

The desktop assessment component of the audit included the assessment of planning related operations and systems, a review of documentation, records and data, a review of the Coupe Information System (CIS) and interviews with key personnel.

The general process of the desk-top assessment for each Compliance Element was as follows:

• Examination and review of relevant legislation, policies, procedures and guidelines relating to the planning activities as they relate to the Compliance Elements listed in Section 3.4, Table 3-1;

- Review of relevant spatial and other databases;
- Data review and interrogation of a sample of the spatial data and relevant documentation with auditees' GIS and CIS;
- Interviews with key DSE and VicForests' personnel, including managerial and technical staff;
- GIS analyses of spatial databases;
- Further analyses using data generated from the GIS analyses including using pivot table analyses and area calculations and summaries; and
- Generation of audit findings and summaries.

4.3.1 Data review

The audit of *Harvesting Performance* includes as a first step, data review. The data review process allows the Auditor to test the raw data validity and also provides the Auditor with a level of confidence in the data and therefore in the audit findings. The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and accuracy of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit. The data review process was conducted on a 10% sample of each of the spatial databases (shapefiles) used in the GIS analyses forming the basis of the assessment of compliance. The components of data review for the audit were:

- A test of the accuracy and completeness of the harvesting area spatial databases;
- Identification of missing data, partial data or illogical data;
- A comparison of the attributes of the spatial databases with the CIS; and
- A review of the equivalency of requirements in the planning and regulatory documentation.

Data and references used for the audit of *Harvesting Performance* in 2008/09 financial year were largely provided by DSE. Data was supplied in various forms including ArcGIS shapefiles (e.g. *Log_history 08/09*), Excel tables (e.g. *TRP register* and *WUP tables*), PDF documents (e.g. *Victorian Government Gazettes, WUP maps*, metadata).

Interviews with relevant DSE and VicForests staff were undertaken to understand the internal procedures in place to verify the harvested areas, known issues with the procedures or datasets, the data capture process, reporting of harvesting exceptions, and the process of managing the TRP / WUP databases.

The data review process involved attending the auditees' Melbourne offices and testing samples of specific datasets (listed below) with auditee representatives. Further data review tests were conducted by the Auditor with information and data provided by the auditee.

- 1. A 10% sample of *Log_history 08/09* shapefile compared with live DSE's GIS (sample included DSE and VicForests coupes);
- A 10% sample of VicForests coupes in Log_history 08/09 shapefile compared with VicForests' CIS (CIS Sections 1 – 3: Forest Coupe Planning);
- 3. A 10% sample of the *Log_season99/09* shapefile was compared with the DSE GIS (sample included DSE and VicForests coupes);
- A 10% sample of the Log_season99/09 shapefile was compared with VicForests CIS (CIS Sections 1 3: Forest Coupe Planning);
- 5. A 10% sample of areas harvested in *Catchments With Limits* shapefile compared with DSE's GIS (sample included DSE and VicForests coupes);



- 6. A 10% sample of VicForests coupes harvested in *Catchments With Limits* shapefile compared with VicForests' CIS (CIS Sections 1 3: Forest Coupe Planning);
- A 10% sample of the output of the Log_season99/09 intersection with the derived SMZ shapefile was compared with DSE's GIS and the Log_history 08/09 shapefile (sample included DSE and VicForests coupes);
- A 10% sample of the output of the Log_season99/09 intersection with the derived SMZ shapefile was compared with VicForests' CIS (CIS Sections 1 3: Forest Coupe Planning) and the Log_history 08/09 shapefile (where relevant);
- 9. A 10% sample of VicForests coupes in *Current TRP* shapefile compared with relevant TRP Government Gazette documents (including those coupes identified through the audit process as potential non-compliances);
- 10.A 10% sample of DSE coupes in *Log_history 08/09* shapefile and *WUP* shapefiles compared with relevant published WUPs (including those coupes identified through the audit process as potential non-compliances);
- 11. The *Catchment_PWSC100* shapefile was verified to include the water supply catchments listed on the Department of Primary Industry (DPI) website (<u>www.land.vic.gov.au/dpi/vro/</u>); and
- 12. The derived *SMZ* shapefile was interrogated and compared with the requirements and SMZ lists in the relevant Forest Management Plans.

The data review process and findings for each Compliance Element is discussed further in Section 5 of this report.

4.3.2 GIS analysis

A geographic information system (GIS) or geospatial information system is any system that captures, stores, analyses, manages, and displays data that are linked to location/s. In conducting this audit, GIS analysis is the merging of cartography, statistical analysis, and database technology.

GIS applications are tools that allow users to create interactive queries, analyse spatial information, edit data, produce maps and present the results of these operations. Geographic information science is the science underlying the geographic concepts, applications and system. GIS is widely used in the forestry industry in Australia and world-wide for both its mapping and decision-making functionalities.

GIS accuracy and therefore the appropriateness of the various outputs depend entirely upon the precision and accuracy of the source data and how it is managed. GIS data represents real objects such as roads, land use, elevation, trees, and waterways and can be captured or generated in a variety of ways. Common methods of data capture used in the forestry industry include the use of Global Positioning Systems (handheld and differential GPS) and survey data (produced by surveyors). Remotely sensed data such as satellite imagery and aerial photography are also widely used in the forestry industry with much digital data currently generated from aerial photo interpretation. Such information forms the basis of vegetation mapping, catchment mapping, mapping of waterways, roads and land tenure. Each dataset therefore has its own inherent level of accuracy and precision depending on a broad range of factors such as the technology used, procedures of data capture, atmospheric conditions, data management and conversion, software and the underlying modeling and projection assumptions.

ESRI's ArcView 9.3 was the selected data management software for the GIS analyses used to assess the Compliance Elements and with which to formulate the audit findings. This software package was selected based on its wide use in the industry, the expertise of the audit support team in the application of the software, and because it matched the auditees spatial data systems and software. The audit employed the following GIS applications and tools:

- Selecting records based on queries;
- Merge;
- Dissolve;
- Intersect;
- Buffer;
- Clip;
- Calculate Geometry (area and perimeter); and
- Export attributes tables to Microsoft Excel.

Both DSE and VicForests employ procedures and instructions to manage and standardise the method and precision of GPS data capture of areas harvested, the internal data verification procedures and the data management process. The procedures and instructions relevant to this audit are:

- Management Procedures for timber harvesting operations and associated activities in Victoria's State forests 2007 (DSE, 2007) (Management Procedures):
 - Section 2.1.4 Identification of Coupe boundaries and Exclusion Areas (for VicForests operations).
 - Section 2.2.4 TRP Compliance Auditing.
 - Section 3.1.3 Logging History.
 - Section 3.2.2 Identification of Coupe boundaries and Exclusion Areas (for DSE operations).
 - Section 3.2.3 Amendment of Forest Management Plan Zoning Schemes and Text.
 - Schedule 10: Verification of logging History.
- Resource Allocation Procedures: Preparation of Spatial Datasets (DSE, 2006);
- Resource Allocation Procedures for VicForests (DSE, 2006);
- *Timber Release Plan Development, Endorsement and Modification* (VicForests Instruction, 2007);
- Logging History Data Capture and Processing (VicForests Instruction, 2008); and
- Verification of VicForests' Logging History by DSE (VicForests Instruction, 2008).

The Auditor referred to the abovementioned procedures and instructions for the provision of context and also in relation to the audit findings and recommendations.

The GIS analysis methodology for each Compliance Element is presented in Appendix G.

4.3.3 Mapping accuracy and GPS precision

The Management Procedures allow for and minimise mapping errors in the *WUP* and *TRP* shapefiles by establishing data capture procedures and by prescribing allowable movement of coupe boundaries. Allowances are prescribed where the WUP or TRP is based on features identifiable in the field such as a road, an adjacent coupe that has been harvested, a stream buffer or lands of a different tenure such as a national park. The allowances for DSE and VicForests operations differ and are each described below.



Section 3.2.2 of the Management Procedures for DSE operations state that where the mapped coupe boundary is an identifiable feature in the field, this feature is the coupe boundary. Part 1 of Schedule 10 prescribes the minimum GPS data capture standards and accuracy and states that by following the procedure, a level of accuracy of plus or minus (+ / -) 30 m should be achieved.

Section 2.1.4 of the Management Procedures for VicForests operations state that where the TRP coupe boundary is mapped to a geographic feature and that geographic feature does not exist in the field (or its location does not match the mapped location), the coupe boundary may be moved a maximum of 50 m from the mapped boundary to align with the actual location of the intended boundary feature. If the coupe boundary must be moved more than 50 m from the mapped TRP boundary to align with the actual location of the intended boundary to align with the actual location of the intended boundary to align with the actual location of the intended boundary features, then a TRP change is required.

In order to standardise assessment of the WUP and TRP Compliance Elements, the Auditor applied a standard procedural allowance of 50 metres (m) based on the Management Procedures (Sections 3.2.2 and 2.1.4).

GPS precision is affected by a number of factors, including satellite positions, 'noise' in the radio signal, atmospheric conditions, and natural barriers to the signal. 'Noise' can create an error between one to ten meters and results from static or interference from natural sources (e.g. lightning) or artificial sources (e.g. radio towers) near to the GPS receiver or another use of the same frequency. Objects such a mountains or tree canopy between the satellite and the receiver can also produce error, for large objects, for example a mountain, this can be up to 30 m. The most precise determination of position occurs when the satellite and receiver have a clear 'view' of each other and no other objects interfere.

In order to standardise assessment of the WUP and TRP Compliance Elements, the Auditor applied a standard GPS error of + / - 10 m. This error margin is based on the use of a standard handheld Global Positioning System (GPS) unit and the standard limits of precision reported in the manuals. The Auditor notes that VicForests also uses differential GPS units that have greater accuracy than the error margin applied in the audit however the use of differential GPS is not standard throughout the organisation.

In order to apply the error margin of + / - 10 m, the *Log_history 08/09* shapefile was buffered by minus 10 m (- 10 m) and then overlayed with the *WUP* and *TRP* shapefiles to determine initial compliance. To allow for movement of the coupe boundary of up to 50 m from the mapped and approved WUP and TRP boundaries, as defined in the Management Procedures (Sections 3.2.2 and 2.1.4), the *WUP* and *TRP* shapefiles were buffered by 50 m. Therefore with GPS error taken into consideration, an instance of harvesting that has occurred outside of an approved WUP or TRP and is a distance of greater than 50 m from the WUP / TRP.

4.4 Environmental impact assessment

FAP Module 6 Harvesting Performance does not require an assessment of the actual or potential environmental impact using the prescribed Environmental Impact Assessment (EIA) Tool used for other FAP Modules.

4.5 DSE stakeholder consultation

The Department's *FAP Module 6 Harvesting Performance* does not require public participation or stakeholder consultation. The audit report will be made publicly available by DSE and by EPA in accordance with the EPA *Environmental Audit Guidelines*.

4.6 Reporting audit findings

At the conclusion of the data review process and audit, findings were transferred to Excel spreadsheets to facilitate the summarisation and presentation of data and the formulation of opinions, conclusions and recommendations presented in this audit report.

A presentation of preliminary audit findings was made to the auditees to provide opportunity for the discussion of issues, interpretation of data and provision of further relevant information.

Audit findings and recommendations are presented in Section 5 of this report. Three recommendations for improvement have been provided, including those where the Auditor considers, based on audit findings, that the current systems, documented procedures or practices do not adequately allow for demonstration of compliance with spatial limits established under various legislative planning processes.

Documents reviewed as part of the Audit are listed in Appendix F, in addition to the spatial datasets provided by the DSE.

A draft of this report was provided to VicForests and DSE for comment on factual matters and comments received were considered for incorporation into this report. Auditee responses are presented in Appendix E.



A summary of the findings of the data review is provided in Section 5.1 and a summary of overall compliance is provided in Section 5.2. Detailed results of the data review process and audit findings for each Compliance Element are presented in Sections 5.3 - 5.6. A summary of the recommendations arising from the audit is provided in Section 5.7.

5.1 Summary of data review findings

The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and consistency of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit. The data review process was conducted on a 10% sample of each of the spatial databases (shapefiles) used in the GIS analyses forming the basis of the assessment of compliance. The components of data review for the audit were:

- A test of the consistency and completeness of the harvesting area spatial databases;
- Identification of missing data, partial data or illogical data;
- A comparison of the attributes of the spatial databases with the Coupe Information System (CIS); and
- A review of the equivalency of requirements in the planning and regulatory documentation.

The data review processes identified a number of deficiencies in the datasets used to conduct the audit that have implications for audit findings, including:

- Incomplete or illogical descriptor data, such as harvest start dates that were later than the end date of harvesting, forest type, silviculture system, SMZ number and SMZ description;
- Differences identified between the data when compared with DSE's GIS and VicForests' CIS, such as harvest start dates and end dates, forest type and silviculture system;
- Missing WUP areas when comparing the *WUP shapefile* data with the WUP documents (including maps and published Plans); and
- Overlap of 550 ha between the *TRP* shapefile and the merged *WUP* shapefile indicating that the use of GIS analysis alone to generate audit findings may be limited in its reliability.

The Auditor undertook the audit on the basis that individual datasets were found to be generally consistent, while noting that the reliability of the findings will be limited by the inconsistencies identified in the data review process described above.

5.2 Summary of overall compliance

The audit identified that a large percentage of the area of timber harvesting operations on State forests in the 2008/09 financial year was compliant with the spatial limits established under various legislative planning processes and government policies aimed at achieving sustainable forest management. Figure 5-1 graphically summarises compliance of the harvested area and number of coupes / audit requirements as assessed for each Compliance Element

However, the audit also identified a small number and area of non-compliant timber harvesting coupes managed by DSE in the WUP Compliance Element and managed by VicForests in the TRP Compliance Element. With regards to the non-compliances, the audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses of the environment (life, health and wellbeing of humans, organisms and ecosystems, local amenity and aesthetic enjoyment), noting that the scope of the audit was limited to desktop review.



Figure 5-1 Summary of compliance for each Compliance Element

n = total number of coupes or audit requirements for each Compliance Element

The Wood Utilisation Plan Compliance Element, which addresses the compliance of timber harvesting operations with the spatial limits established in the WUPs, had a high proportion of compliant harvested area with 94% of the harvested area found to be compliant with the WUPs. Of the 97 coupes harvested on WUP areas, the audit found that 81% of the coupes were compliant with the WUP areas spatial limits including 76 coupes managed by DSE and three coupes managed by VicForests. With an error margin applied to account for Global Positioning System (GPS) accuracy limitations, the audit identified 18 non-compliant coupes, six of which were not on an approved WUP at the time of harvest. The total area of non-compliance was 199 hectares representing 6% of DSE harvested area in 2008/09. The audit also identified a large number of coupes with small areas located outside of the respective WUP areas, suggesting systemic limitations in the accuracy of the WUP mapping. This may be due to the WUP mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliances since they were assessed as having been located in accordance with procedural limits. However, 18 coupes with area harvested greater than 50 metres (m) outside of the WUP boundaries including the six coupes that have been harvested on areas not listed on an approved WUP indicate that in these instances the Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007 (Management Procedures) have not been applied correctly.

The *Timber Release Plan* Compliance Element, which addresses the compliance of timber harvesting operations with the spatial limits established in the TRPs, had a high proportion of harvested area in compliance with 99.9% of the harvested area found to be compliant with the TRPs. Of the 354 coupes



harvested on TRP areas, the audit found that 96% of the coupes were compliant with the TRP areas spatial limits. With an error margin applied to account for GPS accuracy limitations, the audit identified 13 coupes that did not comply with the TRP spatial limits or the procedural allowances. The total area of non-compliance was four hectares representing less than 0.1% of VicForests' harvested area in 2008/09. The audit also identified a large proportion of harvested coupes with small areas located outside of the respective TRP boundaries but within the procedural limits, suggesting systemic limitations in the accuracy of the TRP mapping. This may be due to the TRP mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliances since they were assessed as having been located in accordance with procedural allowances. The non-compliant areas and coupes were attributed to 13 instances of incorrect application of the Management Procedures.

The Harvest Limits in Melbourne's water supply catchments Compliance Element addresses the compliance of timber harvesting operations in four water supply catchments with the spatial limits established in the Forest Management Plans (FMPs) and Management Procedures. This Compliance Element had relatively few requirements with eight spatial harvest limits defined in the Management Procedures tested to assess compliance. The audit found that harvesting operations did not exceed the harvest limits in all four water supply catchments. As such this Compliance Element achieved 100% compliance in both the harvested area and against the number of requirements.

The Harvest limits in Special Management Zones Compliance Element addresses the compliance of timber harvesting operations with the spatial harvest limits established in the FMPs and the *Flora and Fauna Guarantee Act 1988* (FFG Act) Action Statements. The audit found that only eight FMPs and six FFG Action Statements prescribed spatial harvest limits and as such the audit criteria did not allow for a complete assessment within the intended scope and scale of the audit. However, an assessment of the total area harvested in SMZs for each FMA provided an indication of compliance with the FMP harvest limits. Of the 12 FMPs, eight FMPs defined *approximate* spatial harvest limits. These eight requirements were used to assess compliance. No non-compliances were recorded for the SMZ Compliance Element, noting that four FMAs were unable to be assessed due to lack of information in the FMP. As such this Compliance Element achieved 100% compliance in both the harvested area and against the number of requirements.

Detailed results of the data review process and audit findings for each Compliance Element are presented in Sections 5.3 - 5.6. A summary of the recommendations arising from the audit is provided in Section 5.7.

5.3 Wood Utilisation Plans

An objective of the audit is to report on compliance of the extent of forest harvesting on State forests with the spatial limits set in the *Wood Utilisation Plans* (WUPs). Wood Utilisation Plans identify bounded geographic areas representing coupes, within which timber harvesting operations are required to be contained. The Code prescribes the timber harvest planning process and requires that DSE complete a harvest planning and scheduling process based on estimates of sustainable harvesting rates in accordance with the relevant FMP. Three-yearly WUPs are prepared annually for commercial timber and domestic firewood harvesting operations in each FMA managed by DSE in western Victoria and designate, describe and schedule coupes for harvesting.

DSE follows a procedure titled *Wood Utilisation Planning Guidelines (DSE, 2005)* and the Code to develop the WUPs. Wood Utilisation Plans can be reviewed and updated through time in response to a range of issues such as:

- Events such as storms and wildfire that result in areas that are assigned for salvage harvest operations; and
- Findings of pre-harvest reconnaissance surveys that the WUP area has been described or mapped incorrectly. Such amendments may be the forest type, yield, silviculture system, schedule, a modification to the WUP boundary or associated roading, or removal from the WUP.

Wood Utilisation Plans are publicly available documents and according to the *Wood Utilisation Planning Guidelines (DSE, 2005)* must contain specific information including:

- 1. A schedule of coupes planned for timber harvesting or other significant stand management operations (for example commercial thinning, reforestation and treatment of unmerchantable trees);
- 2. A schedule of the construction or improvement associated access road requirements;
- 3. Details of the location of the proposed coupes and any associated access roads;
- 4. Approximate timing of the timber harvesting activities; and
- 5. Attributes of the coupe such as forest type, gross area and proposed silvicultural system.

The assessment of timber harvesting operations in western Victoria has utilised as audit criteria the spatial harvesting limits listed in the WUPs (as amended through time). Other aspects of the WUPs such as the scheduling, forest types and silviculture systems are not a part of the audit scope for this Compliance Element.

5.3.1 Audit criteria

The WUPs that are relevant to the audit are listed below:

- GIPPSLAND:
 - Central Gippsland WUP 2008/09 2010/11 and associated maps
 - Dandenong FMA WUP 2008/09 2010/11 and associated map
 - East Gippsland WUP 2008/09 2010/11 and associated maps
 - Tambo WUP 2008/09 2010/11 and associated maps
- NORTH-EAST VICTORIA:
 - Benalla-Mansfield 2008/09 2010/11 and associated maps
 - Central Highlands WUP 2008/09 2010/11 and associated maps
 - Mid-Murray (east) WUP 2008/09 2010/11 and associated maps
 - North-East WUP 2008/09 2010/11 and associated maps
- NORTH-WEST VICTORIA:
 - Bendigo WUP 2008/09 2010/11 and associated maps
 - Mid-Murray (west) FMA WUP 2008/09 2010/11 and associated map
 - Mildura WUP 2008/09 2010/11 and associated maps
- SOUTH-WEST VICTORIA:
 - Horsham WUP 2008/09 2010/11 and associated maps
 - Midlands FMA WUP 2008/09 2010/11 and associated map



- Otways WUP 2008/09 2010/11 and associated map
- Portland WUP 2008/09 2010/11 and associated maps

Approved current WUPs are available from the DSE website (www.dse.vic.gov.au).

The Department provided the Auditor with two GIS shapefiles with which to conduct the audit:

- 1. Logging history boundaries for the 2008/09 harvesting season (Log_History 08/09); and
- 2. The GIS shapefiles of the WUPs (*Gippsland, North-East, North-West and South-West WUP* shapefiles).

The audit assessed the areas harvested in the 2008/09 financial year against the spatial harvest limits defined in the WUP documents and the WUP GIS shapefiles.

Section 3.2.2 of the Management Procedures for DSE operations state that where the mapped coupe boundary is an identifiable feature in the field, this feature is the coupe boundary. Part 1 of Schedule 10 prescribes the minimum GPS data capture standards and accuracy and states that by following the procedure, a level of accuracy of plus or minus (+ / -) 30 m should be achieved. No maximum allowable movement of the coupe boundary is prescribed by the Management Procedures. For VicForests operations, Section 2.1.4 of the Management Procedures state that where the TRP boundary has been mapped to a feature and the TRP boundary does not align with the features on the ground due to the precision of the TRP mapping, the TRP boundary may be moved up to 50 m, to the correct location in the field.

In order to standardise assessment of the WUP and TRP Compliance Elements, the Auditor applied a standard procedural allowance of 50 metres (m) based on the Management Procedures. Therefore with GPS error (+ / - 10 m), an instance of harvesting that has occurred outside of an approved WUP and is a distance of greater than 50 m from the WUP boundary is considered to be non-compliant with the WUP.

In total, 94 coupes were harvested by DSE in the 2008/09 financial year, totalling 3,298 ha in eight FMAs; Bendigo, Central Highlands, Central Gippsland, Horsham, Mid-Murray, Midlands, Otway and Portland FMAs. Table 5-1 below provides the number of coupes and area harvested by DSE in the FMAs.

Forest Management Area (FMA)	Number of coupes harvested	Area harvested (ha)
Bendigo	46	1,108
Central Highlands	1	25
Central Gippsland	3	29
Horsham	2	187
Mid-Murray	12	1822
Midlands	19	102
Otway	10	13
Portland	1	12
Total	94	3,298 ha

Table 5-1 Number of coupes and area harvested by DSE in 2008/09

The audit found that the areas of the merged *WUP* and *TRP* shapefiles have an overlapping area of 550 ha. The reason for the overlapping area was not investigated by the Auditor as this was considered outside the scope of the audit. Consequently, seven VicForests coupes had been partially or wholly harvested on approved WUP areas. The audit identified the following:

- Four of the VicForests coupes were listed in the TRP documents but the merged *WUP* shapefile overlapped the TRP area. As such the four TRP coupes were removed from the WUP analysis since any area harvested outside of the TRP would be reported as non-compliant with the TRP, see Section 5.4;
- One VicForests coupe was listed in the WUP documents but the *TRP* shapefile overlapped the WUP area. As such this coupe is included in the WUP analysis and removed from the assessment of compliance with the TRP; and
- Two coupes were harvested by VicForests on approved WUP areas under an arrangement with DSE and are therefore included in the assessment of compliance with the WUP spatial limits.

Accordingly, the area harvested by VicForests in an approved WUP totals 170 ha in three coupes.

5.3.2 Data review

The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and consistency of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit.

The following data review was undertaken before commencing the audit:

- A 100% sample review of DSE records in the *Log_history 08/09* shapefile to check that all fields were populated and to check the logic of the attributes such as harvest dates;
- A 10% sample of *Log_history 08/09* shapefile comparison with GIS (sample included DSE and VicForests coupes); and
- A 100% sample of the *WUP* shapefiles (merged) comparison with relevant WUPs documents (including those coupes identified through the audit process as potential non-compliances).

The findings of the data review are listed in Table 5-2 below.

Data review	Findings	Implications for audit findings
100% sample review of DSE records in <i>Log_history 08/09</i> for completeness and logic.	 12% of the records (15 records) in Log_Hist0809 shapefile had a start date that fell after the end date. 	The records were observed in the GIS and all fell within the audit period. As such the date errors identified in the sample are not considered to directly affect the area harvested or the audit findings however do indicate a level of inaccuracy in the data.
	2. One record had had a start and end date which was the same day.	

Table 5-2 WUP Compliance Element - data review findings and implications for the audit



Data review	Findings	Implications for audit findings
10% sample of <i>Log_history 08/09</i> shapefile comparison with DSE's GIS and VicForests CIS.	 98% of the sample (52 records) were observed in both the DSE GIS and VicForests CIS databases. One record was not observed in the GIS. 	The missing record was observed in the CIS (Sections 1 – 3: Forest Coupe Planning) and as such the record was confirmed as existing in another data source. This omission is not considered to impact on the audit findings since it is a valid record in the <i>Log_history</i> <i>08/09</i> GIS shapefile, which was used in the analysis.
	 25% of the DSE sample (5 records) had a start date that fell after the end date. 	If the harvest dates are incorrect and result in the area being attributed to the incorrect financial year, the area may be incorrectly identified as a non-compliance. The Auditor notes this potential impact and has checked any records with incorrect or illogical dates that presented as non- compliances.
	 100% of the sample (20 records) had a forest type. 	No implications.
100% sample of merged WUP shapefile comparison with relevant WUP documents.	98% of the sample of <i>WUP</i> shapefile records were observed in the WUP documents. Two records were not found in WUP documents.	This finding suggests that there may be additional WUP areas in the merged <i>WUP</i> shapefile. The Auditor notes this potential impact on audit findings and has checked records that presented as non- compliances with the WUP documents.

In total, 40% of the sample of *Log_history 08/09* records had some level of inconsistency or attribute omissions when compared with DSE's GIS. One potential implication for the audit findings was identified by the Auditor relating to harvest start and end dates. If the harvest dates are incorrect and result in the area being attributed to the incorrect financial year, the area may be incorrectly identified as non-compliant since it would not intersect with a relevant WUP area. The Auditor notes this potential impact and has checked any records with incorrect or illogical dates that present as non-compliances. A second potential implication for the audit was identified relating to the comparison of the coupes identified in the WUP documents with the merged *WUP* shapefile. Two relevant DSE coupes were observed as approved in the WUP documents however the record was not found in the merged *WUP* shapefile. In both of these instances these areas were approved in earlier WUPs.

The Auditor undertook the audit on the basis that the various datasets were found to be generally consistent, while noting that the reliability of audit findings will be limited by the inconsistencies identified in the data review process described above.

5.3.3 Level of compliance

Overall, the audit found in the 2008/09 harvest season, 94% of the area of State forests harvested by DSE were within the WUP spatial limits, procedural allowances and GPS error (+ / - 10 m). Of the 94 coupes harvested by DSE, the audit identified 18 coupes (or 19% of the coupes harvested) that had some or all of the coupe area harvested outside of an approved WUP area. The audit identified six

DSE coupes which were not on an approved WUP at the time of harvest. The total area associated with the 18 non-compliant coupes located outside of the approved WUP is 227 ha however the audit identified that 199 ha were harvested outside the WUP and outside of the procedural allowances.

The audit found that all three coupes that were harvested by VicForests on approved WUP areas were in compliance with the WUP spatial limits and procedural allowances with a GPS error (+ / - 10 m).

The Auditor notes that the WUP shapefile / mapping data appears to have inherent accuracy limitations having been digitised based on large scale analysis, modelling, aerial photography and other mapping sources.

The audit findings are summarised in Table 5-3 below. A complete list of the non-compliant coupes and area of the non-compliance is provided in Appendix H. The GIS analysis results and discussion are provided below.

	Harvest Organisation					
	DSE		VicForests			
	Number of coupes harvested	Area harvested (ha)	Total area (%)	Number of coupes harvested	Area harvested (ha)	Total area (%)
Total number of coupes and area in compliance	76	3,099	94%	3	170	100%
Total number of coupes and area of non- compliance > 50 m	18	199	6%	0	0	0
TOTALS	94	3,298	100%	3	170	100%

Table 5-3 WUP Compliance Element - summary of compliance

Of the 18 non-compliant DSE coupes where area has been partially harvested outside of a WUP, none were found to have exceeded the total approved WUP area (ha). The 18 non-compliant coupes are made up of 13 thinning from below coupes, three single tree selection coupes, one clearfelling coupe and one group/gap selection coupe. The majority of the area of non-compliance is therefore of a relatively low environmental risk in terms of the less intensive silviculture systems used.

The audit identified six DSE-harvested coupes which were not on an approved WUP at the time of harvest. Each instance of non-compliance is discussed below.

- The largest single non-compliance was recorded on Coupe 11 (C11) (132 ha) and was a single tree selection harvest operation located in the Mid-Murray FMA. C11 was found to be located completely outside of the merged *WUP* shapefile. The coupe number (unique identifier), however, was found in the WUP documents but the WUP documents referred to a different coupe name and the scheduled harvest season for the coupe was 2009/10;
- The harvested boundary of Coupe 12 (C12) (41 ha) was a single tree selection operation located in the Mid-Murray FMA and was found to be abutting a WUP boundary however this coupe was located outside of the WUP;
- Coupe 3 (C3) (4.4 ha) was a Thinning from below operation in the Bendigo FMA and was found to be located outside of an approved WUP. DSE advised the Auditor that this coupe was



subsequently approved on the 2009/10 WUP; however, this has not been verified by the Auditor. As such, C3 was not on an approved WUP at the time of harvest;

- Coupe 7 (C7) (1.7 ha) was a clearfelling operation also located in the Bendigo FMA and was found to be located outside of an approved WUP. DSE advised the Auditor that this coupe was part of a plantation thinning operation, however, this has not been verified by the Auditor;
- Coupe 17 (C17) (0.4 ha) was a thinning coupe located in the Otway FMA and was located outside of an approved WUP area. DSE advised the Auditor that an error had occurred when the coupe was set up and marked in the field. The Auditor also notes that the start date is after the end dates for this record in the *Log_history 08/09* shapefile;
- Coupe 18 (C18) was a thinning coupe located in the Portland FMA and is located outside of an approved WUP (12 ha). This coupe was found in the WUP documents; however, the merged WUP shapefile does not contain the WUP area. DSE advised the Auditor that the boundary of the coupe was captured using GPS and is outside the WUP area due to the inaccuracies in the WUP mapping, however, this was not verified by the Auditor.

The Auditor considers that the 18 non-compliances do not present imminent environmental hazards or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to desktop review.

Figure 5-2 below depicts the audit findings graphically illustrating that the majority of the non-compliant coupes have small areas harvested outside of the WUP and that the area of non-compliance is largely due to three non-compliant coupes representing 93% of the total area harvested outside of the WUP.





Allowing for GPS error (+ / - 10 m), the audit also identified an additional 52 DSE coupes and two VicForests coupes with some area harvested outside the approved WUP area but within the procedural allowances. Both DSE and VicForests acknowledge that the accuracy of the WUP mapping layer is limited as it has been digitised based on large scale analysis, modelling, aerial photography and other mapping sources. As such, DSE and VicForests reportedly realign boundaries where necessary. The audit did not confirm if the harvested areas outside of the WUP area were due to the alignment of the boundary to mapped geographic features as allowed for in the Management Procedures.

The 52 DSE coupes totalled an area of 147 ha with most coupes having a small proportion of the harvested area being outside of the WUP area. For example, 31 coupes had an area of less than 0.1 ha outside of the WUP boundary; a further 17 coupes had an area of less than 1 ha outside of the WUP boundary and four coupes had an area of between 1 and 2 ha outside of the WUP boundary. The harvested areas located outside of the WUP area but within the procedural allowances represent 4.5% of the total area harvested by DSE in the 2008/09 financial year.

Two VicForests coupes were found to have a small area (total 0.1 ha) harvested outside of the WUP area however this area was within the procedural allowances. This area represents less than 1% of the area harvested by VicForests on WUP areas.

GIS analysis initially identified one coupe had a large area of non-compliance, however, DSE provided further evidence that demonstrated that the coupe boundary had been correctly located and that the error was in the *WUP* shapefile, the source being the land tenure mapping data. This coupe provides an example of the inherent inaccuracies within the WUP mapping / shapefile identified by the audit.

The Auditor notes that the WUP shapefile / mapping data appears to have inherent accuracy limitations having been digitised based on large scale analysis, modelling, aerial photography and other mapping sources and therefore which limit the reliability of the audit findings obtained through GIS analysis alone. The Auditor considers that the large number of coupes with small areas located outside of the WUP suggests systemic limitations in accuracy of the WUP mapping. This may be due to the mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliance since they were assessed as having been located in accordance with procedural allowances. However, 18 coupes with area harvested greater than 50 m outside of the respective WUP area and the six coupes that have been harvested on areas not on an approved WUP indicate that in these instances the Management Procedures have not been applied correctly.

5.4 Timber Release Plans

An objective of the audit is to report on compliance of the extent of forest harvesting on State forests with the spatial limits set in the Timber Release Plans (TRP).

The Allocation Order (as amended) details the areas allocated to VicForests by the Minister for Environment and Climate Change for the purposes of harvesting and selling timber resources. *Timber Release Plans* are prepared by VicForests in accordance with Part 5 of the *Sustainable Forests (Timber) Act 2004* and must be consistent with the Allocation Order, FMPs and the Code. The Plans identify bounded geographic areas representing coupes, within which timber harvesting operations are required to be contained. On the publication of a notice of the approval of a TRP in the Victoria



Government Gazette, the timber resources to which the approved TRP applies are vested in VicForests and it is these areas which are the subject of this Compliance Element.

VicForests follows the procedure titled *Timber Release Plan – Development, Endorsement and Modification* (VicForests Instruction, 2007) to develop a TRP. The procedure provides for TRPs to be updated through time in response to a range of issues such as:

- Events such as storms and wildfire that result in areas that are assigned for salvage harvest operations; and
- Findings of pre-harvest reconnaissance surveys that the TRP area has been described or mapped incorrectly. Such amendments may be forest type, yield, silviculture system, schedule, a modification to the TRP boundary or associated roading, or removing it from the TRP such as in the case of non-economical yield or slope exclusions.

TRPs are publicly available documents and according to the *Timber Release Plan – Development, Endorsement and Modification* (VicForests Instruction, 2007) must include specific information including:

- 1. A schedule of coupes selected for timber harvesting and associated access road requirements;
- 2. Details of the location of the proposed coupes and any associated access roads; and
- 3. Approximate timing of the timber harvesting activities.

The assessment of timber harvesting operations in eastern Victoria has used as audit criteria the spatial harvesting limits listed in the TRPs (as amended through time). Other aspects of the TRPs such as the scheduling, forest types and silviculture systems are not a part of the audit scope for this Compliance Element.

5.4.1 Audit criteria

The TRPs and amendments that are relevant to the audit are listed below:

- TRP 2004 2009 (August 2004);
- Change to TRP 2004 2009 (December 2004);
- Change to TRP 2004 2009 (August 2005);
- Change to TRP 2004 2009 (13 October 2005);
- Change to TRP 2004 2009 (25 October 2005);
- Change to TRP 2004 2009 (November 2005);
- Change to TRP 2004 2009 (June 2006);
- Change to TRP 2004 2009 (September 2006);
- Change to TRP 2004 2009 (November 2006);
- Change to TRP 2006 2011 (March 2007);
- Change to TRP 2004 2009 (July 2007);
- Change to TRP 2006 2011 (September 2007);
- Change to TRP 2006 2011 (January 2008);
- Change to TRP 2006 2011 (July 2008);
- Change to TRP 2006 2011 (August 2008);
- Change to TRP 2006 2011 (September 2008);
- Change to TRP 2006 2011 (January 2009);
- Change to TRP 2006 2011 (March 2009); and
- Change to TRP 2006 2011 (August 2009).

TRPs are publicly available documents and approved Plans are available from the VicForests website (<u>www.vicforests.com.au</u>).

The Department provided the Auditor with two GIS shapefiles with which to conduct the audit:

- 1. Logging history boundaries for the 2008/09 harvesting season (Log_history 08/09 shapefile); and
- 2. Boundaries of coupes currently on an approved Timber Release Plan (Current TRP shapefile).

The audit has assessed the areas (coupes) harvested in the 2008/09 financial year against the spatial harvest limits defined in the TRP documents and GIS shapefiles.

Section 2.1.4 of the Management Procedures for VicForests operations state that where the TRP coupe boundary is mapped to a geographic feature and that geographic feature does not exist in the field (or its location does not match the mapped location), the coupe boundary may be moved a maximum of 50 m from the mapped boundary to align with the actual location of the intended boundary feature.

In order to standardise assessment of the TRP and WUP Compliance Elements, the Auditor applied a standard procedural allowance of 50 metres (m) based on the Management Procedures. Therefore with GPS error (+ / - 10 m), an instance of harvesting that has occurred outside of an approved TRP and is a distance of greater than 50 m from the TRP boundary is considered to be non-compliant with the TRP.

In total, 357 coupes were harvested by VicForests in the 2008/09 financial year totalling 5,644 ha in seven FMAs; Benalla-Mansfield, Central Highlands, Central Gippsland, Dandenong, East Gippsland, North-East and Tambo FMAs. Table 5-4 provides the number of coupes and area harvested by VicForests in the FMAs.

Forest Management Area (FMA)	Number of coupes harvested	Area harvested (ha)
Benalla-Mansfield	3	52
Central Highlands	74	912
Central Gippsland	52	722
Dandenong	13	149
East Gippsland	154	2,741
North-East	11	76
Tambo	50	992
Total	357	5,644 ha

Table 5-4	Number of coupes and area	a harvested by	VicForests in 2008/09
-----------	---------------------------	----------------	-----------------------

The audit found that the areas of the merged *WUP* and *TRP* shapefiles have an overlapping area of 550 ha. The reason for the overlapping area was not investigated by the Auditor as this was considered outside the scope of the audit. Consequently, seven VicForests coupes had been partially or wholly harvested on approved WUP areas. The audit identified the following:

• Four of the VicForests coupes were listed in the TRP documents but the merged *WUP* shapefile overlapped the TRP area. As such, the four TRP coupes were removed from the WUP analysis since any area harvested outside of the TRP would be reported as non-compliant with the TRP;


- One VicForests coupe was listed in the WUP documents but the *TRP* shapefile overlapped the WUP area. As such, this coupe is included in the WUP analysis and removed from the assessment of compliance with the TRP; and
- Two coupes were harvested by VicForests on approved WUP areas under an arrangement with DSE and are therefore included in the assessment of compliance with the WUP spatial limits.

Accordingly, the area harvested by VicForests in an approved WUP totals 170 ha in three coupes. Results of compliance of VicForests timber harvesting operations with the spatial limits of the WUPs is presented in Section 5.3.

5.4.2 Data review

The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and consistency of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit.

The following data review was undertaken before commencing the audit:

- A 100% sample review of VicForests records in the *Log_history 08/09* shapefile to check that all fields were populated and to check the logic of the attributes such as harvest dates;
- A 10% sample of *Log_history 08/09* shapefile comparison with GIS (sample included DSE and VicForests coupes);
- A 10% sample of VicForests coupes in Log_history 08/09 shapefile comparison with CIS (CIS Sections 1 – 3: Forest Coupe Planning); and
- A 10% sample of VicForests coupes in *Current TRP* shapefile comparison with the relevant TRP Government Gazette documents (including those coupes identified through the audit process as potential non-compliances).

The findings of the data review are listed in Table 5-5 below.

Data review	Findings	Implications for audit findings
100% sample review of VicForests records in the <i>Log_history 08/09</i> data for completeness and logic.	 1.5% (eight records) of the data Log_history 08/09 had no silviculture system recorded. 	The missing silviculture system data does not affect the audit findings, as it is not considered in
	2. 100% of the records had logical dates.	the analyses. However, this finding indicates to the Auditor that there are some deficiencies in the data management processes and therefore a level of inaccuracy in the data.
10% sample of <i>Log_history 08/09</i> shapefile comparison with DSE GIS.	 98% of the sample (52 records) was observed in both the DSE GIS and VicForests CIS databases. One record was not observed in the GIS. 	The missing record was observed in the CIS (Sections $1 - 3$: Forest Coupe Planning) and as such the record was confirmed as existing in another data source. This omission is not considered to impact on the audit findings since it is a valid record in the <i>Log_history</i> <i>08/09</i> GIS shapefile, which was used in the analyses.
10% sample of VicForests coupes in <i>Log_history 08/09</i> shapefile	 All records were observed in the VicForests CIS. 	No implications.

Table 5-5 TRP Compliance Element - data review findings and implications for the audit

Data review	Findings	Implications for audit findings
comparison with CIS (Sections 1 – 3: Forest Coupe Planning).	 30% of the sample (16 records) had different start or end dates in the CIS. 	The Auditor notes that the difference was generally < 2 weeks and may be attributed to the difference between the date of coupe finalisation in the field and the data entry dates. All records fell within the audit period, therefore based on the sample these errors are not expected to materially impact on the audit findings.
	 The start and end dates of two records were found to be significantly different (>2 months). 	The two records were observed in the CIS (Sections $1 - 3$: Forest Coupe Planning) and the records were found to be dated within the audit period. As such there is no impact on the audit findings since it is a valid record in the <i>Log_history</i> <i>08/09</i> GIS shapefile. Therefore based on the sample these errors are not expected to materially impact on the audit findings.
	 4% of the sample (two records) did not have a silviculture system and one record was found to have the incorrect silviculture system. 	The Auditor observed the missing silviculture system attributes in the CIS (Forest Coupe Planning section). The missing silviculture system data does not affect the audit findings as it was not required for the analyses. However, this finding indicates to the Auditor that there are some deficiencies in the data management processes and therefore a level of inaccuracy in the data.
10% sample of VicForests coupes in <i>Current TRP</i> shapefile comparison with the relevant TRP Government Gazette documents	 100% of the sample of <i>Current</i> <i>TRP</i> shapefile records were observed in the TRP documents. 	No implications.

In total, 33% of the *Log_history 08/09* records had some level of inconsistency or attribute omissions when compared with DSE's GIS and VicForests CIS Forest Coupe Planning section. Whilst the inconsistencies identified are not considered to directly and materially impact the findings of the audit, the Auditor notes that the data review findings such as incorrect dates and missing attributes indicate that there are some deficiencies in the data management processes and therefore a level of inaccuracy in the data.

The Auditor undertook the audit on the basis that the various datasets were found to be generally consistent with regards to relevant components, while noting that the reliability of audit findings will be limited by the inconsistencies identified in the data review process described above.

5.4.3 Level of compliance

Overall, the audit found in the 2008/09 harvest season, 99.9% of the area of State forests harvested by VicForests were within the TRP spatial limits, procedural allowances and GPS error (+ / - 10 m). Of



the 354 coupes harvested by VicForests on TRP areas, the audit identified 13 coupes (or less than 4% of the coupes harvested by VicForests) that had area harvested outside of the approved TRP area. The total area of the 13 non-compliant coupes located outside of the approved TRP is 26 ha however the audit identified that four ha were harvested outside the TRP and outside of the procedural allowances.

The Auditor notes that the TRP shapefile / mapping data appears to have inherent accuracy limitations having been digitised based on large scale analysis, modelling, aerial photography and other mapping sources and therefore limits the reliability of the audit findings obtained through GIS analysis alone.

The audit findings are summarised in Table 5-6 below. A complete list of the non-compliant coupes and area of the non-compliance is provided in Appendix I. The GIS analysis results and discussion are provided below.

	VicForests		
	Number of coupes harvested	Area harvested (ha)	Total area (%) harvested in TRP
Total number of coupes and area in compliance	341	5,469	99.9%
Total number of coupes and area of non-compliance > 50m	13	4	0.1%
TOTALS*	354	5,474	100%

Table 5-6 TRP Compliance Element - summary of compliance

* An additional three VicForests coupes (170 ha) were harvested on WUP coupes under agreement with DSE.

Of the 13 VicForests coupes where area has been partially harvested outside of a TRP, none were found to have exceeded the total approved TRP areas (ha). The 13 non-compliant coupes are made up of four thinning from below coupes, two seed tree, one clearfelling coupe, five clearfall salvage coupes and one road alignment / improvement coupe.

The area of non-compliance for all coupes is small, with all but one coupe having an area of noncompliance of less than one hectare. Coupe 8 (C8) had 2 ha harvested outside of the TRP. This coupe was a seed tree (includes retained overwood) coupe located in East Gippsland. The Auditor notes that the boundary of seven coupes including C8 appears to have been moved to align with an existing road or an adjacent coupe in the field, however, this location is greater than the 50 m authorised in the Management Procedures and as such the TRP should have been amended prior to harvesting.

The Auditor considers that the 13 non-compliances do not present imminent environmental hazards or unacceptable risks to the beneficial uses of the environment, especially in terms of the small areas of individual non-compliant areas, noting that the scope of the audit was limited to desktop review.

Figure 5-3 depicts the audit findings graphically illustrating that the majority of the coupes have small areas that are outside of the TRP and that approximately half of the total area, or 4 ha, harvested outside of a TRP boundary was less than one hectare.





Allowing for GPS error (error (+ / - 10 m), the audit also identified that of the 354 coupes harvested by VicForests on TRP areas, 69% of the coupes harvested (244 coupes including the 13 coupes reported as non-compliances) were found to have some area harvested outside of an approved TRP area but within the procedural allowance. The area that occurred outside of an approved TRP boundary but within the procedural allowance totalled 72 ha and represents 1.3% of the total area harvested by VicForests on TRPs in 2008/09. VicForests advised the Auditor that the TRP mapping is understood to be inaccurate especially where the TRP is mapped to a geographic features as is often the case. As such, it is reportedly not unusual for the coupe boundaries to be moved to the correct location of the geographic feature on the ground, resulting in a large number of small areas being harvested outside of the TRP boundaries. VicForests advised that they had identified the issue and have since put procedures in place to rectify this issue however this was not verified by the Auditor. The audit did not confirm if the harvested area outside of the TRP area were due to the alignment of the boundary to mapped geographic features as allowed for in the Management Procedures.

The Auditor considers that the large proportion of coupes with small areas located outside of the TRP but within the procedural allowances suggests systemic limitations in the accuracy of the TRP mapping. This may be due to the mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliance since they were assessed as having been located in accordance with procedural allowances. The 13 non-compliant coupes located outside the respective TRP area and at a distance of greater than 50 m from the TRP boundary however indicate that in these instances the Management Procedures have not been applied correctly.



5.5 Harvest limits in Melbourne's water supply catchments

An objective of the audit is to assess the performance of timber harvesting operations within Melbourne's water supply catchments with the spatial cumulative harvest limits established in the State forest planning processes. Melbourne's water supply catchments are managed as a combination of 'open' and 'closed' catchments, with a key difference being public access to the catchments. Timber harvesting is permitted in 'open' catchments, subject to averaged spatial limits, which are the subject of this Compliance Element.

The four catchments that supply Melbourne with water nominated for assessment by *FAP Module 6 Harvesting Performance* are listed below. A map of the catchments is provided at Appendix J.

- 1. Bunyip River;
- 2. Thomson River;
- 3. Tarago River; and
- 4. Yarra Tributaries.

The assessment of harvesting in State forest water catchments that supply water to Melbourne has utilised as audit criteria spatial harvesting limits defined in the Management Procedures. The Auditor also notes that some FMPs define the prescriptions for State forests that occur in water supply catchments and declared 'Special Water Supply Catchments'. All requirements of the FMPs pertaining to harvest limits in Melbourne's water supply catchments also form the audit criteria for this Compliance Element and are discussed specifically where relevant. Other aspects of timber harvesting management in water supply catchments, such as the timing and number of subcatchments that are able to be harvested in each year, are not a part of the scope of this audit.

5.5.1 Audit criteria

The Auditor has made an assessment of compliance against the spatial harvest limits defined in the Management Procedures as presented in Table 5-7.

Eight tests of compliance with the average annual harvest limits have been conducted for this Compliance Element. The spatial harvest limits defined for each of Melbourne's water supply catchments are summarised in Table 5-7 and discussed below.

Catabrant	Harvest limits (ha) defined in the Management Procedures (2007)			
Catchinent	Ash	Mixed species	Total	
Bunyip River [#]	15	15	30	
Thomson River [^] *	150	15	165	
Tarago River*	55	23	78	
Yarra Tributaries*	52	15	67	

Table 5-7 Summary of the spatial harvest limits in Melbourne's water supply catchments

[#]The Management Procedures state that the area harvested is calculated on a ten-year rolling average commencing July 1996.

[^]Central Highlands FMP 1998 states the harvest limit of 150 ha Ash forests (only) agreed for the period 1987 to 2002.

*The Management Procedures state that the area harvested is calculated on a rolling average commencing July 2004.

Bunyip River catchment

The Bunyip River catchment is a 'Special Water Supply Catchment Area', proclaimed under the nowrepealed *Soil Conservation and Land Utilisation Act 1958* and a 'Land Use Determination' was published in 1968. Melbourne Water advised the Auditor (2005 and 2010) that the Bunyip River Catchment does not supply water to Melbourne. Despite that Section 2.3.3 of the Management Procedures sets the average annual harvest limit for the Catchment as 15 ha of Ash forests and 15 ha of Mixed species forests calculated on a ten-year rolling average to commence in 1996. The *Central Highlands FMP* (Appendix R – Dandenong and Central Gippsland FMA) describes the seasonal closure period, stream buffer and filter widths but does not discuss the harvest limits as set out in the Management Procedures.

Thomson River catchment

The Thomson River catchment includes areas of State forest that drain into the Thomson Reservoir. The land is a 'Special Water Supply Catchment Area' proclaimed under the *Catchment and Land Protection Act 1994*. A 'Land Use Determination' was prepared for the land and a formal Catchment Management Agreement was made between Melbourne Water and DSE in 2007 that defines the allowable activities, timing and responsibilities. Chapter 5 of the *Central Highlands FMP* states that Melbourne Water and DSE entered into an annual harvest limit agreement for the period of 1978 - 2002 of 150 ha of Ash forests. Section 2.3.3 of the Management Procedures sets the average annual harvest limit for the Thomson River Catchment as 150 ha of Ash forest and 15 ha of Mixed species forests calculated on a rolling average to commence in July 2004. The Management Procedures therefore differ from the *Central Highlands FMP* harvest limits in the Thomson River catchment by an additional 15 ha of Mixed species forests and in the start date of the agreement. The Auditor sought advice from Melbourne Water on the agreed harvest limits for the catchments however the reported harvest limits also differed from those defined in the Management Procedures.

In this instance, the audit has utilised the harvest limits defined in the Management Procedures since the Management Procedures are the current procedural document defining the spatial harvest limits for DSE and VicForests.

Tarago River catchment

The Tarago River catchment was proclaimed a 'Special Water Supply Catchment Area' in 1967 under the now-repealed *Soil Conservation and Land Utilisation Act 1958* and a 'Land Use Determination' was published in 1973. The Tarago River catchment shares its western boundary with the Bunyip River catchment. Section 2.3.3 of the Management Procedures sets the average harvest limit for the Tarago River Catchment as 55 ha of Ash forest type and 23 ha of mixed species forest type calculated on a rolling average commencing in 2004. The *Central Highlands FMP* (Appendix R – Central Gippsland FMA) describes the seasonal closure period, stream buffer and filter widths but does not define the harvest limits as set out in the Management Procedures.

Yarra Tributaries

The Yarra Tributaries catchment is made up of four sub-catchments being, McMahons Creek, Starvation Creek, Cement Creek and Armstrong Creek West. Section 2.3.3 of the Management Procedures states that a total annual harvest limit must not exceed 52 ha of Ash forests and 15 ha of Mixed species forests, measured as a rolling average commencing July 2004. The *Central Highlands*



FMP (Appendix R – Dandenong FMA) describes the sub-catchments as 'restricted access catchments managed by agreement between Melbourne Water and DSE. Appendix R defines the seasonal closure period, stream buffer and filter widths but does not define the harvest limits.

The findings of the data review process are presented in Section 5.5.2 and the findings of the audit are presented in Section 5.5.3 below.

5.5.2 Data review

The Department provided the Auditor with two GIS shapefiles with which to conduct the audit:

- 1. Logging history boundaries for the 1999/00 to 2008/09 harvesting seasons (*Log_season 99/09* shapefile); and
- 2. Boundaries of water catchments (Catchment_PWSC100 shapefile).

The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and consistency of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit.

The following data review was conducted before commencing the audit:

- A 10% sample of the Log_season99/09 shapefile was compared with the DSE GIS and VicForests CIS databases;
- A 100% sample of the output of the Log_season99/09 shapefile intersection with the Catchment _PWSC100 shapefile to check that all fields were populated and to check the logic of the attributes such as harvest dates;
- A 10% sample of the output of the Log_season99/09 shapefile intersection with the Catchment _PWSC100 shapefile was interrogated and compared with DSE's GIS and VicForests CIS databases;
- The *Catchment_PWSC100* shapefile was also verified to include the water supply catchments listed on the Department of Primary Industry (DPI) website (<u>www.land.vic.gov.au/dpi/vro/</u>).

The findings of the data review are listed in Table 5-8 below.

Data review	Findings	Implications for audit findings
10% sample check of the Log_season99/09 shapefile compared with the DSE GIS and VicForests CIS databases.	 All records were observed in both the DSE GIS and VicForests CIS databases. 	No implications.
	 All records were observed in both the DSE GIS and VicForests CIS databases. 	
100% sample review of <i>Log_season 99/09</i> intersection with the <i>Catchment_PWSC100</i> shapefile for completeness and logic.	 Three (3) records or 0.6% of records within the derived shapefile (output of Log_season99/09 intersection with the Catchment _PWSC100 shapefile) did not have a forest type or silviculture system. 	This equates to less then <1% of the output dataset. The Auditor subsequently requested the omitted information and it was provided by DSE and used in the analyses. Therefore there are not considered to be any implications for the findings of the audit.

Table 5-8 Melbourne's water supply catchments Compliance Element – data review findings and implications for the audit

Data review	Findings	Implications for audit findings
10% sample of the output of the <i>Log_season99/09</i> shapefile intersection with the <i>Catchment _PWSC100</i> shapefile interrogated and compared with DSE's GIS and VicForests CIS databases.	 All records were observed in the VicForests CIS. 	No implications.
	 The attributes (forest types, silviculture system, commencement and completion dates) of the records matched in all cases the DSE and VicForests databases. 	No implications.
The Catchment_PWSC100 shapefile checked against the water supply catchments listed on the Department of Primary Industry (DPI) website.	 The attributes of the catchments in Catchment_PWSC100 shapefile including catchment name, location and area, matched those recorded in FMPs and on the DPI website. 	No implications.

The Auditor undertook the audit based on the findings of the data review process as described above, using the original and supplementary data provided by DSE.

5.5.3 Level of compliance

All audited coupes were assessed as being in compliance with the audit criteria and as such all harvest operations conducted within the 2008/09 financial year were within the spatial harvest limits defined by the Management Procedures. The audit findings are presented in Table 5-9 and the level of compliance within each catchment is discussed below.

The Auditor notes that there is a minor inconsistency in the catchment harvest limits defined in the Management Procedures and the FMPs as discussed in Section 5.5.1 of this report. The Auditor sought advice from Melbourne Water on the agreed harvest limits however some of these harvest limits also differed from those defined in the Management Procedures.

<u>Recommendation 1</u>: It is recommended that the harvest limit agreements in each of Melbourne's water supply catchments is clarified between Melbourne Water and DSE and that Forest Management Plans and Management Procedures are updated to reflect such agreements.





Table 5-9Summary of annual harvested areas in Melbourne's water supply catchments 1999/00 –
2008/09

Bunyip River catchment

The audit found that a total area of 169 ha or 4% of the total Bunyip River catchment has been harvested in the last ten years. The total harvested area is made up of 126 ha of Ash forests and 43 ha of Mixed species forests.

The audit found that the ten year rolling average of harvesting of Ash and Mixed species forests in 2008/09 was within the harvest limits and therefore compliant with the Management Procedures.

Thomson River catchment

A total area of 1015 ha or 3% of the total Thomson River catchment has been harvested in the last ten years. The total harvested area is made up of 1011 ha of Ash forests and 4 ha of Mixed species forests.

The audit found that the harvesting of Ash and Mixed species forests in the Thomson River catchment complied with the harvest limit defined in the Management Procedures. Calculated as a rolling average commencing in 2004/05, an average of 89 ha of Ash forests have been harvested annually and no (zero ha) Mixed species forests have been harvested.

The Auditor notes that whilst full compliance with the harvest limits have been recorded in the Thomson River catchment in 2008/09, there is inconsistency in the harvest limits between the Central FMP and the Management Procedure regarding the harvesting of Mixed species.

Tarago River catchment

A total area of 688 ha or 6% of the total Tarago River catchment has been harvested in the last ten years. The total harvested area is made up of 497 of Ash forests and 189 ha of Mixed species forests.

The audit found that the harvesting of Ash and Mixes species forests in the Tarago River catchment complied with the harvest limits prescribed by the Management Procedures. Calculated as a rolling average commencing in 2004/05, an average of 37 ha of Ash forests has been harvested and an average of 4 ha Mixed species forests has been harvested annually.

Yarra Tributaries catchment

A total area of 601 ha or 5% of the total Yarra Tributaries catchment has been harvested in the last ten years. The total harvested area is made up of 544 of Ash forests and 58 ha of Mixed species forests.

The audit found that the harvesting of Ash and Mixes species forests in the Yarra Tributaries catchment complied with the harvest limits prescribed by the Management Procedures. Calculated as a rolling average commencing in 2004/05, an average of 43 ha of Ash forests has been harvested and no (zero hectares) Mixed species forests have been harvested annually.

Discussion of audit findings

VicForests provided to the Auditor their own monitoring records of harvesting areas in Melbourne's water catchments which differed from those generated by the audit. VicForests advised the Auditor that they do not use the same GIS shapefile for defining the catchment boundaries as was used in the audit (*PWSC100* shapefile). VicForests advised that they use a more accurate scaled mapping layer (*VicMaps 1:25000*) to define the boundary of the water catchments and base their monitoring of harvesting levels on this mapping layer. VicForests monitoring records differed from the results of the audit, the differences being:

- VicForests reported one ha of Mixed species forests harvested within the Bunyip River catchment however the audit found that this area was recorded as Ash forest type. The total area harvested in the Bunyip River catchment was equivalent.
- VicForests reported two ha of Mixed species forests harvested within the Thomson River catchment however the audit found that this area was recorded as Ash forest type. The total area harvested in the Thomson River catchment was equivalent.
- VicForests reported eight ha of Mixed species forests harvested within the Tarago River catchment however the audit found that this area was recorded as Ash forest type. The total area harvested in the Tarago River catchment was equivalent.
- VicForests reported an additional three ha of Ash forest type and four hectares of Mixed species forests harvested within the Yarra Tributaries catchment when compared with the findings of the audit. The total area harvested therefore differed by an additional seven ha of harvesting being reported by VicForests in the Yarra Tributaries catchment.

Additionally, DSE's published *Monitoring Annual Harvesting Performance 2008/09* report (MAHP 2008/09) informed the average annual harvesting areas in each of Melbourne's water supply



catchments against the harvesting limits defined in the Management Procedures. The MAHP 2008/09 report results also differed when compared to the findings of the audit. The largest difference was in the Yarra Tributaries catchment where the MAHP reported an additional 12 hectares of Mixed species forest harvested when compared to the findings of the audit.

The Auditor notes that no non-compliances were recorded in the findings of the audit or in either the VicForests monitoring data or the MAHP 2008/09 report.

The findings of the 2010 *FAP Module 6 Harvesting Performance* audit cannot determine the reason/s for the differences between results reported by VicForests and DSE however it is likely to be due to differences between the datasets that were used for each analysis. For example there is variation between the catchment boundary datasets being used by harvesting organisations; correspondingly there may be differences in the harvesting history datasets being used to undertake the analysis. It is likely also that the forest types have been summarised differently between harvesting organisations thereby generating different harvest areas between the forest types but the same total area harvested in the catchment. The Auditor notes that the DSE fact-sheet published in September 2010 titled *'The allocation of State forest areas to VicForests for harvesting and selling timber resources*' defines the summary forest types now in use.

<u>Recommendation 2</u>: It is recommended that DSE, as the regulator, clarifies the datasets to be used to monitor and report on harvesting in Melbourne's water supply catchments.

5.6 Harvest limits in Special Management Zones

An objective of the audit is to assess and report on the operational performance of timber harvesting operations, undertaken in the 2008/09 financial year on State forests, against spatial cumulative harvest limits established under various forest management planning processes and legislative requirements, specifically those under the FMPs and the FFG Act.

Forest Management Plans

In accordance with the Code, *Forest Management Plans* (FMPs) are prepared for all FMAs and provide for the sustainable use and management of environmental, cultural, social and economic values of State forests. FMPs are prepared using a range of expertise and community input. Each FMP describes a zoning scheme which set priorities and permitted uses in different parts of State forest. The zoning system consolidates and integrates information and management requirements from many sources. In developing the zoning system, DSE aim to establish a Comprehensive, Adequate and Representative (CAR) forest reserve system in accordance with nationally agreed criteria. Management guidelines for a number of flora and fauna species considered rare or threatened have been incorporated into the zoning system, as have any Action Statements from the schedules within the *Flora and Fauna Guarantee Act 1988* (FFG Act). The management of each zone is described below.

General Management Zone

The General Management Zone (GMZ) is managed for a range of uses and values, with the sustainable production of timber and other forest products being a major use. Associated aims include protection of landscape, provision of recreation and educational opportunities, fire protection and conservation of natural values to complement adjacent zones. Within the GMZ there are areas

excluded from harvesting operations due to the requirements of the Code such areas include buffers to protect features such as streams and rainforests, and slopes generally greater than 30°.

Special Protection Zone

The Special Protection Zone (SPZ) is managed for conservation. Larger components of the zone are based on representative examples of vegetation communities and old growth, as well as known localities of key threatened and sensitive flora and fauna species; their habitat and nesting or breeding sites.

Special Management Zone

The Special Management Zone (SMZ) areas cover a range of natural and/or cultural values and are managed to conserve specific features and values. The protection or enhancement of these values in SMZs requires modified timber harvesting rather than their exclusion. The zone contributes substantially to the conservation of important species, particularly fauna, as well as encompassing landscape values, cultural heritage and historic values, and water management values. Timber and other forest produce may be harvested from this zone under certain conditions.

FMPs are available from the DSE website (www.dse.vic.gov.au).

Flora and Fauna Guarantee Act 1998 - Action statements

The *Flora and Fauna Guarantee Act 1988* (FFG Act) provides for the listing of Victoria's threatened plant and animal species, ecological communities and potentially threatening processes. Under the Act, an Action Statement must be prepared by the DSE for each item following its listing.

The Action Statements provide species information including the species description, distribution, habitats, life history, known reasons for its decline and the threatening processes which affect it such as predation by pest species. Action Statements describe the conservation measures currently in place and also define the actions necessary to both mitigate the threatening processes and to research and better understand the species. The Action Statements are designed to apply for three to five years, after which time they are generally reviewed and updated.

FMPs are intended to incorporate the conservation measures defined in the Action Statements for all FFG Act listed species, communities and threatening processes that are known to occur, or that have been modelled to occur, in State forest. Action statements are also available from the DSE website (www.dse.gov.vic.au).

5.6.2 Audit criteria

The specific limits of timber harvesting in SMZs defined in the FMPs and the harvest limits specified in the FFG Action Statements, form the audit criteria for the SMZ Compliance Element.

Forest Management Plans

The Forest Management Plans relevant to the audit are listed in Appendix F, F.2. The FMPs were reviewed and the management requirements and harvest limits of SMZs were summarised. The Auditor made the following general findings regarding the relevant SMZ related content of the FMPs:



- Eight (8) of the 12 FMPs provide a statement of the area of SMZs and the percentage of the total area of the FMA covered by SMZs;
- Eight (8) of the 12 FMPs provide an *approximate* total area (ha) of SMZs available for harvest (net productive area generally not provided).
- All 12 FMPs contained the following:
 - The management objectives for the SMZs;
 - A detailed description of the process of developing the SPZ and SMZ zones;
 - A register of the SMZs in the FMA including the SMZ number (unique identifier);
 - Reference to the FFG Act and Action Statements; and
 - A list of the 'values' of the SMZ and the associated protection requirements being some or all of the following:
 - Rare or threatened flora and fauna species (habitat and breeding sites);
 - o Wetlands;
 - Ecological Vegetation Communities (EVC) present in the FMAs;
 - Old growth forests / mature tree sites;
 - Landscape values (such as tourist access routes);
 - Historic sites;
 - Cultural heritage sites; and
 - Research sites.

The audit found that there were several inconsistencies and deficiencies in the FMPs which prevented a complete assessment of the performance of timber harvesting operations against the spatial harvest limits established under the FMPs. The inconsistencies and deficiencies related to:

- The FMP requirements for protection of a FFG species, habitat, EVC or threatening processes not always consistent with the conservation measures of the FFG Action Statements. This was found to be largely due to the publication or revision of a Action Statement after the FMP was published;
- Within the eight FMPs that define an *approximate* total area of the SMZs available for harvest, no
 definition of specific harvest limits (including cumulative harvest limits) or which SMZs are available
 for timber production or are fully protected;
- The inclusion of different data and information about the SMZ harvest limits, for example, eight of the 12 FMPs describe the area of SMZs on State forests and four FMPs do not;
- A lack of readily available timber harvest limits or conditions on the basis that timber harvesting in SMZs is stated as often being undertaken on a case-by-case basis through consultation with relevant experts within the FMA; and
- A lack of specification of timber harvest limits for SMZs that protect landscape values, research plots, historic sites and sites of cultural significance. Each FMA would need to provide documentation of the decision-making process for the harvesting of each of the SMZs with these values to enable the Auditor to assess compliance with spatial harvest limits.

Examples of the inconsistencies in two FMPs are provided in Appendix K.1and K.2.

Flora and Fauna Guarantee Act 1998 - Action statements

The FFG Action Statements relevant to the audit are listed in Appendix F, Table F.2. Following the GIS analysis that identified the SMZs and associated SMZ values that have been harvested in the decade preceding 2008/09, the Auditor reviewed the requirements for management of SMZs in each of the associated FFG Action Statements. The Auditor found that 66% of the SMZ values (61

individual values at genera or community level) did not have a FFG Action Statement. Of the SMZ values that did have Action Statements, very few prescribed spatial harvest limits or requirements for the management of timber harvesting operations within SMZs. For example the Action Statement for the Spot-tailed QuoII prescribes as one of the habitat protection conservation measures, the development of management guidelines for the SMZs. Appendix K.3 provides two examples of FFG Action statements that provide management actions related to timber harvesting but do not prescribe a spatial harvest limit.

Six Action Statements relevant to the audit were identified that prescribe the conditions that specifically allow for whole or partial harvest of the SMZs, the conditions being the application of a SPZ, the silviculture system, the season or timing of timber harvesting and the requirement for a Special Management Plan. The harvest limits and timber harvesting conditions of each of the six Action Statements is summarised in Table 5-10 below and could potentially form the audit criteria for the SMZ Compliance Element in future audits.

Table 5-10	Timber har	vest limits and c	onditions in re S	elevant <i>Flora and</i> Statements	l Fauna Guarantee	<i>Act 1988</i> Action

Action Statement	Silviculture system	Harvest timing or season limited?	Protect habitat trees/ prey species habitat	Special Management Plan required (Yes or No)?	Whole or Partial SMZ allowable for timber harvest
Powerful Owl <i>Ninox strenua</i> (No. 092), 1999	STS* / selective	Yes	Yes	Yes	Whole
Barking Owl <i>Ninox connivens</i> (No. 116), 2001	STS* / selective	Yes	Yes	No	Whole
Sooty Owl <i>Tyto tenebricosa</i> (No. 117), 2001	STS* / selective	No	Yes	No	Whole
Masked Owl Tyto novaehollandiae novaehollandiae (No. 175), 2001	STS* / selective	No	Yes	Yes	Whole
Swift Parrot <i>Lathamus dicolor</i> (No. 169), 2002	Not specified	Yes	Yes	No	Whole
Long-footed Potoroo <i>Poturus longipes</i> (No. 58), 2009 (revised)	Not specified	No	Yes	No	Partial

*STS – Single tree selection (see Section 7 Glossary).

The Auditor notes that in order to undertake an assessment of the compliance of the timber harvesting operations against the conditional timber harvesting limits prescribed in the six FFG Action Statements, further data would be required such as, threatened species point-source location GIS data and associated modelling of habitats and/or distribution and the protection buffers (SPZ and SMZs) that have been applied in the GIS. The Auditor notes however, that the current scope of *FAP Module 6 Harvesting Performance* requires assessment of compliance with the spatial harvest limits



only. However, given the conditional harvesting requirements, the Auditor considers that a more complete audit would also attempt to assess compliance with the conditions in addition to the spatial harvest limits prescribed by the FFG Action Statements. This analysis is currently beyond the intended scope or scale of the audit of the SMZ Compliance Element.

Summary of audit criteria

Eight of 12 FMPs specify a total *approximate* area of the SMZs available for harvest, however, the specific SMZ(s) where harvesting is permitted or not permitted is not specified. Additionally, a large proportion of SMZs are aggregated areas comprising areas nominated to protect individual values. As a result the Auditor is unable to determine if timber harvesting has complied with the protection requirements within a specific SMZ. The FMPs do not define spatial timber harvest limits for most SMZ values.

The lack of documented spatial harvest limits for most SMZ values in the FFG Action Statements also limits the extent to which the audit can assess the compliance of timber harvesting within SMZs since many SMZ areas have multiple values and, based on the data provided, the audit cannot determine which value has been potentially impacted by the timber harvesting.

An assessment of the total area harvested in SMZs for each FMA that prescribes an area limit will provide an indication of compliance with the FMP's stated total *approximate* area of SMZs available for harvest. Assessment of timber harvesting against the six FFG Action Statements listed in Table 5-10 requires the analysis of further data which is currently beyond the intended scope and scale of the audit. Refer to Section 5.6.3 below for further discussion related to the audit data.

5.6.3 Data review

The Department provided the Auditor with two GIS shapefiles with which to conduct the audit:

- 1. Logging history boundaries for the 1999/00 to 2008/09 harvesting seasons (*Log_season 99/09* shapefile); and
- 2. Boundaries of forest management zones (derived SMZ shapefile).

The Auditor undertook review and comparison of samples of GIS data provided by DSE to check the robustness and consistency of the datasets. Complete verification of the datasets was not undertaken as it was considered outside the scope of the audit.

The following data review was conducted before commencing the audit:

- A 10% sample of the *Log_season99/09* shapefile was compared with DSE's GIS and VicForests' CIS databases;
- A 10% sample of the output of the *Log_season99/09* intersection with the derived *SMZ* shapefile was interrogated and compared with DSE's GIS and the *Log_history 08/09* shapefile and VicForests' CIS (where relevant);
- A 100% sample of the output of the *Log_season99/09* intersection with the derived *SMZ* shapefile was checked for completeness of the forest type and silviculture system attributes; and
- The derived *SMZ* shapefile was interrogated and compared with the requirements and SMZ lists in the FMPs.

The findings of the data review are listed in Table 5-11 below.

Data review	Findings	Implications for audit findings
10% sample check of the Log_season99/09 shapefile compared with the DSE GIS and	1. All records were observed in both the DSE GIS and VicForests CIS databases.	No implications.
VICFORESTS CIS databases.	2. All records were observed in both the DSE GIS and VicForests CIS databases.	
100% sample review of <i>Log_season 99/09</i> intersection with the derived <i>SMZ</i> shapefile completeness of the forest type and silviculture system attributes.	 187 records (out of 1082 records) or 17% of records within the derived SMZ Log- season99/09 did not have any SMZ value description or forest type and/or silviculture system. 	The Auditor subsequently requested this information and most records were provided by DSE and used in the analyses. This is further discussed in point 2.
	 14 records (out of 1082 records) or 1.3% of records within the derived <i>SMZ Log-season99/09</i> were unable to be fully described by DSE (SMZ number, description of value forest type or silviculture system). The records represent 0.6% (49.8 ha) of the total area of SMZs harvested between 1999/00 and 2008/09. 	The implications to the audit are that some data analyses have been performed on incomplete data. The Auditor considers that the implications to the findings of this audit of compliance with approximate spatial harvest limits defined in the FMPs are likely to be immaterial since less then 1% of the area cannot be used in the analyses. The Auditor has noted where data is incomplete in the presentation and discussion of results.
	3. 20 records (out of 1082 records) or 1.9% records within the derived <i>SMZ Log-</i> <i>season99/09</i> lacked a start date.	There are not considered to be implications to the audit findings as the end dates were provided and fell within the audit period and the harvest limits are not constrained by specific time periods.
A 10% sample of the output of the <i>Log_season99/09</i> intersection with the derived <i>SMZ</i> shapefile was interrogated and compared with the DSE GIS and the <i>Log_history</i> 08/09 shapefile and CIS (where relevant)	 Fourteen records from the sample (108 records) or 13% sample records within the derived SMZ Log-season99/09 were unable to be fully described by DSE (SMZ number, description of the SMZ value, forest type or silviculture system). The records represent 0.6% (49.8 ha) of the total area of SMZs harvested between 1999/00 and 2008/09. 	The implications to the audit are that some data analyses have been performed on incomplete data. The Auditor considers that the implications to the audit findings are likely to be immaterial since less then 1% of the area cannot be used in the analyses. The Auditor has noted where data is incomplete in the presentation and discussion of results.
The derived <i>SMZ</i> shapefile was interrogated and checked against the requirements and SMZ lists in the FMPs.	1. The <i>SMZ</i> shapefile records were all able to be located within the FMPs however the FMPs did not state the full list of values for each SMZ that were provided in the SMZ shapefile attributes.	The implications to the audit are that there is uncertainty as to when the SMZ values were added into the <i>SMZ</i> shapefile, and therefore, whether the harvesting with the SMZs took into consideration the conditional harvesting pertaining to all of the SMZ values or just those listed in the FMP.

Table 5-11 SMZ Compliance Element - data review findings and implications for the audit



The data review process indicates that the *SMZ* and *Log_season 99/00* shapefiles have incomplete attribute data and harvesting details. Subsequently, some data analyses have been performed on incomplete data. The Auditor considers that the implications to the findings of this audit are likely to be immaterial since less than 1% of the area is unsuitable for inclusion in the analyses. The Auditor has noted where data is incomplete in the presentation and discussion of results.

Review of the SMZ GIS data revealed that the SMZ values (or 'Description' attribute) often comprised more than one value. Therefore based on the data provided, the audit cannot determine which, if any, SMZ value has been impacted where timber harvesting has been undertaken in a SMZ.

In the context of the data limitations described above, the Auditor was able to undertake the audit at a strategic level on the basis that the data was found to be generally consistent, while noting that the reliability of the findings will be limited by the inconsistencies identified in the data review process described above. An assessment of the total area harvested in SMZs against the FMPs stated total *approximate* area of SMZs available for harvest has been undertaken. However, compliance of timber harvesting operations with the spatial harvest limits in FFG Action Statements were unable to be assessed due to the limitations of the data provided and the complexity and scale of this analysis being beyond the intended scope of the audit of the SMZ Compliance Element.

5.6.4 Level of compliance

The audit identified a list of the key values of the SMZs that were harvested between 1999/00 and 2008/09 is provided below:

- Species of rare or threatened flora (including the habitat of the species);
- Species of rare or threatened fauna (including the habitat of the species and breeding sites);
- Wetlands;
- Ecological Vegetation Communities (EVC);
- Old growth forests / mature tree sites;
- Landscape values (such as tourist access routes);
- Historic sites;
- Cultural heritage sites; and
- Research sites.

The audit found that no FMA harvested more than the 'approximate area available for harvesting in the SMZs' as defined in the FMPs, noting that four FMAs were unable to be assessed due to lack of information in the FMP. The area of SMZs available for harvest and the area and percentage of the SMZ harvested over the decade preceding 2008/09 is summarised in Table 5-12 below. As the results summarised in Table 5-12 illustrate, harvesting in SMZs between 1999/00 and 2008/09 comprised a small percentage of the total approximate area available for harvesting in SMZs, the largest being 13% of the available SMZ area recorded in the Mid-Murray FMA. As such, the Auditor considers that timber harvesting has complied with the SMZ spatial harvest limits established in the FMPs and that the gaps identified in the datasets, as presented in Table 5-11, do not impact on the results of the audit.

FMA	No. of SMZs harvested 1999/00 – 2008/09 (10 years)	Total area (ha) of SMZ on State forests defined in FMP	SMZ approx. area (ha) available for harvest as defined in FMP	Actual area harvested (ha) in 10 years to 2008/09	Percentage of available SMZ harvested in 10 years to 2008/09
Benalla – Mansfield	3	Not defined	6804	279	4.
Bendigo	38	9423	Not defined	1174	CBA
Central Highlands	22	17 900	~9278	613	4%
Central Gippsland	20	10 471	~2848	294	10%
Dandenong	5	Not defined	~3817	35	1%
East Gippsland	75*	37 900	~22 400	1441	6%
Horsham	1	Not defined	Not defined	83	CBA
Mid-Murray	30	15 920	12 430	1624	13%
Midlands	20*	28 900	Not defined	1921	CBA
Mildura	1	6663	1326	0.2	0.02%
North East	6	22 072	15 267	280	2%
Tambo	12	Not defined	Not defined	53	CBA

Table 5-12 Summary of SMZ areas harvested in FMAs for the period 1999/00 to 2008/09

* Data incomplete

CBA = cannot be assessed

Since a complete assessment of the compliance with the FMPs and FFG Action Statements was unable to be undertaken (as discussed in Sections 5.6.2 and 5.6.3), the Auditor used GIS analysis to undertake a high level analysis of the derived *SMZ Log-season99/09 shapefile* that provides coarse trends in the timber harvesting operations in SMZs harvested for the 10 year period 1999/00 – 2008/09 and the forest types and silviculture systems that were used. The analysis is presented in Appendix L (Table L-3, Figure L-1 and Figure L-2). The analyses should be used as a guide only since there are inherent limitations with the SMZ shapefile that have not been quantified at this stage.

Summary of results

The Auditor was unable to make a complete assessment of the operational performance of timber harvesting operations in SMZs, undertaken in the 2008/09 financial year, against spatial cumulative limits established under various forest management planning processes and legislative requirements, specifically those under the FFG Act due largely to the fact that the scale and scope of an audit of this complexity was significantly greater than anticipated by the *FAP Module 6 Harvesting Performance*. The following issues contributed to this outcome:

- The lack of documented spatial harvest limits for most SMZ values in the FMPs;
- The lack of documented spatial harvest limits for most SMZ values in the FFG Action Statements;
- The SMZ database (shapefile) is currently unable to be interrogated to assess compliance against individual harvest limits (such as the harvest limit required for a POMA) because the values of the SMZ are grouped together (that is they are a conglomerate of SMZ values as opposed to the source record) and therefore the Auditor is unable to determine which value of the SMZ has been impacted by harvesting;



- Modifications to the SMZs that are made after field surveys are not captured on the GIS and therefore any use of the *FMZ100* shapefile for GIS analyses will contain boundary errors. Additionally, such errors will accumulate temporally since the SMZ boundaries are likely to have been modified over time;
- FMPs have been drafted over several years and at times are inconsistent with the requirements of the FFG Action Statements;
- The data review process requires the Auditor to verify the source data of the SMZ shapefile (a conglomeration of ecological, cultural, landscape and scientific values) and the process of applying the SPZ and SMZ buffers which is beyond the scope of the current audit (see excluded elements); and
- The current *FAP Module 6 Harvesting Performance* and *6D Workbooks* do not currently provide an agreed process that enables an assessment and the generation of audit findings.

The Auditor understands that DSE is currently updating the SMZ database (shapefile) by re-sectioning the individual attributes (SMZ values) to allow interrogation of the SMZ layer. The Auditor considers that the update of the SMZ database by DSE is a positive initiative that will facilitate the identification of potential impacts of harvesting on specific SMZ values and enable demonstration of compliance with harvest limits through future external and internal auditing and monitoring processes. The Auditor also notes that the effectiveness of the FMPs and FFG Action Statements cannot and are not intended to be measured under the *FAP Module 6*.

In order to further improve the value of outcomes of the audit for the future, the Auditor identified an opportunity for improvement in the FAP. <u>Recommendation 3</u>: It is recommended that the FAP Module 6 Harvesting Performance and associated 6D Workbook are reviewed and updated, with consideration given to the objectives of the audit and the analysis sought.

The Auditor has provided a summary of alternative audit options and a recommended process to enable the audit of the SMZ Compliance Element to be conducted in the future in Appendix M.

5.7 Summary of recommendations

This section of the report lists the recommendations that are contained within the findings sections for the Melbourne's water supply catchments and the SMZ Compliance Elements. Three recommendations for improvement have been made, including those where current systems are not considered adequate to demonstrate compliance with the relevant regulatory requirements.

<u>Recommendation 1</u>: It is recommended that the harvest limit agreements in each of Melbourne's water supply catchments is clarified between the Melbourne Water and DSE and that Forest Management Plans and Management Procedures are updated to reflect such agreements.

<u>Recommendation 2</u>: It is recommended that DSE, as the regulator, clarifies the datasets to be used to monitor and report on harvesting in Melbourne's water supply catchments.

<u>Recommendation 3</u>: It is recommended that the FAP Module 6 Harvesting Performance and associated 6D Workbook are reviewed and updated, with consideration given to the objectives of the audit and the analysis sought.

Conclusion

6.1 Overall assessment of compliance

The audit comprised a strategic-level assessment of harvesting operations undertaken in the 2008/09 financial year against the spatial limits relevant to WUPs, TRPs, Melbourne's water supply catchments and SMZs.

The audit identified that a large proportion of the area of timber harvesting operations in the 2008/09 financial year was compliant with the spatial limits established under the various relevant legislative planning processes and government policies aimed at achieving sustainable forest management.

Specifically the audit identified that:

- A high level of compliance with the WUP spatial limits was achieved;
- A very high level of compliance with the TRP spatial limits was achieved;
- Timber harvesting conducted in Melbourne's water supply catchments complied with the spatial harvest limits defined in the Management Procedures; and
- Timber harvesting conducted over the past decade did not exceed the FMA's 'approximate area available for harvesting in the SMZs' as defined in the FMPs, noting that four FMAs were unable to be assessed due to lack of information in the FMP.

The audit also identified that there were a large number of coupes (both on WUPs and TRPs) with small areas harvested outside of the respective WUP / TRP area but within the procedural allowances (Management Procedures) suggesting systemic limitations in the accuracy of the WUP and TRP mapping. This may be due to the mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These instances were not recorded as non-compliances since they were assessed as having been located in accordance with procedural allowances. The fewer instances of relatively large areas of non-compliance were found to be mainly due to the incorrect application of the Management Procedures.

The Auditor noted a number of individual examples of compliant and good practices, including instances of:

- Harvesting in accordance with the spatial limits defined in the *Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007* in Melbourne's water supply catchments;
- Harvesting in accordance with the spatial limits defined in the Forest Management Plans in SMZs; and
- Generally consistent recent logging history databases and records.

This audit report includes three recommendations for improvement, including those where current systems, documented procedures or practices do not adequately allow for demonstration of compliance with spatial limits established under various legislative planning processes. They relate to clarification of agreed harvest limits in Melbourne's water supply catchments, clarification of the datasets used to monitor the annual harvesting in Melbourne's water supply catchments and review and revision of the *FAP Module 6 Harvesting Performance* scope and methodology for assessment of the SMZ Compliance Element.

6.2 Risks to beneficial uses

The audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses listed in Section 3.3 of this report, noting that the scope of the audit was limited to desktop review. The assessment of risk to the listed beneficial uses is based on non-compliances identified



6 Conclusion

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.

Life, health and wellbeing of humans

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

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

As discussed in Section 5, the Audit did not identify any non-compliances that presented an unacceptable environmental risk to the life, health and wellbeing of other forms of life, including the protection of ecosystems of biodiversity, within the context of approved timber harvesting on Victorian State forests. The Auditor notes however that this audit was a desktop assessment only and did not involve site inspections of areas where non-compliances were identified or assessment of the environmental asset value that may have been impacted by the non-compliances. The audit makes a recommendation that the scope be expanded to enable assessment of specific values intended to be protected by SMZs.

Local amenity and aesthetic enjoyment

The audit did not identify any specific issues related to landscape or recreation buffers or values, noting that these specific values were unable to be assessed in the SMZ Compliance Element under the agreed scope of the audit. The audit makes a recommendation that the scope be expanded to enable assessment of specific values intended to be protected by SMZs.

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 EP Act 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. Generally referred to as 'focus areas' in the former audit program operated under EPA.

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 DSE to address the full range of values and uses in FMAs, which have been designated as the units for planning forest management activities.



7 Glossary

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, DSE 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.

Silviculture

The science and practice of managing harvesting, forest establishment, composition, and growth, to achieve specified objectives.

Silviculture System

— Group (or Gap) Selection

A method where trees are harvested groups (gaps in the canopy are created in the forest). Regeneration is established in the gaps produced and an uneven-aged stand is maintained.

— Single Tree Selection

A method where trees are harvested singly or in small groups at relatively short intervals (usually 10 - 20 years) over the rotation. Regeneration is established in the gaps produced and an unevenaged stand is maintained.

- Clearfelling

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

— Clearfelling Salvage

Method of harvesting a coupe following wildfire, storms or other events whereby all merchantable trees, apart from those to be retained for wildlife habitat, are removed. Salvage harvesting must take as much account of environmental care as any other harvesting operation and specific management prescriptions apply.

- Reforestation

The establishment of a stand of trees by planting or sowing with species native to the locality on previously cleared or poorly forested land.

— Roading (Construction and Improvement)

The removal of trees for the purposes of permanent road construction and improvement. Improvement of roads are those works that result in a significant improvement or upgrade of an existing road which may include a significant realignment of an existing road.

- Seed Tree

Method of harvesting a coupe whereby all merchantable trees are harvested apart from those specifically retained for regenerating the coupe by natural or induced seed-fall and for habitat purposes.

— Shelterwood

Method of harvesting a coupe consisting of the removal of a proportion of the mature trees to allow the establishment of essentially even-aged regeneration under sheltered conditions, followed by later felling of the remainder of the mature (seed) trees. Shelterwood 1 coupes are > 40 ha in size; Shelterwood 2 coupes are a maximum size of 40 ha.

— Thinning

The removal of part of a forest stand or crop, with the aim of increasing the growth rate and/or health of retained trees.

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.*



7 Glossary

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.

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).

Wetlands

Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.

Wood Utilisation Plan (WUP)

A Wood Utilisation Plan (WUP) is prepared by DSE to detail the type and quantity of wood to be produced in the state 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.

A WUP may also apply to some coupes managed by VicForests in the east of the state

Limitations

Jodie Mason (the Auditor) along with her support team from URS Australia Pty Ltd (URS) has prepared this report for the use of the Department of Sustainability and Environment in accordance with the usual care and thoroughness of the consulting profession. 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 Proposal dated 10 June 2010.

The methodology adopted and sources of information used by Jodie Mason and the support team are outlined in this report. In conducting the audit, and in preparing the report, URS did not independently verify any of the data or information upon which this audit was based. Further, in preparing this report, URS was not able to rely upon the accuracy of any of the information and / or data that was provided to URS. As such, URS disclaims any responsibility for the data and/or information that was used as a basis for this report, and disclaims any responsibility for any inaccuracies in this report that exist because the data and / or information provided to URS was incorrect or inaccurate.

As such, anyone reviewing this report should undertake their own independent investigation of the data and / or information that was used to prepare this report. Further, anyone reviewing this report is advised that the conclusions and determinations in this report may be incorrect or erroneous due to errors, mistakes, and/or inconsistencies in the data and/or information provided to URS for purposes of preparing this report. Additionally by terms of its retainer, URS have been precluded from reliance from the data. Hence, this report must be interpreted in light of URS's inability to rely on the data and information provided to it.

This report was prepared based on databases and documents reviewed and interviews conducted between November and December 2010, and is based on the conditions encountered and information reviewed at the time of preparation. Jodie Mason and the support team disclaim responsibility for any changes that may have occurred after this time.

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. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

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 Sustainability and Environment 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.

URS cannot be responsible for changes in conditions that occur after the date of this report, whether they are hazardous or otherwise.



Appendix A Forest Audit Program Module 1 - Overview



А





CONTENTS

1	MODULE 1 – OVERVIEW	5
1.1	BACKGROUND	5
1.2	OVERVIEW OF VICTORIA'S ENVIRONMENTAL AUDIT SYSTEM	6
1.3	INTENDED USERS	6
2	OBJECTIVES AND SCOPE OF THE FOREST AUDIT PROGRAM	7
2.1	AUDIT PROGRAM OBJECTIVES	7
2.2	AUDIT PROGRAM SCOPE	8
2.2.1	OUT OF SCOPE ELEMENTS	8
2.2.2	Selecting targets for the Forest Audit Program	9
2.2.3	Environmental Values	10
2.2.4	SEGMENTS AND ELEMENTS OF THE COVERED BY THE FAP	11
2.3	Forest Audit Program Toolbox	11
2.3.1		11
2.3.2	MODULE COMPLIANCE ELEMENTS	13
3	STATUTORY OVERVIEW	15
3.1	Sustainable Forests (Timber) Act 2004	15
3.1.1	SUSTAINABILITY CHARTER	15
3.2	Environment Protection Act 1970	16
3.2.1	EPA Environmental Auditor Guidelines	16
3.3	CATCHMENT AND LAND PROTECTION ACT 1994	16
3.4	Flora and Fauna Guarantee Act 1988	17
3.5	SUSTAINABLE FORESTS (TIMBER HARVESTING) REGULATIONS	\$
	2006	17
3.6	ALLOCATION ORDER	17
3.7	CODE OF PRACTICE FOR TIMBER PRODUCTION 2007 (AS	
	AMENDED)	18
3.7.1	Fire Salvage Harvesting Prescriptions 2009 (as amended)	18
3.7.2	MANAGEMENT PROCEDURES FOR TIMBER HARVESTING, ROADING AND	C
	REGENERATION IN VICTORIA'S STATE FORESTS 2009 (AS AMENDED)	19
3.7.3	NATIVE FOREST SILVICULTURE GUIDELINE SERIES	20
4	GLOSSARY	21
5	ACCRONYMS	24
ANNEX A	ELECTRONIC TOOLBOX CD	

Document and Version Control

Title	Forest Audit Program Toolbox – Module 1	
Owner	DSE Forest Branch - Forestry Standards and Compliance Unit	
Registry File	FS/18/3059	
Scope of document	For use by Environmental Auditors appointed to conduct audits under the DSE Forest Audit Program. May involve or impact on some DSE and VicForests staff	
Date issued	16 April 2010	
Version	1.0	
Commences	16 April 2010	
Review schedule	As required	
Last revision date	-	
Note	Printed copies of this document are uncontrolled. The latest version is available in the DSE Forests and Fire Document Management System (DMS), or by contacting the DSE Forestry Standards and Compliance Unit.	

Revision History

Date	Reviewer	Summary of changes	Replaces
-	-	-	-



FOREST AUDIT PROGRAM TOOLBOX



Module 1 Overview



Module 2 Audit Process



Module 3 Tactical Planning



Module 4 Operational Planning



Module 5 Harvesting and Closure



Module 6 Harvesting Performance



Module 7 Regeneration and Finalisation



1 MODULE 1 – OVERVIEW

1.1 BACKGROUND

The Department of Sustainability and Environment (DSE) is the regulator of timber harvesting operations on public land in Victoria. VicForests is responsible for the management of commercial harvest and sale of timber from State forest within the east of the State, while other parts of the State are overseen and managed by DSE, see *Figure 1.1.* Timber harvesting operations and associated activities conducted in State forest must be undertaken in accordance with the *Sustainable Forests (Timber) Act 2004* (the Act). The Act includes requirements that these operations comply with the *Code of Practice for Timber Production 2007* (the Code).

Following a review of the previous forest auditing programs that was administered by the Environment Protection Authority (EPA), the Minister for Environment and Climate Change announced that a new Forest Audit Program would be established by DSE and would ensure that timber harvesting practices in State forests are open and transparent. The Minister also directed DSE to ensure that the new Forest Audit Program (FAP) retained key features from the previous program, including the statutory environmental audit framework, stakeholder consultation and public reporting. These compulsory requirements have been included in the design of the new FAP.

The FAP will apply to commercial timber harvesting conducted in State forests. The audits will provide an objective and independent assessment of risk of harm to the environment, status of compliance with the relevant regulatory framework, and assist DSE and VicForests to pursue their objectives for continual improvement. Audit reports detailing compliance with the regulatory framework will assist in informing members of the community about harvesting performance.

The aim of the new FAP can be summarised in three points:

- To assess the performance of timber harvesting operations against the compliance framework,
- To review the effectiveness of the regulator.
- To review the effectiveness of the regulatory framework.

Environmental Resource Management Australia (ERM) was commissioned by DSE to assist in designing the new audit program.



Figure 1.1 DSE/VicForests management roles in Victoria's State forests (DSE 2008)

1.2 OVERVIEW OF VICTORIA'S ENVIRONMENTAL AUDIT SYSTEM

The *Environment Protection Act 1970* provides for the statutory appointment of environmental auditors and their responsibilities to ensure that high quality, rigorous environmental audits are conducted by appropriately qualified professionals. The Environmental Audit System currently has three well-established applications that cover contaminated land, industrial facilities and natural resources.

The *Environment Protection Act 1970* defines two forms of environmental audit. Section 53V provides for environmental audits that are carried out on risk of harm to the environment caused by industrial processes or activity, waste, substance or noise (EPA, 2007) and section 53X provides for audits of a segment of the environment.

Audits conducted as part of the FAP are conducted under section 53V of the *Environment Protection Act 1970*.

An environmental audit is an assessment of the nature and extent of harm (or risk of harm) to the environment posed by an industrial process or activity, waste, substance or noise. An environmental audit must be able to deliver authoritative advice, upon which individuals and organisations are able to rely in making decisions which affect the future of the community.

An environmental audit therefore must be:

- Independent;
- Objective;
- Credible; and
- Transparent.

1.3 INTENDED USERS

It is intended that the FAP Toolkit and supporting Modules will be used by Auditors appointed pursuant to the *Environment Protection Act 1970*, and their supporting staff, engaged by DSE to implement the annual FAP.



2 OBJECTIVES AND SCOPE OF THE FOREST AUDIT PROGRAM

2.1 AUDIT PROGRAM OBJECTIVES

It is intended that the FAP will support continual improvement in sustainable timber production processes over time. This will be driven by the primary objective of the FAP, in assessing and monitoring compliance of timber harvesting operations with the relevant environmental legislation and regulatory framework (as updated over time).

The framework relating to sustainable timber production in Victoria's State forest is summarised below.



Figure 2.1 Regulatory Hierarchy (generalised)

Additional objectives include the following elements:

- Assessing the consistency of the planning framework for sustainable timber production with the regulatory and legislative environment;
- Assessing the compliance of operational timber harvesting planning with the tactical planning framework provided by the Allocation Order, Timber Release Plans and/or Wood Utilisation Plans; and
- Assessing the performance of timber harvesting conducted in State forest.

The outcomes of the FAP are intended to benefit DSE as the environmental regulator, the Victorian forestry industry, catchment managers and the community. The public reporting of audit findings will inform members of the community and improve transparency.

2.2 AUDIT PROGRAM SCOPE

The audit program applies to the management of forests for timber production on State forests across all of Victoria. This includes commercial timber harvesting operations undertaken by VicForests in eastern Victoria and by DSE in other parts of the State.

The scope of the FAP is built upon the forest harvesting lifecycle and includes:

- Forest planning and reconnaissance;
- Coupe planning;
- Harvesting and closure; and
- Regeneration, monitoring and finalisation.

Figure 2.2 below represents the forest harvesting lifecycle.



Figure 2.2 Forest Harvesting Lifecycle

2.2.1 Out of scope elements

The following elements have been defined as beyond the scope of the FAP:

• Compliance with rules, regulations or guidelines that relate to Occupational Health and Safety (OH+S) matters;


- Timber harvesting practices undertaken in plantations or on non-State forest;
- Roading activities conducted in State forests that are not associated with timber production;
- Silvicultural practices conducted in State forests that are not associated with commercial timber production (i.e. fire recovery silviculture and ecological thinning);
- Land use decisions and associated "forest policy";
- The forest management planning processes (such as the establishment of forest management plans), 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);
- Assessing methods used in the development of the Allocation Order;
- Practices associated with production and collection of domestic forest produce (including firewood) on all land tenures;
- Recreational activities undertaken in State forests;
- Livestock grazing activities undertaken in State forests;
- Apiary activities undertaken in State forests; and
- Fire suppression and management practices undertaken in State forests (e.g. fuel reduction burning and habitat enhancement burning), with the noted exception of post harvest burning undertaken in State forests.

2.2.2 Selecting targets for the Forest Audit Program

Section 2.3.1 of this module outlines how the FAP toolbox has been divided into different audit modules based on groups of related management and harvesting activities that are aligned with different stages of the forest lifecycle (see Figure 2.2). It is important to consider this modular approach in the selection of audit targets across the FAP, given that audit methods change for different audit modules.

The selection of audit targets across the FAP can potentially span the majority of the lifecycle of Victoria's State forests. This is a large and complex process and will need to take into consideration commercial factors (such as the cost of engaging independent environmental auditors) and the resources that are available to DSE in any given year.

The modular design of the FAP will allow for greater flexibility in the selection of audit targets, based on annual priorities. DSE has identified priority areas that are likely to be included as recurrent audit targets. Other factors have also been highlighted that may be considered in determining annual audit priorities, and may be considered in target selection.

Priority areas include:

- Allocation Order and Timber Release Plans;
- Wood Utilisation Plans;
- Planning of timber harvesting operations;
- The performance of timber harvesting operations against the Code and other relevant regulatory requirements;
- Regeneration and coupe finalisation.

Other factors that may also need to be considered in selecting audit targets include:

- Geographical regions;
- Forest types;
- Site specific issues, such as:
 - Flora values (eg rainforest);
 - o Fauna values (eg threatened species);
 - o Fire salvage operations;
 - o Catchments; and
 - o Cultural values.

There may also be times, when it is appropriate under the statutory environmental audit framework for environmental auditors to investigate activities and/or events or conditions outside the scope of the audit that present an imminent hazard to the environment or impacts on beneficial uses. Auditors are expected to pursue such investigations where professional judgement leads to the conclusion that to do so complies with their obligations as an appointed auditor under the *Environment Protection Act 1970* and would likely provide a materially enhanced understanding of the management of the forest.

2.2.3 Environmental Values

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

- 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.



2.2.4 Segments and Elements of the Environment Covered by the FAP

The segment of the environment covered by the FAP are defined as that portion of Victoria in which timber is harvested from State forest. The following elements of the environment (as defined in the *Environment Protection Act 1970*) are relevant to the audit program scope:

- Land; Aesthetics;
- Surface water; Wildlife;
- Groundwater;
 Climate; and
 - Vegetation;

• Fish.

2.3 FOREST AUDIT PROGRAM TOOLBOX

2.3.1 Toolbox Modules

The FAP Toolbox comprises seven modules that are based around the forest harvesting lifecycle. This association of the modules is illustrated in Figure 2.3.



Figure 2.3 Audit Program Modules

An overview of each module is provided as follows:





Module 1 Overview (this module)

Module 1 provides an outline of the Forest Audit Program, its objectives, scope and statutory obligations.

Module 2 Audit Process

Module 2 provides a description of the audit process including the procurement and selection of auditors, selection of audit targets and other considerations for auditors.



Module 3 Tactical Planning

Module 3 outlines the scope and preferred method for assessing compliance with the tactical planning compliance elements and associated criteria, including the guidelines and approval process for Timber Release Plans (TRPs) and Wood Utilisation Plans (WUPs).



Module 4 Operational Planning

Module 4 outlines the scope and preferred method for assessing compliance related to management processes implemented to identify, assess and manage environment and sustainability risks during coupe establishment.



Module 5 Harvesting and Closure

Module 5 outlines the scope and preferred method for assessing compliance related to harvesting and closure. It includes assessment of roading and environmental values as part of harvesting operations including closure.



Module 6 Harvesting Performance

Module 6 outlines the scope and preferred method for assessing compliance related to monitoring of annual harvest performance and compliance with the Allocation Order (AO), TRPs and WUPs.



Module 7 Regeneration and Finalisation

Module 7 outlines the scope and preferred method for assessing compliance related to regeneration and finalisation. This includes regeneration, stocking, tending and general forest health.



2.3.2 Module Compliance Elements

Audits should include assessment against applicable criteria that have been identified in the audit workbooks in Modules 3 - 7 of this toolbox. Compliance with the applicable criteria and procedures will determine whether the principles of forest sustainability are being met.

The workbooks included in the modules correspond to the assessment of defined compliance elements as follows:

Module 3 – Tactical Planning

• TRP/WUP development and approval process

Module 4 - Operational Planning

• No specific compliance element exists, however this module includes a process audit to review linkages between TRP/WUP approvals and operational planning systems (including, but not limited to, consideration of heritage, exclusion zones, silviculture, hazard identification, soil erosivity).

Module 5 – Harvesting and Closure

- Forest Coupe Plans, including a sub element on Exclusion Zones
- Operational Provisions, (ie. weather, seasonal provisions)
- Water Quality, River Health and Soil Protection, including sub-elements:
 - o Waterways
 - o Buffers
 - o Filters
 - Slopes
 - Camp Maintenance, Fuel Storage & Waste Disposal
 - Water Catchments
- Biodiversity Conservation including sub-elements:
 - o Habitat Trees
 - o Rainforest
 - o Forest Health

- Roading including sub-elements:
 - Road Planning
 - o Road Design
 - Road Construction
 - o Road Maintenance
 - Suspension of Cartage
 - Road Closure
- Coupe Infrastructure Provisions, including sub-elements:
 - Log Landings and Dumps
 - Snig and Forwarding Tracks
 - o Boundary Trails

Module 6 – Harvesting Performance

- Compliance with Wood Utilisation Plans (WUPs)
- Compliance with the Allocation (including thinning) Order
- Compliance with Timber Release Plans (TRPs)
- Cumulative harvest limits in Melbourne's water catchments
- Cumulative harvest limits in Special Management Zones.

Module 7 – Regeneration and Finalisation

- Coupe Regeneration Provisions
- Stocking Assessment Provisions (ie. species diversity and forest density)
- Tending and Forest Health Provisions including pest control, seed crop monitoring and coupe maintenance.



3 STATUTORY OVERVIEW

The following key legislation is considered relevant to the Forest Audit Program. It is important to note that the regulatory publications employed to assess compliance of timber harvesting operations must be relevant to the date of harvest. A number of coupes may have been harvested or regenerated under old prescriptions.

A comprehensive list of legislation, guidelines and other general references considered applicable to auditing of the compliance elements within each module (modules 3–7), are listed in Section 4 of the relevant module booklet. Additional legislation, policy and guidance notes relevant to forest management for timber production are also listed in Appendix A and Appendix B of the Code of Practice for Timber Production 2007.

3.1 SUSTAINABLE FORESTS (TIMBER) ACT 2004

The *Sustainable Forests (Timber) Act 2004* (the Act) is the overarching legislative document for the management of commercial timber harvesting within Victoria. The Act describes the obligations for persons undertaking timber harvesting in State forest, including complying with the Code. The Act establishes a framework for the sustainable management of Victoria's State forests and provides for the development of a Sustainability Charter to establish criteria and indicators to monitor and report on performance. The Sustainability Charter was subsequently published by DSE (2006) and specifies objectives around maintaining items such as biodiversity, ecosystems, and managing disturbance.

The Act enables the allocation of timber resources to VicForests for commercial forestry operations. It also defines VicForests' reporting and performance obligations. Section 96 of the Act provides for the development of regulations governing the licensing of commercial timber harvesting operations. This includes establishment of a Timber Harvesting Operator Licence system and prescribes an enforcement and penalty regime for breaches of specified environmental requirements.

3.1.1 Sustainability Charter

The Act provides for the development of a Sustainability Charter. The Act states that the Sustainability Charter must set out objectives, consistent with the National Principles of Ecologically Sustainable Development, for both the sustainability of forests and the sustainability of the timber harvesting industry.

The Charter sets the direction for sustainable forest management in Victoria. It commits DSE and VicForests to support the objectives set out in the Charter. VicForests will respond to the Government's sustainability agenda by developing initiatives and targets to progress the objectives of the Charter. It will include these in its statement of corporate intent and report on the outcomes of these initiatives as part of its normal business reporting. Subsequently, both DSE and VicForests are working to achieve sustainable forest management.

3.2 Environment Protection Act 1970

The *Environment Protection Act 1970* (the EP Act) seeks to prevent pollution and environmental damage by setting environmental quality objectives and establishing programs to meet them. The EP Act has been amended over time to reflect the growing interest in best practice in environment protection regulation and to meet the needs of the community.

Key aims of the EP Act include sustainable use and holistic management of the environment, ensuring consultative processes are adopted so that community input is a key driver of environment protection goals and programs and encouraging a cooperative approach to environment protection.

It is under Section 53S of the EP Act, that the EPA appoints environmental auditors to undertake environmental audits, including audits commissioned under this FAP.

3.2.1 EPA Environmental Auditor Guidelines

Whilst DSE will commission environmental audits under the FAP, the EPA administers Victoria's environmental audit system. The following guidelines provide important standards that apply to the conduct of independent environmental audits undertaken in accordance with Part IXD of the EP Act.

- Publication No. 865.7: Appointment and Conduct, October 2008 these guidelines also set out the processes followed by EPA when making, suspending and revoking appointments as environmental auditors.
- Publication No. 953.2: Conducting Environmental Audits, August 2007 these guidelines have been issued primarily to assist environmental auditors to conduct environmental audits. The guidelines may also be useful for audit clients, auditees and the community.
- Publication No. 1147: Provision of Environmental Audit Reports, Certificates and Statements, September 2007 these guidelines provide guidance on the provision of paper and electronic versions of completed environmental audit reports, statements and certificates to the EPA.
- Publication No. 952.2: Preparation of Environmental Audit Reports on Risk to the Environment, August 2007 these guidelines provide guidance on the provision of paper and electronic versions of completed environmental audit reports on risk to the environment to the EPA.

3.3 CATCHMENT AND LAND PROTECTION ACT 1994

Measures to reduce the impact of timber harvesting on water quality and river health must take account of other requirements set out in Special Area Plans made under the *Catchment and Land Protection Act 1994*. Further, this Act requires all landholders to control pest animals and noxious weeds on their property.



3.4 FLORA AND FAUNA GUARANTEE ACT 1988

*The Flora and Fauna Guarantee Act 1988 (*the FFG Act*)* provides for the listing of Victoria's threatened plant and animal species, ecological communities and potentially threatening processes.

Action Statements are prepared for threatened plant and animal species under Section 19 of the FFG Act. These documents may contain prescriptions relating to the planning and conduct of harvesting operations that are relevant to the FAP.

3.5 SUSTAINABLE FORESTS (TIMBER HARVESTING) REGULATIONS 2006

The *Sustainable Forest (Timber Harvesting) Regulations 2006* (the Regulations) provide further detail on the Timber Harvesting Operator Licence system and the enforcement rules for individual timber harvesting operators. Under the Regulations, penalties may apply to individuals if their conduct is not compliant with the Code.

3.6 ALLOCATION ORDER

Resource allocation to VicForests is made through an Allocation Order (AO), which is prepared by DSE. The AO identifies the area available in particular forest stands for each of three five-year periods, together with the full extent of those forest stands. Section 9 of the Act, requires that VicForests monitor and report on operations authorised under this Act.

The conditions of the Allocation Order to which VicForests must comply are included in the following documents:

- Sustainability Charter for Victoria's State forests;
- Code of Practice for Timber Production 2007 (supersedes the 1996 code);
- Code of Practice for Fire Management on Public Land 2006, (supersedes the 1995 code);
- Various management guidelines as specified in Forest Management Plans relevant to the Allocation Order;
- Management procedures for timber harvesting and associated activities in State forests in Victoria; and
- Fire Salvage Harvesting Prescriptions.

3.7 CODE OF PRACTICE FOR TIMBER PRODUCTION 2007 (AS AMENDED)

The Code of Practice for Timber Production 2007 (the Code) is a key regulatory instrument that applies to commercial timber production in both public and private native forests and plantations in Victoria. It is a statutory document prepared under Part 5 of the *Conservation, Forests and Lands Act 1987.* Compliance with the Code is required under the Act, and this is achieved through its incorporation into the Victoria Planning Provisions.

The Code lays down state wide goals and guidelines that apply to timber harvesting, timber extraction, roads, regeneration, and reforestation in native forests as well as to the planning, establishment and management of softwood and hardwood plantations.

The purpose of the Code is to provide direction and guidance to forest managers and operators to deliver sound environmental performance when undertaking commercial timber growing and harvesting operations, that:

- Permits an economically viable, internationally competitive, sustainable timber industry;
- Is compatible with the conservation of the wide range of environmental, social and cultural values associated with timber production forests;
- Provides for the ecologically sustainable management of native forests proposed for continuous timber production; and
- Enhances public confidence in the management of Victoria's forests and plantations for timber production.

Subsequently, the Code establishes goals and guidelines in environmental care for all commercial timber production activities in the state.

The Code provides some key state-wide requirements for timber harvesting operations conducted on public land (for example, width of streamside buffers and grades of roads), which act as minimum allowable local standards. The additional requirements are documented within a range of subordinate prescriptions, management plans and procedures of which some are summarized below. These requirements are tailored at a local level for the specific characteristics of forests and harvesting conditions that vary within each region across the State.

3.7.1 Fire Salvage Harvesting Prescriptions 2009 (as amended)

The Fire Salvage Harvesting Prescriptions 2009 (Salvage Prescriptions) apply to timber harvesting operations conducted within bushfire affected areas. Timber harvesting operations conducted in burnt environments (salvage operations) require different management to conventional harvesting operations to ensure timber recovery is expedited and that salvage operations, as a second major disturbance to a forest in a short period, do not necessarily compound any environmental impacts caused by the bushfire. Salvage operations have the potential to adversely impact on the ecosystem following bushfire, through removal of habitat refuges and structures, damage to regenerating plants, distribution of weeds, and sedimentation.



The Fire Salvage Harvesting Prescriptions apply to burnt areas up to 3 years after a fire event. Conditions applied to approved coupes, in conjunction with the Fire Salvage Harvesting Prescriptions 2009 constitute the 'Special Plans' required by the Code.

The 2009 prescriptions were issued on the 6 October 2009 and commenced on 6 October 2009. The prescriptions replace the Fire Salvage Harvesting Prescriptions, Revision 2.0, previously issued 3 March 2008. Additional revision history can be found in Appendix 2 of the current prescriptions.

3.7.2 Management Procedures for Timber Harvesting, Roading and Regeneration in Victoria's State Forests 2009 (as amended)

The Management Procedures provide additional guidance to DSE and VicForests staff in meeting the requirements of the Code, and specify environmental and operational requirements additional to those of the Code.

The objectives of the Management Procedures are to:

- Standardise, where appropriate, the management of timber harvesting operations and associated activities in all Victorian State forests;
- Provide instruction on operational and administrative procedures;
- Form part of the regulatory framework for timber harvesting operations and associated activities;
- Provide a framework for consistent administrative arrangements between DSE and VicForests at an operation level; and
- Provide a framework for VicForests and DSE to prepare subsidiary operational procedures for staff, contractors and timber harvesting operators.

The 2009 procedures were issued on the 12 October 2009 and commenced on 19 October 2009. The procedures replace the Management Procedures for timber harvesting operations and associated activities in State forests in Victoria, previously issued October 2007.

3.7.3 Coupe Finalisation Procedures

The Coupe Finalisation Procedures (CFPs) describe the process by which DSE will resume full management responsibility of coupes following the completion of timber harvesting operations, rehabilitation and regeneration activities. The CFPs are only relevant to coupes harvested by VicForests.

The CFPs set out:

 Minimum regeneration and rehabilitation standards for even aged and uneven aged coupes harvested after 31 July 2004 and thinned coupes of ash or mixed species;

- Timelines and responsibilities for VicForests with respect to the regeneration of standard coupes, salvage coupes and road line coupes; and
- Required action, responsibilities and completion dates for the review of coupes nominated for finalisation including desktop and field based verification of stocking levels and data accuracy.

The 2008 procedures were issued on the 2 October 2008 and commenced on 6 October 2008. The procedures replace the Coupe Finalisation Procedures previously issued August 2007.

3.7.4 Native Forest Silviculture Guideline Series

Reference should also be made to the Native Forest Silviculture Guideline (NFSG) series (1993-2006), as amended, which provide standards and guidance around silvicultural and regeneration activities.



4 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 EP Act 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 The subject, activity or operational component being assessed for compliance against the regulatory framework. Generally referred to as 'focus areas' in the former audit program operated under EPA.
- Compliance 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 A plan that must be prepared for each harvesting operation in public Plan 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.
- ForestBasic units for forest planning and management in Victoria. CurrentlyManagementVictoria is divided into 15 Forest Management Areas as defined in the
Forests Act 1958.

Forest

Management

Management

Zone (GMZ)

products.

Plan (FMP)

General

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, DSE 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 A zone within a State forest defined as a zone which will be managed Management to conserve specific features, while catering for timber production Zone (SMZ) 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 A zone within a State forest defined as a zone which will be managed Protection for conservation, and timber harvesting will be excluded. Zone (SPZ) Special A catchment that has been officially declared under Schedule 5 of the Water Supply Catchment and Land Protection Act 1994. Catchment

Forest Management Plans are produced by DSE to address the full

range of values and uses in FMAs, which have been designated as the

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

units for planning forest management activities.



- 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 The Timber Release Plan (TRP) is prepared by VicForests in accordance with Part 5 of the *Sustainable Forests (Timber) Act 2004.* (TRP)

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.

- Water supply A catchment from which water is used for domestic water supply catchment 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).

Wood A Wood Utilisation Plan (WUP) is prepared by DSE to detail the type and quantity of wood to be produced in the state 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.

A WUP may also apply to some coupes managed by VicForests in the east of the state.

Further definitions relevant to harvesting and regeneration activities are available in the Code of Practice for Timber Production 2007 (as amended).

5 ACCRONYMS

- AO Allocation to VicForests Order 2004 (as amended) generally referred to as the "Allocation Order"
- ARR Absolute Risk Rating
- CAP Corrective Action Plan
- CFP Coupe Finalisation Procedures
- CIS Coupe Information System
- DSE Department of Sustainability and Environment
- EIA Environmental Impact Assessment
- EIAP Environmental Independent Advisory Panel
- EMS Environmental Management System
- EPA Environment Protection Authority
- FAP Forest Audit Program
- FCP Forest Coupe Plan
- FFG Act Flora and Fauna Guarantee Act 1988
- FMA Forest Management Area
- FMP Forest Management Plan
- FMZ Forest Management Zone
- FRU Forest Reporting Unit
- FTE Full-Time Equivalent
- GMZ General Management Zone
- GPS Global Positioning System
- HSE Health, Safety and Environment
- JSA Job Safety Analysis
- LHV Logging History Verification
- MRU Monitoring and Reporting Unit
- NFSG National Forest Silviculture Guideline



- NGO Non Government Organisation
- OA Operations Area (term used by VicForests)
- SAP Special Area Plan
- SFMS Sustainable Forests Management System
- SFRI State-wide Forest Resource Inventory
- SMZ Special Management Zone
- SOP Standard Operating Procedure
- SPZ Special Protection Zone
- STRP Sustainable Timber Resource Planners
- SWSC Special Water Supply Catchment Area
- TRP Timber Release Plan
- WUP Wood Utilisation Plan
- The Act The Sustainable Forests (Timber) Act 2004
- The EP Act The Environment Protection Act 1970

FOREST AUDIT PROGRAM – MODULE 1 OVERVIEW



Annex A

Electronic Toolbox CD

FOREST AUDIT PROGRAM – MODULE 1 OVERVIEW

Prepared by Environmental Resources Management Australia Pty Ltd in collaboration with the Victorian Government Department of Sustainability and Environment Melbourne, April 2010

© The State of Victoria Department of Sustainability and Environment 2010

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DSE Customer Service Centre 136 186

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

www.dse.vic.gov.au







B

Appendix B Forest Audit Program Toolbox Module 2 – Audit Process







CONTENTS

1	MODULE 2 - AUDIT PROCESS	5
1.1	Overview	5
1.2	METHODOLOGY FOR CONDUCTING THE AUDIT	5
1.2.1	SCHEDULE OF ACTIVITIES	5
1.2.2	PREPARING FOR AN AUDIT	6
1.2.3	Pre-Audit Meeting	10
1.2.4	CONDUCTING AUDITS	10
1.2.5	AUDIT REPORTS	13
2	ROLES, RESPONSIBILITIES AND CREDIBILITY OF	
	FOREST AUDITS	15
2.1	AUDIT INDEPENDENCE AND MANAGING CONFLICTS OF	
	INTEREST	15
2.2	DUE PROFESSIONAL CARE	15
2.3	COMPETENCE OF AUDITORS	15
2.4	ROLES AND RESPONSIBILITIES	17
2.4.1	Auditor	17
2.4.2	AUDIT TEAM MEMBERS	18
2.4.3	DEPARTMENT OF SUSTAINABILITY AND ENVIRONMENT	18
2.4.4	Role of Environment Protection Authority	19
2.4.5	Role of Melbourne Water	19
2.4.6	AUDITEE	20
2.4.7	COMMUNITY ENGAGEMENT	20
3	SELECTION OF AUDITOR(S)	22
3.1	GOVERNMENT PROCUREMENT PROCESS	22
3.2	AUDITOR ENGAGEMENT	23
4	SELECTION OF AUDIT TARGETS	24
4.1	PRIORITY ELEMENTS FOR THE FOREST AUDIT PROGRAM	24
4.2	TARGET SELECTION	25
4.2.1	TARGET SELECTION FOR MODULE 3 AND MODULE 6	25
4.2.2	TARGET SELECTION FOR MODULE 4	25
4.2.3	TARGET SELECTION FOR MODULE 5	25
4.2.4	TARGET SELECTION FOR MODULE 7	27
4.2.5	SPECIAL TARGET SELECTION FOR WATER CATCHMENTS	28

5	PRESENTATION OF AUDIT FINDINGS	29
5.1	REPORTING REQUIREMENTS	29
5.2	RISK ASSESSMENT	30
5.2.1	Module 5	30
5.2.2	Modules 3, 4, 6 and 7	31
ANNEX A	Absolute Risk Rating Parameters	
ANNEX B	ENVIRONMENTAL IMPACT ASSESSMENT TOOL	

Document and Version Control

Title	Forest Audit Program Toolbox – Module 2		
Owner	DSE Forest Branch - Forestry Standards and Compliance Unit		
Registry File	FS/18/3059		
Scope of document	For use by Environmental Auditors appointed to conduct audits under the DSE Forest Audit Program. May involve or impact on some DSE and VicForests staff		
Date issued	16 April 2010		
Version	1.0		
Commences	16 April 2010		
Review schedule	As required		
Last revision date	-		
Note	Printed copies of this document are uncontrolled. The latest version is available in the DSE Forests and Fire Document Management System (DMS), or by contacting the DSE Forestry Standards and Compliance Unit.		

Revision History

Date	Reviewer	Summary of changes	Replaces
-	-	-	-



FOREST AUDIT PROGRAM TOOLBOX



Module 1 Overview



Module 2 Audit Process



Module 3 Tactical Planning



Module 4 Operational Planning



Module 5 Harvesting and Closure



Module 6 Harvesting Performance



Module 7 Regeneration and Finalisation



1 MODULE 2 - AUDIT PROCESS

1.1 OVERVIEW

To summarise the information provided in *Module 1*, the Forest Audit Program (FAP) has been designed to allow objective and independent assessment of timber harvesting operation's compliance with relevant forestry legislation and the associated regulatory framework.

Public reporting of audit results will inform members of the community and assist the Department of Sustainability and Environment (DSE) and VicForests to pursue their objectives of continual improvement.

The FAP incorporates:

- An audit process meeting the statutory requirements of Section 53V of the *Environment Protection Act 1970*;
- A assessment scope that includes the forest planning, harvesting, regeneration and finalisation elements of the forest harvesting lifecycle;
- Audit compliance elements that are intended to be assessed over time;
- A robust process for conducting independent audits;
- Provision for Special Purpose Audits to be conducted as either statutory or nonstatutory audits, that can be initiated by DSE on a needs basis to examine problematic issues or alleged serious breaches of the regulatory framework; and
- Scope for the participation of interested community members as observers in the conduct of audits.

1.2 METHODOLOGY FOR CONDUCTING THE AUDIT

1.2.1 Schedule of Activities

An indicative schedule for the annual audit cycle is provided herein, and will be pursued by DSE in the implementation of the FAP. Under the proposed schedule, DSE will aim to have audit reports completed and ready for publication as soon as possible following the completion of contracted audits.

Specific timeframes set out in the following schedule may vary from year to year, however the overall timing and sequencing of these steps is expected to remain consistent.

For timber harvesting conducted during any given financial year: Relevant logging history data provided October October Relevant coupe finalisation data provided Logging history verified by DSE January (following year) DSE issue request for proposal January (following year) Receive and evaluate proposals February (following year) Selection of Auditor(s) February (following year) Auditor orientation March (following year) Preparation of Audit Plan March (following year) March - August (following year) **Desktop Audits Field Audits** April – July (following year) Draft Audit Report September (following year) **Final Audit Report** October (following year) Publication As soon as possible after finalisation

It is envisaged that DSE and/or VicForests will then develop a response to Audit Report findings and recommendations. This may include the preparation of corrective action plans, as deemed appropriate, so that they can be implemented as soon as practicable in the following harvest year.

1.2.2 Preparing for an Audit

Orientation

The DSE will, as necessary, hold annual Auditor orientation sessions. A general overview of what is required in the FAP will be outlined in the orientation sessions. Audit team members conducting audits should also attend the Auditor orientation session.

Information Gathering

DSE will provide contracted Auditors with all available data that is required to perform the requested audit.



When required, contracted Auditors will also be provided with electronic access to the DSE/VicForests Coupe Information System (CIS) to enable analysis of coupe-specific information.

The Auditor will contact the auditee(s) after being awarded a contract by DSE, and will clarify specific documentation needs for audit sites, and anticipated project timelines.

If requested by an Auditor, an information package will be prepared by the auditee containing information on forest management activities which have been planned and/or carried out, the history of operations on the site, survey records, relevant maps, identified hazards, procedures, inspection reports and records of silvicultural treatments. This will provide the audit team with a practical reference source for each selected audit target.

During audits, Auditors are to gather additional information through interviews, examination of documents and observation of activities and conditions in the field. Indications of non-conformity to the audit criteria should be recorded.

Information gathered through interviews should be verified by the Auditor, by acquiring supporting information from independent sources where possible, such as observations, records and results of existing measurements.

Information collected by the Auditor should relate to and cover the specified audit period specified in the contract.

The following non-exhaustive list outlines audit information that may be requested (as applicable), during an audit process:

- Contacts list (auditees, NGOs, Aboriginal communities etc);
- Organisational charts;
- Forest coupe plans;
- Copies of coupe diaries;
- Monitoring records;
- Public notices;
- Key maps and aerial photographs;
- Harvest records;
- Fire occurrences;
- Reports (pesticide/herbicide application reports, environmental surveys etc); and
- Relevant intra- and inter- agency correspondence.

Health and Safety

Auditors undertaking audits on behalf of DSE will be working as contractors. Auditors contracted to undertake audits will, as a minimum, be expected to comply with DSE occupational health and safety standards.

Auditors will need to become familiar with DSE OHS policy and procedures and how they apply to the work being performed by the Auditor including:

- DSE OH&S SafeTCare Policy;
- DSE OH&S Risk Management Procedures; and
- DSE Job Safety Analysis (JSA) Procedures.

Before undertaking audit activities, the Auditor will be required to provide DSE with a copy of their Health, Safety and Environment Plan (HSE Plan). This information should also form part of the Audit Plan (see below for more information). In preparing the HSE Plan, the Auditor should address the following matters:

- Indicative audit schedule and scope of works;
- Competency of personnel and supervision of audit team members;
- Information, instruction and training procedures;
- Assessment and engagement of suitable contractors/sub-contractors and the management of their HSE performance;
- Personnel protective equipment (PPE) requirements, first aid equipment, and any other safety equipment requirements;
- Risk/hazard procedures, including assessment, control and specific safe working method statements (or equivalent) including:
 - o Identification of hazards and available controls;
 - Consideration of coupe and office based activities;
 - $\circ\;$ Travel to/from field locations, including vehicle operation and safety guidelines; and
 - Guidelines around the abandonment of field visits (i.e. Weather conditions such as high winds, snow);
- Incident reporting responsibilities and procedures, including procedures to report relevant incidents or claims to DSE; and
- Emergency response management.

Auditors will be expected to use documented systems of work, plant and equipment that are safe and that do not pose unacceptable risks to health. Auditors must employ



safety systems in which there has been adequate information, instruction, training, and supervision in the key health, safety and environmental aspects of the proposed work.

The Auditor will be responsible for making the ultimate judgement on when to abandon site visits (i.e. for safety concerns) for members of the audit team.

In coupes where active harvesting is occurring, the Auditor will need to be aware of and meet the specific requirements for entry and induction by the harvesting contractor.

Audit Plan

An audit plan must be developed by the Auditor in consultation with DSE and relevant auditees. The plan should be flexible enough to permit changes in emphasis based on information gathered during the audit, and to permit effective use of resources.

The plan must include:

- Outline of target compliance elements.
- Audit schedule:
 - The dates and places where audits are to be conducted;
 - The expected time and duration for major field audit activities;
 - The schedule, location and format of key meetings;
 - Expected date of issue and distribution of the draft and final audit reports.
- A HSE Plan, outlining the health, safety and environmental procedures and requirements.
- Identification of audit team members and their roles. Each audit team member will be assigned specific areas to audit and be instructed on the audit procedure to follow. Such assignments are made by the Auditor in consultation with the audit team members concerned. During the audit, the Auditor may make changes to the work assignment to ensure the optimal achievement of the audit objectives.
- Contact information for the audit team, and key contacts in the DSE, auditee organisations plus other relevant parties.
- Methodology for public consultation (refer to Section 2.4.7 herein).
- Identification of the functions and/or individuals within the auditee's organisations having significant direct responsibilities regarding the subject matter of the audit.
- Identification of electives of the auditee's systems or activities that will be reviewed for that year.

- Confirmation that the audit report will be prepared, distributed and reviewed in accordance with the FAP and EPA Victoria requirements.
- Planned sampling intensities and evidence-gathering methodologies (in accordance with this toolbox) and the proposed field site inspection plan.

A draft of the audit plan will be discussed and reviewed with DSE prior at the preaudit meeting.

1.2.3 Pre-Audit Meeting

After receiving the audit plan, DSE will meet with the appointed Auditor. The purpose of this meeting is to:

- Provide an overview of the FAP and associated Toolbox of audit process and protocols;
- Review the audit plan, and make necessary adjustments;
- Review the HSE plan and hazards associated with any required field work;
- Review the status of any relevant Corrective Action Plans prepared in response to previous audits;
- Discuss relevant compliance issues raised by auditees;
- Discuss issues identified by members of the public relating to audit element priorities and audit targets; and
- Discuss the process and plan for public participation in the field component of Module 5 (also refer to Section 2.4.7).

1.2.4 Conducting Audits

Desk-based Assessment

Audits conducted under Modules 3 - 7 may require a desk-based assessment of tactical, operational and coupe planning; harvesting performance; regeneration; and coupe finalisation. Such audits should comprise a review of documentary evidence and records, and interviews with representatives from auditees .

The procedures for the desk-based audit will be determined by the Auditor, but would typically include:

- Review of relevant legislation;
- Examination of compliance elements, and familiarisation with review of management prescriptions and procedures relating to the audit period;



- Review of documentation relating to compliance with relevant procedures and processes;
- Review of relevant intra- and inter- agency correspondence;
- Assessment of data relating to compliance elements;
- Review of previous auditee incidents relating to the compliance audits being assessed;
- Interviews, where appropriate, with DSE and VicForests managerial and technical staff.

Field Assessment

Field assessment will be required for audits conducted under Modules 5 and 7, and may also be required as part of any Special Purpose Audits.

The procedures for the field assessment will be determined by the Auditor, but the following guidance is provided as a preferred process.

Before commencing the field visits, the Auditor would hold an opening meeting in each region being audited. The aim of this meeting would be to:

- Introduce the members of the audit team to the auditee's key personnel;
- Review the scope, objectives, audit plan and confirm the audit timetable;
- Provide a short summary of the methods and procedures to be used to conduct the audit;
- Ensure that the communication links between the audit team and the auditee are established;
- Confirm that the resources and facilities needed by the audit team are available;
- Confirm the times and dates for the interim end-of-day meetings and the closing meeting;
- Promote active participation by the auditee; and
- Allow the auditee to invite the relevant forest operator/contractor to observe field assessments undertaken at sites that they have harvested;
- Induct the audit team with reqard to site specific health, safety and emergency procedures.

The DSE contract manager will reserve the right to attend any field audits undertaken under the FAP to monitor the performance of the audit team with respect to quality control and health and safety elements outlined in the audit plan. The procedures for field activities should include:

- Examination in the field of operations that have been planned and carried out over the period that is the focus of the audit. The target sites sampled should be the same as those identified at the time of the pre-audit meeting. It may be necessary to sample additional sites as a result of operational issues, or in following up findings at the pre-selected sites, but any such field operations should first be discussed with the auditee.
- Follow-up examination (as required) related to observations or queries.
- Review of information made available to the audit team at the field audit stage.

Observations of conditions noted during the site visits should be documented by the Auditor at the time of field assessment, and will form the support for the conclusions of the audit. Auditors will be required to store and maintain copies of such records.

Auditors should discuss any notable items that they observe during the field assessment with the auditee's representative. This should be undertaken at the closing meeting, but may be conducted by telephone if it is not possible to undertake this discussion at the time of audit.

If time and resources allow, Auditors may also hold on-site meetings with the auditee's representative(s) to discuss audit findings and non-conformance issues, and to review plans for the remainder of the relevant audit activities. However, such meetings are not compulsory if time and resources are limited.

Auditors should also observe the forest when travelling between audit locations noting whether or not the observed conditions are reflected in maps or other documents. Inconsistencies, or observations suggesting negative impacts should be noted and may be followed up in subsequent investigations.

Auditors are expected to provide necessary vehicles to transport the audit team during the field work. Vehicles used in audit field work must be capable of travel on forest roads, as outlined in the HSE Plan. Auditee personnel participating in the audit process may travel with the audit team if feasible, but will be responsible for providing their own transportation during site visits.

Where logistical issues limit the numbers of people that can be transported on site to take part in the field assessments, the Auditor should ensure that highest priority is given to the audit team members and the auditee personnel that are most relevant to the sites being examined. Other individuals will be accommodated where possible, to the extent that space allows.

After completion of the field assessments within each region, the audit team will hold a closing meeting with the auditee and DSE. The main purpose of these meetings is to present preliminary audit findings in such a manner as to ensure that the factual basis of the findings is clearly understood.

Disagreements on factual information presented at these meetings should be resolved (if possible). It is preferable that any resolution occur before the Auditor issues the



draft Audit Report. Final decisions on the descriptions and significance of findings ultimately rest with the Auditor. Auditees will have the ability to prepare a response to such findings to present alternative points of view.

1.2.5 Audit Reports

Audit Findings and Draft Report

The focal point of the audit is the process through which the audit team investigates, analyses, assesses and reassembles the facts, and finally reaches a decision on the findings to be reported. Depending on the scope of work commissioned by DSE, separate audits made under Modules 3 - 7 (and therefore audit reports) may be prepared in any given year.

The Auditor will prepare a complete draft Audit Report consistent with the requirements of EPA Publication No. 952.2 (2007) *Environmental Auditor Guidelines for Preparation of Environmental Audit Reports on Risk to the Environment.* Reporting requirements are discussed further in Section 5 herein.

The audit report should identify both positive and negative findings, and all noncompliances that are detected during the audit process. Findings of non-compliance should be reviewed with the auditee prior to the production of the draft report to ensure that the Auditor has obtained all the relevant evidence, and with a view to obtaining acknowledgment of such findings.

The audit team should ensure that findings are documented in a clear, concise manner with significant findings supported by substantive evidence. The supporting evidence must also be documented in the audit report. In situations where field sampling is involved in the audit, the Auditor should also include documentation of the associated sampling results in relation to significant audit findings.

The report conclusion will need to capture the nature and extent of any harm or detriment caused to, or the risk of any possible harm or detriment which may be caused to, any beneficial use made of any segment of the environment.

Review Draft Audit Report

After receiving a draft audit report, the DSE Forests Branch will be responsible for circulating the draft Audit Report to relevant auditees for a period of comment, and a review of matters of fact.

The Auditor will also attend a meeting with DSE Forest Branch and the auditees to discuss the draft Audit Report. This meeting should be included in the audit plan. The purpose of the meeting is to present the audit findings and to discuss factual matters with the auditees. Written comments from the auditees on the draft report should be provided to the Auditor prior to the meeting.
Final Audit Report

The Auditor will submit the final audit report including all charts, graphs, photographs and appendices, in hard and electronic copy to DSE Forest Branch and EPA Victoria within 7 days of completion. The electronic version should be provided in universal file format (a pdf file).

Environmental audit reports are deemed to be public documents, and therefore will be made available by DSE to the general community.

Corrective Action Plans

The auditee will be given the opportunity to prepare a formal response to an audit report. Findings related to regulatory, regional and corporate responsibility will be addressed in the DSE response.

If required, auditees will prepare Corrective Action Plans (CAPs) to address the findings relating to compliance issues and environmental impact provided in the final audit report. This will be prepared with input and review from the DSE Director Forests or a nominated representative.

The development and management of CAPs will be administered by DSE and is outside the scope and responsibility of the Auditor. The CAPs must be submitted to the DSE Director, Forests for final approval within two months of receipt of the final audit report. In the interest of transparency and accountability, approved CAPs will be published on DSE's public website, alongside corresponding audit reports.



2 ROLES, RESPONSIBILITIES AND CREDIBILITY OF FOREST AUDITS

2.1 AUDIT INDEPENDENCE AND MANAGING CONFLICTS OF INTEREST

It is important for the credibility of the audit process, that the Auditor is seen to be independent of the organisation being audited. To ensure objectivity of the process and its findings, Auditor independence will be maintained through the Statutory Audit provisions specified under the Victorian EPA environmental audit system. The FAP will use Auditors appointed pursuant to the *Environment Protection Act 1970* in the Natural Resources category.

Members of the audit team must also be objective and free from bias and conflict of interest throughout the process. To avoid or manage any real or perceived conflict of interest, all audit team members will be required to make declarations regarding potential conflicts of interest before engaging in the audit program.

During the audit, The Auditor will be responsible for managing any perceived conflict of interest in this regard.

DSE staff participation in audit teams would be at the discretion of the Auditor and the Auditor may consult with DSE and/or EPA Victoria on the use of DSE data collection capabilities during the audit of VicForest operations. Where DSE provides data and/or data collection services that will be used by the audit team to reach or support audit findings, the Auditor should ensure he/she is satisfied with the independence and reliability of the data.

2.2 DUE PROFESSIONAL CARE

In the execution of audits commissioned under the FAP, the Auditor must use the care, diligence, skill and professional judgement expected of an Auditor appointed pursuant to the *Environment Protection Act 1970*. Auditors will comply with all applicable legislation and State government policies in the conduct of the audit.

The relationship between the Auditor, auditee and DSE (the regulator and commissioning authority) will be one of respect, with preservation of an appropriate level of confidentiality and discretion.

2.3 COMPETENCE OF AUDITORS

In order for the environmental audit to be accepted as credible, it is necessary that those who undertake the assessment are seen to be competent in their field.

Audit team qualifications shall include:

- Must be an Environmental Auditor appointed pursuant to the *Environment Protection Act 1970* in the Natural Resources category;
- Must carry out his/her role in compliance with the provisions of applicable forest management legislation and policy, including the *Code of Practice for Timber Production 2007*; and
- Must have highly-developed project management and leadership qualities, to ensure ability to execute the HSE plan, and the efficient operation and coordination of the audit program.
- The Auditor may also need to seek advice from members of his/her expert support team, nominated to, and approved by, EPA as part of his/her Auditor appointment.

Audit Team

- All audits must be conducted by a core team, including the appointed Auditor;
- Membership of the core team would typically meet the following requirements:
 - Minimum of five years of forestry, timber harvesting, ecological or other relevant field experience, acquired in the past ten years; and/or
 - A tertiary biological, ecological or forest science qualification, relevant to the forest issues being audited; and/or
 - Operational experience in forest management and planning, comprising the inter-related activities of resources access, harvest, renewal, maintenance, planning, monitoring and reporting that are outlined in the *Code of Practice for Timber Production 2007* (as amended); and/or
 - Other high-level or suitably qualified experience that is of benefit to the specific issues being audited, such as social and economic impacts, public consultation processes in the context of forest management, cultural heritage, etc.
- Audit teams may also have supplementary team members (as required) and these
 members may possess lesser skills and experience than members of the core
 team. If such skills and experience do not meet the core team requirements, team
 members should only conduct less complex audit tasks, which are within their
 abilities, and this should be performed under direct supervision from core team
 members.



2.4 ROLES AND RESPONSIBILITIES

2.4.1 Auditor

Environmental Auditors are appointed pursuant to, and for the purposes of, the *Environment Protection Act 1970*. In exercising their functions and duties pursuant to the *Environment Protection Act 1970*, Auditors owe a primary duty of care to the environment and to the people of Victoria above all others (including to DSE as the commissioning authority).

Appointed environmental Auditors must lead the audit in accordance with the requirements of EPA Victoria Environmental Auditor Guidelines for Conducting Environmental Audits Publication No. 953.2 August 2007.

The Auditor's responsibilities and activities should cover:

- Forming the audit team, giving consideration to potential conflicts of interest, and seeking agreement on its composition with DSE;
- Directing the activities of the audit team;
- Preparing the audit plan;
- Executing the HSE Plan for the audit team, and monitoring adherence of the audit team members to this plan.
- Coordinating required communications with appropriate parties;
- Obtaining relevant background information;
- Scheduling audit activities and meetings as necessary;
- Determining the appropriate level of involvement of the auditee(s);
- Selecting audit target sites for examination in field audits;
- Coordinating the preparation of working documents and detailed procedures and briefing the audit team;
- Seeking to resolve any problems that arise during the audit;
- Recognising when audit objectives appear to become unattainable and reporting the reasons to DSE and the auditee;
- Representing the audit team in discussions with the auditee prior to, during and after the audit;
- Notifying the auditee of observations of non-conformities without delay;
- Reporting on the audit clearly and conclusively within the required time frames;

- Making findings available to the auditee to allow for improvements in its operations in areas of non-conformance with audit criteria;
- Reaching a conclusion on risk of harm to the environment;
- Preparing and issuing the draft Audit Report and scheduling a meeting with the specified parties to review the report; and
- Issuing and authorising the final Audit Report.

2.4.2 Audit Team Members

The audit team members are generally responsible for conducting the audit in accordance with this FAP Toolbox. Selection of the audit team will be undertaken by the Auditor.

The team members' responsibilities and activities include:

- Following the directions of, and supporting the Auditor;
- Acting in accordance with the health and safety requirements outlined in the HSE plan;
- Planning and carrying out the assigned task objectively, effectively and efficiently within the scope of the audit;
- Collecting, recording and analysing relevant and sufficient evidence to allow findings to be made and conclusions to be drawn regarding the audited criteria;
- Safeguarding documents pertaining to the audit and returning such documents to the Auditor as required; and
- Assisting in writing of the draft and final audit reports.

2.4.3 Department of Sustainability and Environment

The DSE has the overall responsibility for administering the FAP including ensuring that forest audits are carried out in accordance with the direction of the Minister.

Where required, DSE will utilise the design, structures and standards that are defined under Victoria's statutory environmental audit system (administered by the EPA), but retains overall control of the FAP.

Responsibilities and activities of DSE representatives leading the FAP include:

- Designing and periodically revising, the FAP;
- Promoting general awareness and managing overall communications about the FAP;



- Providing relevant information pertaining to selecting audit targets in accordance with the approved methodology;
- Issuing the Request for Proposal and selecting Auditor(s);
- On selection of audit targets, notifying auditees that are to be audited;
- Reviewing the audit plan including the HSE Plan;
- Contacting stakeholders including members of the public who may provide input to the audit process;
- Coordinating health and safety issues for community members who attend the Community Open Days;
- Organising information/orientation sessions for auditees and Auditors;
- Responding to inquiries from stakeholders regarding the FAP;
- Participating in audit meetings and activities, and attending field assessments where required to offer guidance to the audit team and auditee, discuss issues, and facilitate the consistent application of the audit process;
- Receiving and coordinating the review of the draft Audit Report;
- Distributing, as appropriate, the final Audit Report; and
- Facilitating the completion of audit CAPs and status reports (where applicable).

2.4.4 Environment Protection Authority

EPA Victoria administers and maintains the ongoing integrity of the environmental audit system by:

- Setting standards for environmental Auditors;
- Maintaining a list of suitable Auditors;
- Receiving, holding and reviewing final environmental audit reports prepared under the system.

A range of guidance relating to the conduct and reporting of statutory environmental audits has been prepared by the EPA and is available on their website <u>www.epa.vic.gov.au</u>.

2.4.5 Melbourne Water

Timber harvesting that occurs within four of Melbourne Water's catchments: Thomson, Tarago, the Yarra Tributaries and Bunyip is of special interest to Melbourne Water. As the process of timber harvesting has the potential to impact water quality and supply, harvesting limits are set to prevent these situations occurring. Further, Melbourne Water conducts its own annual audits of coupes in catchment areas as part of its governance procedures.

Melbourne Water therefore has a vested interest in the scope, conduct and outcomes of the FAP and will liaise with DSE on its design as it relates to the relevant catchments. There is scope under the FAP for Melbourne Water to contribute additional support to the FAP in any given year to ensure that sufficient field assessments are undertaken in catchment-related coupes.

2.4.6 Auditee

The auditee is generally responsible for:

- Informing employees about the objectives and scope of the audit as necessary;
- Attending, as necessary, auditee information sessions regarding the FAP process;
- Participating in the FAP process as described in this toolbox;
- Providing the facilities needed for the audit team in order to ensure an effective and efficient audit process;
- Appointing responsible and competent staff to accompany members of the audit team, to act as guides during the field components of the audits and to ensure that Auditors are aware of health, safety and other appropriate requirements;
- Providing access to the applicable forest, personnel and relevant evidential material as requested and as required to carry out the audit;
- Reviewing matters of fact issues in the draft Audit Report; and
- Developing and implementing CAPs in response to audit findings, and providing DSE with CAP status reports.

2.4.7 Community Engagement

Parties that are not mentioned in the above sections (2.4.1 - 2.4.6) are considered external to the audit process, and are therefore will not participate within the defined roles of regulator, Auditor, auditee or audit team member.

The general community will be given the opportunity to learn about and participate in the audit process, with the mutual agreement of the Auditor, DSE and the auditee.

It is envisaged that this will comprise:

• Being advised by DSE of the nature and scope of any audits being conducted under Modules 3 - 7.



- Participating in Community Open Days as part of the field component of Module 5, which will allow community representatives to observe the audit of a coupe and engage with the audit team during the field inspection.
- Receiving and reviewing the outcomes of the audits undertaken through access to Audit Reports published by DSE, and any subsequent follow up presentations delivered to interest groups (as determined by DSE).

Each Community Open Day will comprise the following:

- <u>Pre Site Briefing</u>: to be held at a central location to be determined by DSE, to inform the participants on: health and safety requirements while on the coupe; the role of the Auditor; the skills of the audit team; and allocation of community representatives to an audit team member for the duration of the site visit.
- <u>Site Visit</u>: including travel to the relevant coupe where participants will be able to *observe* the audit process and direct questions to their designated audit team representative; and
- <u>Debrief</u>: to enable the Auditor to provide participants with feedback on coupe compliance and field observations; and to allow participants to direct any further questions toward the Auditor and/or audit team.

Participants may be required to sign a record of attendance at the commencement and end of the Open Day. DSE will coordinate health and safety issues for community members who attend the open day.

DSE will determine the location and attendance limits for each Community Open Day through consideration of health and safety, accessibility of the coupe and the level of community interest in the area to be audited. The number of Community Open Days held within any audit period will be at the discretion of DSE and will depend largely on which FMAs are included in the audit, the availability of resources and the harvesting lifecycle stage being audited. Community representatives will not be able to visit 'active' harvesting coupes for health and safety reasons.

DSE will select community representatives on a first-come, first-served basis, after making information available about the timing and location of such Community Open Days on the Department's website and any direct mailing made to stakeholders who have registered an interest in such events.

3 SELECTION OF AUDITOR(S)

The Environment Protection Authority (EPA) appoints environmental Auditors pursuant to Section 53S of the *Environment Protection Act 1970*. Environmental Auditors are appointed to carry out statutory duties pursuant to this Act (and other Acts), which may include audits on segments of the environment or conducting environmental audits of the risk to the beneficial uses of the environment associated with industrial processes or activities.

DSE is responsible for administering the FAP and will engage environmental Auditors to conduct specific audits as required.

Generally, environmental Auditors will be expected to bid for the Auditor role through a commercial, fee-for-service arrangement with DSE.

This will be done on the basis of:

- Written proposal submitted in response to a request for proposal issued by DSE;
- Presentation(s) or interviews; and
- Any clarifications submitted by the firm concerning the above.

Performance of bidders against the selection criteria will be assed by DSE in consideration of value for money (including consideration of technical ability and quoted price).

3.1 GOVERNMENT PROCUREMENT PROCESS

In accordance with the Victorian Government's Procurement Procedures, DSE will issue a Request for Proposal (RFP) for the provision of audit services. Assessment criteria that may be considered by DSE in selecting service providers may include:

- Demonstrated ability to deliver projects and milestones on time and budget;
- Demonstrated understanding, identification and resoluation of issues in previous environmental audit processes, and recognition of the importance of consultation;
- The Auditor's technical skills and relevance of auditing competency to forestry operations, and experience in stakeholder consultation;
- Demonstrated independence and integrity, and ability to ensure that audits are conducted in a manner consistent with the *Environment Protection Act 1970*,



- The technical skills and experience of the proposed audit team members, in relation to the following:
 - o Forestry, Forest Science, Natural Resource Management or a related discipline;
 - Ecology and Victorian vascular and non-vascular flora;
 - Soils and Erosion;
- Conflicts of interest (actual or perceived); and
- Value for money.

3.2 AUDITOR ENGAGEMENT

Once an environmental Auditor is engaged by DSE to conduct the audit program pursuant to section 53V of the *Environment Protection Act 1970*, the Auditor is required to notify the EPA's Manager Environmental Audit within seven days of receiving the appointment.

Notification of a request to prepare an environmental audit report can be made using the notification form available from the forms section of the EPA website (<u>www.epa.vic.gov.au/Forms</u>).

4 SELECTION OF AUDIT TARGETS

4.1 PRIORITY ELEMENTS FOR THE FOREST AUDIT PROGRAM

The FAP includes gathering and examining data relating to the planning and conduct of timber harvesting operations.

As noted in Module 1, the selection process is to include consideration of 'priority' elements and 'other factors' which DSE may elect to focus on during a specified audit period.

At a whole-of-FAP level (that is looking at the whole forest life cycle explained in Module 1), DSE believes that there is a need to ensure that audits are undertaken annually on the following audit priority elements:

- Compliance with the Allocation Order;
- Timber harvesting operations' performance against the Code and other relevant regulatory requirements; and
- Regeneration and Coupe Finalisation.

Some of these elements require quite different levels of examination, including requirements for both desktop and field based investigations.

It may not be feasible to audit all available timber harvesting operations conducted in Victoria during an audit period, especially for audits that have a high field based investigation requirement. In light of this, the FAP will be undertaken on a sample basis, to allow the Auditors to draw conclusions on the compliance of such operations against the regulatory framework in addition to risk of harm to the environment.

The specified audit priority elements correspond to Modules 3-7 and Auditors will be selected by DSE to undertake the required tasks. Depending on Auditor availability and other commercial matters, it may be appropriate for DSE to contract multiple Auditors to undertake different audit elements in any given year, but this will be a decision made by DSE based on responses to any Request for Proposal.



4.2 TARGET SELECTION

4.2.1 Target Selection for Module 3 and Module 6

A specific target selection process is not required under Modules 3 and 6. There is an expectation for the Auditor to undertake an assessment at a broad or strategic level which may involve scrutiny at a Forest Management Area (FMA) or VicForests Operational Area (OA) level.

DSE will provide advice to the Auditors on the areas that are to be scrutinised for audits required under these modules.

A target selection methodology may be adopted for these modules for the purposes of selecting auditing case studies or to select particular coupes to review procedural matters.

This will be determined when required in negotiation between DSE and the selected Auditor.

4.2.2 Target selection for Module 4

DSE will provide advice to the Auditors on the areas that are to be scrutinised for audits required under this module.

A target selection methodology may be adopted for the purposes of selecting auditing case studies or to select particular coupes to review procedural matters.

This will be determined, when required, in negotiation between DSE and the selected Auditor.

4.2.3 Target selection for Module 5

Auditors engaged to undertake audits for Module 5 will select audit targets with consideration for pre-defined environmental risk factors and to maintain randomness. The selection process is intended to be efficient, repeatable, and transparent, whilst the incorporation of environmental risk factors meets the intent of statutory environmental auditing to assess the risk of any possible harm or detriment to a segment of the environment.

It is planned to have a mix of active and completed coupes forming the targets for the Module 5 field assessments with the final ratio determined by the Auditor in consultation with DSE.

To assist the Auditors, DSE will supply an unfiltered list of all forest coupes available for assessment during the audit period. This list will be referred to as the Master Coupe List and will correspond to the position in the forest life cycle of the coupes, to ensure they are suitable for the type of audit that has been requested. The generated list would try to ensure that relevant activities had occurred during the period of time that was relevant to the audit period. For example, it would not be appropriate to conduct a Module 5 audit at coupes where harvesting has not yet commenced.

Sampling Intensity

In order to apply appropriate rigour to the audit process, DSE will try to achieve a sampling intensity to allow meaningful conclusions to be drawn on the success of operations against the management objectives. In any given year, this will be reliant on available resources.

Auditors will receive advice from DSE about the type of audits required and the number of coupes to be selected for audit. This advice will be based on consideration of the total resources available to the FAP and the anticipated cost per coupe figures provided by the Auditor during the Request For Proposal process. The Auditor and DSE will need to reach agreement on the adequacy of sample size prior to finalisation of any commercial contract.

Absolute Risk Rating

The Auditor will determine an absolute risk rating (ARR) for all potential audit targets based on the following environmental risk parameters for the Module 5 audits:

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

Details of these risk parameters are discussed in Annex A.

Each coupe in the Master Coupe List should be assigned an absolute risk rating (ARR) by multiplying the risk values obtained for each variable element as follows:

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

The ARR derived for each coupe is used to place the coupe into one of three relative risk groups (RRGs) as follows:

Low Risk	Moderate Risk	High Risk
< 9	9-14	>14



The total number of coupes to be assessed will be selected at random from across the State in accordance with an overall risk distribution as follows:

- 60% from the high RRG;
- 25% from the moderate RRG; and
- 15% from the low RRG.

The selection process places some bias towards selecting a larger number of targets from the high RRG. The incorporation of environmental risk parameters is intended as an interpretive exercise for identifying coupes with a higher potential for activities to impact the environment. For this reason, the results are not intended to represent a statistical analysis.

Within a three year cycle of the FAP, all Forest Management Areas within the state (where timber harvesting occurs) should have been included in the audit program, and additional target selection criteria may be stipulated at the discretion of DSE to achieve this goal.

Replacement of audit targets in consideration of geographic coverage, safety and resource use

Auditees should be given the opportunity to comment on issues (safety, availability, currency, access etc) regarding the coupes selected prior to starting the field activities. Issues raised will be addressed on a case by case basis.

Auditors will also be able to discuss the location of the audit targets with DSE to address issues of geographical coverage and situations where low number of target coupes may occur in remote and difficult to access areas. DSE will give consideration to excluding audit targets that represent a disproportionately large level of resource use, to ensure the efficient allocation of available audit resources across the FAP. It is not intended that this process will be used to achieve the most commercially-attractive mixture of coupes for Auditors, but rather DSE will only allow for one-off exclusions of the most isolated, and difficult to access coupes. To ensure transparency, decisions to replace copes in the target selection process should be documented in the audit report.

Audit targets removed for any reasons should be replaced with an additional target, also selected at random.

DSE reserves the right to review the selection process after the first round of audits.

4.2.4 Target selection for Module 7

Target selection for Module 7 will be carried out in accordance with the directions provided in Section 5.2 of the DSE *Coupe Finalisation Procedures*, October 2008 and includes the following.

Regenerated coupes

Within each FMA the audit team must assess in the field, a minimum of:

- Ten percent of the regenerated coupes nominated by VicForests for finalisation where 50 or more coupes have been nominated; or
- Five coupes nominated by VicForests for finalisation, where between 5 and 50 coupes are nominated; or
- All coupes nominated by VicForests for finalisation, if less than 5 coupes are nominated.

Thinned coupes

Within each FMA the Audit Team must assess in the field, a minimum of:

- Ten percent of the thinned coupes nominated by VicForests for removal from the TRP where 50 or more coupes have been nominated; or
- Five coupes nominated by VicForests for removal from the TRP, where between 5 and 50 coupes are nominated; or
- All coupes nominated by VicForests for removal from the TRP, if less than 5 coupes are nominated.

Coupes selected for field assessment should:

- Proportionally represent the forest types of, and silvicultural systems used to harvest, the coupes nominated by VicForests for finalisation or removal from the TRP.
- Generally be greater than 10 hectares in area; and
- Otherwise be randomly selected.

4.2.5 Special Target Selection for Water Catchments

Based on discussions between DSE and Melbourne Water, it is likely that Module 5 (and possibly Module 7) audits will require a selection of coupes to be audited that are located within all or some of the catchments that supply water to Melbourne. Melbourne Water may elect to contribute additional resources to the FAP to ensure selection of additional audit targets within catchment areas.

Although additional coupes in water catchments may be selected on a different basis from other audit targets, once identified, these coupes should be treated and reported on in the same manner as other coupes assessed under Module 5.



5 PRESENTATION OF AUDIT FINDINGS

5.1 **REPORTING REQUIREMENTS**

The Auditor will prepare a complete audit report consistent with the requirements of EPA (2007) Publication No. 952.2 *Environmental Auditor Guidelines for Preparation of Environmental Audit Reports on Risk to the Environment.* The results of the report should identify both positive and negative findings and/or conclusions and report on the actual or potential risk of harm to beneficial uses of the segment concerned.

For the purpose of consistency between Auditors and audit years, all audit reports should include at least the following major headings:

- Executive Summary;
- Introduction;
- Audit Scope, including objectives, scope and period of the audit and audit criteria;
- Audit Approach, including target selection, documentation reviewed, site visits undertaken and risk assessment approach;
- Audit Findings presented by compliance element, including reference to evidence used to assess the audit criteria, data collected and evaluated, compliance/non-compliance and risk assessment evaluation;
- Conclusions/Recommendations; and
- Annexes, including charts, graphs, photographs and supporting documentation.

It is expected that the report will also make appropriate distinction between:

- Operations supervised by VicForests and DSE;
- Desktop and field-based assessment;
- Compliance elements and sub-elements nominated within each module being assessed; and
- Audit module, where more than one module is audited by the same Auditor.

The audit of each module will assess the compliance elements for potential noncompliance, and where identified, a risk assessment will be carried out on individual non-compliances or a group of similar non-compliance issues, in accordance with Section 5.2 herein.

The presentation of findings for each compliance element should aim to summarise the total number of non-compliances and the environmental impact risk levels identified during the audit. An example of a summary of compliance and risk impact for each compliance element is provided in Table 5.1.

Table 5.1 Example Summary of Compliance and EIA Risk by Compliance Element

Compliance Element	Buffers
Total Non-compliance	12
Total Compliance	29
Non-compliance EIA breakdown	
Severe	1
Major	1
Moderate	3
Minor	2
Negligible	5

5.2 **RISK ASSESSMENT**

Where an environmental audit of a complex activity such as forest harvesting is to be conducted, a risk assessment process can be adopted to assist in focusing the audit.

Risk assessment can be used within an environmental audit to:

- refine the scope to focus on issues of concern, and/or
- assess the risk of harm to beneficial uses.

Generally this would involve a process of hazard identification, analysis of risks and categorisation of the risks. During the audit of compliance themes and compliance elements within the modules, a risk assessment process should be adopted in line with the methodology proposed below.

5.2.1 Module 5

When considering a non compliance relating to the workbook compliance elements, its impact on the environment should be assessed using an environmental impact assessment method. The impact assessment is a two-step process based on the non-compliance observed at the time of audit. This process enables the impact to be qualitatively determined through consideration of the following factors:

- extent of impact or disturbance within the audit target;
- duration of impact or expected time for recovery; and
- environmental asset value.

These factors are described in more detail in Annex B.



It should be noted that the FAP is not intended to substitute for controlling individual harvester performance. This is provided for under the existing Timber Harvesting Operator Licence System, established under the Act and the subordinate regulations.

5.2.2 Modules 3, 4, 6 and 7

It should be noted that the methodology outlined above does not directly correspond with the remaining modules given the risk assessment will be at a broad or strategic level. The Environmental Impact Assessment tool discussed in Section 5.2.1 is not designed to assess the extent, duration or context of planning breaches addressed in the coupe planning, wood utilisation planning or planning of area exclusions and boundaries for flora and fauna focus areas of the audit.

In this situation, where a potential non-compliance has been identified, assessment of risk may also adopt the following classification strategy:

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

FOREST AUDIT PROGRAM – MODULE 2 AUDIT PROCESS



Annex A

Absolute Risk Rating Methodology

Absolute Risk Rating Methodology

Slope and soil erosion hazard carries an inherent risk to the stability of soils within the coupe. Steep slopes are more susceptible to erosion which could potentially affect water quality and road networks. Soils with a high erosion hazard are more likely to erode affecting potential for regeneration, water quality, stream flow and the road network. Management procedures and controls are enhanced for sites with greater slope or higher erosion potential.

Slope Risk (S)

Slope risk (S) values should be assigned as outlined in Table A.1.

Table A.1 Slope Risk Value by Class

Slope Class*	Slope Risk Value
<11°	1
11° – 18°	2
18° – 27°	3
>27° 4	
* An average of all slope values	

Soil Erosion Hazard (SE)

The assessment of soil erosion hazard should be carried out on each coupe assessed during the Module 5 field assessment.

The hazard assessment is the product of two processes; soil erodibility and soil permeability. Reference should be made to the *Soil Erosion Hazard and Soil Permeability Assessment and Classification*, Forest Management Branch Forests Service, Department of Natural Resources and Environment, March 1999. The assessment within this reference uses a categorical point score system to determine a soil erosion classification of low, medium, high or very high.

The soil erosion hazard falls into the three classes: low, medium and high (including very high). These are assigned a soil erosion risk (SE) value of 1, 2 and 3 respectively.

Table A.2Soil Erosion Hazard

Soil Erosion Hazard	Soil Risk Value
Low	1
Medium	2
High	3



Silvicultural System (SS)

Clear felling and thinning from above and below are the most common silvicultural systems employed in Victoria. Clear felling (including seed tree silvicultural systems) due to its nature is more likely to affect the environment and biodiversity. Coupes that have been clear felled are assigned a silvicultural system (SS) value of 2. Coupes where non-clear felling silvicultural systems have been employed are assigned an SS value of 1.

Special Land Protection Requirements (PR)

State forests are zoned according to sensitivity. The majority of forest harvesting takes place in the General Management Zone (GMZ), the zone with the lowest sensitivity. Coupes in the GMZ are assigned a protection risk (PR) value of 1.

Special Protection Zones (SPZ) and Special Management Zones (SMZ) are more sensitive, although some harvesting is allowed in SMZ zones. To recognise this sensitivity coupes that are affected by SPZ or SMZ are assigned a PR value of 2. Water supply catchments are also more sensitive and coupes that fall within specified catchment zones should also be assigned a PR value of 2.

If there is no reliable information regarding SPZ, SMZ or water catchments for a particular coupe is available, a default PR of 2 should be assigned.

Compliance Themes (CT)

In addition, the audit target selection may also incorporate compliance themes into the selection methodology. Compliance themes selected for audit focus will be determined by DSE annually. For each year of audit, one or more compliance themes may be adopted, typically from the following:

- Forest type;
- Coupe type (ie. roadline, commercial firewood);
- Special prescriptions (eg: salvage harvesting);
- Harvest season;
- Flora values (ie. rainforest, habitat trees);
- Fauna values (ie. threatened species, eg. leadbeater possum);
- District.

The compliance themes selected for inclusion in the applicable audit period are allocated a CT value of 1 with all other compliance themes assigned a default CT value of 0. More than one compliance theme can be selected during an audit period with the total number of compliance themes agreed upon by DSE and the Auditor.

FOREST AUDIT PROGRAM – MODULE 2 AUDIT PROCESS



Annex B

Environmental Impact Assessment Tool

Environmental Impact Assessment Tool

The objective of this annex is to describe the approach that should be adopted by the environmental Auditor during assessment of the environmental impact of non-compliance identified during the audit of Module 5.

When considering a compliance or noncompliance associated with the workbooks, the impact on the environment must be assessed using the Environmental Impact Assessment method as a guide.

The environmental impact is based on the following factors:

- Extent of impact or disturbance;
- Duration of impact; and
- Environmental asset value.

Extent of Impact or Disturbance (E)

The extent of the impact is measured as a relative percentage of the sampled area or length and defined as one of the following four categories:

- 0 10%
- 11 25%
- 26 50%
- >50%

A fifth category is used when the impact or disturbance results in a significant offsite effect where an area outside of the coupe boundary is adversely affected.

Duration of Impact or expected time to recover (t)

The duration of the impact is defined as the period in which the area will recover to pre-impacted levels. The impact period is defined by three levels as follows:

- Short Term, 0 12 months;
- Medium Term, 12 36 months; and
- Long Term, > 3 years.

The *Extent of Impact (E)* and *Duration of Impact (t)* form a risk matrix to determine an *Et* rating.



	Duration of Impact (t)			
Extent (E)	Short Term	Medium Term	Long Term	
0 - 10%	А	С	F	
11 - 25%	В	E	Н	
26 - 50%	С	F	I	
> 50%	D	G	J	
offsite	E	Н	К	

Table B.1 Determining the Extent/Duration of the impact

Environmental Asset Value (z)

The environmental asset value of the impacted area is defined by the relative resilience and resistance of the area affected, and the significance of the environmental value of the area, which may be characterised by its protection status within the Forest Management Zoning system or the Code of Forest Practice. The environmental asset value is divided into four categories;

- General environmental value;
- Filter or drainage line;
- Representative SMZ or SPZ, i.e. habitat corridors, landscape buffers and some linear buffers; and
- Specific SMZ or SPZ, i.e. for specific flora and fauna, rainforest buffers and riparian or streamside reserve buffers.

The *Et* rating and Environmental Asset Value (z) are applied in an additional risk matrix to determine an environmental impact assessment level for the non-compliance. The impact is categorised into five nominal levels as follows:

- Negligible (including areas of no impact) impacts typically within marked harvest areas with a short duration of impact.
- Minor impacts typically within marked harvest areas or filter strip with a short to medium duration of impact
- Moderate impacts typically within marked harvest areas with a medium to long term duration of impact or impacts within filter strips, buffers or reserves with a short to medium term impact
- Major impacts typically within marked harvest areas leading to a long term offsite impact or impacts within filter strips, buffers or reserves with a medium to long term on-site or off-site impact
- Severe impact within buffers or reserves with a long term on-site or off-site impact.

Table B.2 Level of Environmental Impact

Et Value	General	Filter	rSPZ / LR / LB	sSPZ / RB / RF
А	Negligible	Negligible	Minor	Minor
В	Negligible	Minor	Moderate	Moderate
С	Negligible	Minor	Moderate	Moderate
D	Negligible	Moderate	Moderate	Moderate
E	Minor	Moderate	Moderate	Major
F	Minor	Moderate	Major	Major
G	Moderate	Moderate	Major	Major
н	Moderate	Major	Major	Major
1.1	Moderate	Major	Major	Severe
J	Moderate	Major	Severe	Severe
к	Major	Major	Severe	Severe

Environmental Asset Value (z)

Note:

LR – Linear Reserve

LB – Landscape Buffer

RB – Riparian Buffer

RF – Rainforest Buffer

rSPZ – Representative Special Protection Zone

sSPZ – Specific Special Protection Zone

To assess the consistency of the Environmental Impact Assessment tool, the 2006 Audit reviewed the capacity of the model to evaluate a range of past and potential breaches. A range of examples were reviewed for a range of compliance elements or sub-elements and are shown in Table B.3.



Compliance Element/ Sub- element	Breach	_Extent_	Duration	Asset value	Assessed impact
Coupe planning	Not applicable				
Wood utilization planning (WUP)		Not a	applicable		
Landscape values	No landscape buffer along a major tourist route	Offsite	> 3 years	Landscape buffer	Severe
Water yield protection	Harvesting in a small proportion of coupe occurred outside the prescribed period	0-10%	0-12 months	Riparian buffer	Minor
Log landings and dumps	Ripping depth <0.4m and erosion	Offsite	> 3 years	Filter	Major
Camp maintenance areas	Hydrocarbon spill	26-50%	> 3 years	General	Moderate
Litter removal	Esky left on site	0-10%	> 3 years	General	Minor
Habitat trees	Insufficient numbers protected	> 50%	> 3 years	General	Major
	Example 1: Fire damage outside the prescribed burn area	> 50%	> 3 years	sSPZ	Severe
Management of exclusion areas and boundaries – flora and fauna	Example 2: Fire damage outside the prescribed burn area	26-50%	12-36 months	Filter	Moderate
	Example 3: Fire damage outside the prescribed burn area	Offsite	0-12 months	General	Minor
Reserved area protection - buffers	Section of buffer insufficient width	11-25%	> 3 years	Riparian buffer	Major
Reserved area protection - filters	Machinery entry into filter strip	0-10%	0-12 months	Filter	Negligible
Rainforest	Rainforest not marked on coupe plan but not harvested	0-10%	0-12 months	Rainforest buffer	Minor
Snig and forwarding tracks	Poor drainage & blading off	11-25%	12-36 months	General	Minor
Boundary tracks	Inadequate drainage	26-50%	> 3 years	General	Moderate
Roading	Roads damaged due to use during wet weather	11-25%	> 3 years	General	Moderate

Table B.3 Hypothetical noncompliance by compliance element.

FOREST AUDIT PROGRAM – MODULE 2 AUDIT PROCESS



FOREST AUDIT PROGRAM – MODULE 2 AUDIT PROCESS

Prepared by Environmental Resources Management Australia Pty Ltd in collaboration with the Victorian Government Department of Sustainability and Environment Melbourne, April 2010

© The State of Victoria Department of Sustainability and Environment 2010

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DSE Customer Service Centre 136 186

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

www.dse.vic.gov.au







Appendix C Forest Audit Program Toolbox Module 6 – Harvesting Performance



С









Harvesting Performance



CONTENTS

1	MODULE 6 – HARVESTING PERFORMANCE	5
1.1	INTRODUCTION	5
1.1.1	OBJECTIVE OF MODULE 6	5
1.1.2	Scope of Module 6	5
1.2	STRUCTURE OF MODULE	6
2	COMPLIANCE ELEMENTS	7
2.1	COMPLIANCE WITH WOOD UTILISATION PLANS	7
2.2	COMPLIANCE WITH THE ALLOCATION ORDER	7
2.3	COMPLIANCE WITH TIMBER RELEASE PLANS	8
2.4	CUMULATIVE HARVEST LIMITS IN MELBOURNE'S WATER	
	CATCHMENTS	8
2.5	CUMULATIVE HARVEST LIMITS IN SPECIAL MANAGEMEN	t Zones8
3	AUDIT APPROACH AND TOOLS	9
3.1	Sourcing Information	9
3.2	DESKTOP ASSESSMENT	9
3.3	AUDIT WORKBOOKS	10
4	REFERENCES	11

ANNEX A	WORKBOOK 6A: COMPLIANCE WITH THE ALLOCATION ORDER

ANNEX B WORKBOOK 6B: WOOD UTILISATION PLANS / TIMBER RELEASE PLANS

ANNEX C WORKBOOK 6C: CUMULATIVE HARVEST LIMITS IN MELBOURNE'S WATER CATCHMENTS

ANNEX D WORKBOOK 6D: CUMULATIVE HARVEST LIMITS IN SPECIAL MANAGEMENT ZONES

Document and Version Control

Title	Forest Audit Program Toolbox – Module 6		
Owner	DSE Forest Branch - Forestry Standards and Compliance Unit		
Registry File	FS/18/3059		
Scope of document	For use by Environmental Auditors appointed to conduct audits under the DSE Forest Audit Program. May involve or impact on some DSE and VicForests staff		
Date issued	16 April 2010		
Version	1.0		
Commences	16 April 2010		
Review schedule	As required		
Last revision date	-		
Note	Printed copies of this document are uncontrolled. The latest version is available in the DSE Forests and Fire Document Management System (DMS), or by contacting the DSE Forestry Standards and Compliance Unit.		

Revision History

Date	Reviewer	Summary of changes	Replaces
-	-	-	-


FOREST AUDIT PROGRAM TOOLBOX



Module 1 Overview



Module 2 Audit Process



Module 3 Tactical Planning



Module 4 Operational Planning



Module 5 Harvesting and Closure



Module 6 Harvesting Performance



Module 7 Regeneration and Finalisation

FOREST AUDIT PROGRAM - MODULE 6 HARVESTING PERFORMANCE



1 MODULE 6 – HARVESTING PERFORMANCE

1.1 INTRODUCTION

The planning and management of forest operations for timber production are critical elements in achieving the environmental outcomes encompassed under Victoria's regulatory framework.

Forest management planning incorporates a commitment to ecologically sustainable timber harvesting practices, and a key component of this commitment includes the establishment of a framework to allocate timber resources.

In 2004 the Victorian Government introduced a framework for timber allocation to VicForests, through the establishment of an Allocation Order (AO). The AO describes the timber resource to be made available to VicForests for a 15 year period, with scope for review every 5 years. It can also be reviewed and varied by the Minister for Environment in certain circumstances, e.g. after a major bushfire.

The AO identifies different types of forest stands where VicForests can conduct timber harvesting activities in each Forest Management Area. Permitted timber harvesting activities include sawlog and residual log harvesting and commercial thinning. This approach is established through the *Sustainable Forests (Timber) Act 2004* (the Act).

A number of other processes have also been established in the regulatory framework to contribute to ecologically sustainable timber harvesting practices, and these and their associated compliance elements are discussed further in this module.

1.1.1 Objective of Module 6

The objective of this module is to assess whether timber harvesting operations conducted in a specified period were conducted to achieve sustainable forest management, and were conducted in accordance with all relevant legislation, regulations and government policies.

1.1.2 Scope of Module 6

The module aims to provide users with the necessary information and tools to enable an audit of the operational performance of timber harvesting operations against spatial limits established under various planning processes and cumulative area limits established under the AO. Specifically excluded from the scope of Module 6 – Harvesting Performance is:

- Audit of the strategic planning and development of the Allocation Order by Department of Sustainability and Environment (DSE) under the *Sustainable Forests (Timber) Act 2004* (as amended); and
- Audit of the strategic planning and development phase of Forest Management Plans by DSE.

1.2 STRUCTURE OF MODULE

Module 6 – Harvesting Performance includes:

- *Chapter 1 Introduction*: provides an introduction to the scope, aim and structure of the audit module as part of the Forest Audit Program;
- *Chapter 2 Compliance Elements*: provide a list of elements or focus areas suitable for inclusion in the annual Forest Audit Program as part of Harvesting Performance;
- *Chapter 3 Audit Approach and Tools*: provides a preferred audit approach and methodology and supporting tools including the following Audit Workbooks; and
- *Chapter 4 References*: provides a description of the key regulatory documents supporting each of the Workbooks.



2 COMPLIANCE ELEMENTS

The relevant compliance elements associated with Module 6 - Harvesting Performance include:

- Compliance with Wood Utilisation Plans (WUPs);
- Compliance with the Allocation (including thinning) Order;
- Compliance with Timber Release Plans (TRPs);
- Cumulative harvest limits in Melbourne's water catchments; and
- Cumulative harvest limits in Special Management Zones.

Each of these compliance elements are discussed in greater detail below.

2.1 COMPLIANCE WITH WOOD UTILISATION PLANS

Victoria is divided into Forest Management Areas (FMAs) for forest management purposes. WUPs are prepared annually for all commercial DSE forestry operations in State forests. WUPs provide a list of areas scheduled to be harvested, associated road requirements; details of the location and approximate timing of timber harvesting in the proposed coupes; and details of the location of any associated access roads. The WUPs indicate the planned areas for sawlog, firewood and minor forest produce production and are prepared for a three year period. A WUP is prepared in accordance with the *Conservation, Forests and Lands Act 1987*.

Module 6 incorporates the capacity to assess compliance with the spatial harvesting limits established under the WUPs.

2.2 COMPLIANCE WITH THE ALLOCATION ORDER

The Act provides the Minister for Environment and Climate Change with the power to allocate to VicForests timber resources in State forests for the purposes of harvesting and/or selling. The allocation is outlined in the *Allocation to VicForests Order*, commonly referred to as the Allocation Order (AO).

The AO provides a description of the forest stands to which VicForests has access, and the extent and location of these stands. The Allocation Order also describes the area of forest available for VicForests to harvest and/or sell timber products in each of three consecutive five-year periods.

Module 6 incorporates the capacity to assess VicForests' harvesting and reporting against the timber volume allocations by area and forest stand prescribed in Allocation Order. It also includes an audit of the process used to verify the harvested areas.

2.3 COMPLIANCE WITH TIMBER RELEASE PLANS

TRPs detail the location, nature and approximate timing of timber harvesting by VicForests, including the location of associated access roads. A TRP is to comply with the timber allocation provided by the Allocation Order promulgated in accordance with the Act and other relevant legislative requirements. TRPs are prepared by VicForests under Part 5 of the Act.

Module 6 incorporates the capacity to assess VicForests' compliance with the spatial harvesting limits established under the TRPs.

2.4 CUMULATIVE HARVEST LIMITS IN MELBOURNE'S WATER CATCHMENTS

State forests in Melbourne's water catchments provide timber resources and play a vital role in ensuring that Melbourne is supplied with clean water. Melbourne's catchments are managed as a combination of 'open' and 'closed' catchments, with a key difference being access. In general, public access to closed catchments is not permitted. Timber harvesting is permitted in 'open' catchments, subject to spatial limits, and a range of environmental and other controls, which are the subject of this audit module. Timber harvesting is not permitted in 'closed' catchments which are predominantly located inside National Parks.

The FAP incorporates an assessment of harvesting and reporting against the timber volume allocations by water catchment area prescribed in the Management Procedures for Timber Harvesting (as amended).

2.5 CUMULATIVE HARVEST LIMITS IN SPECIAL MANAGEMENT ZONES

Forest Management Plans (FMPs) have been prepared, or are in preparation, for all Forest Management Areas in Victoria. FMPs outline zoning schemes which include Special Management Zones (SMZs). These zones are managed to conserve specific known features or values, while catering for timber production under certain conditions. The protection or enhancement of the known features or values (covering both natural and cultural elements) may require modification to timber harvesting or other land-use practices.

Timber production planning needs to be cognisant of conditions, particularly cumulative harvesting limits imposed by FMPs for SMZs. Prescribed timber harvesting limits have been established in some Action Statements prepared under Section 19 of the *Flora and Fauna Guarantee Act 1988*.



3 AUDIT APPROACH AND TOOLS

Module 2 – Audit Process describes the FAP audit approach and methodology and should be read in conjunction with this module.

The audit of Tactical Planning compliance elements will require:

- Sourcing of relevant information and evidence;
- Desktop assessment; and
- Completion of Audit Workbooks.

The performance of Environment Impact Assessment on non-compliances will not be possible at the tactical planning phase and should be excluded from audit findings.

3.1 SUPPORTING DOCUMENTATION

Module 1 – Overview, and Module 2 – Audit Process should be read in conjunction with this module. Module 2 outlines a method for selecting audit targets, and guidelines for preparing an audit report including the assessment of risk.

3.2 SOURCING INFORMATION

Information should be collected through interviews, an examination of documents and observation of planning activities and tools. Instances of non-conformity of any audit criteria should be recorded.

Information gathered through interviews should be verified by acquiring supporting information from independent sources where possible, such as observations, records and results of existing activities or measurements.

3.3 DESKTOP ASSESSMENT

The desk-based component of the audit program includes the assessment of planning related operations, review of documentary evidence and records, the Coupe Information System and interviews.

The procedures for the desk-based audit should include:

- Examination and review of legislative requirements, management prescriptions and procedures relating to the conduct of planning activities as they relate to the compliance elements;
- Review of relevant spatial and other databases;

• Interviews, where appropriate, with DSE and VicForests managerial and technical staff.

3.4 AUDIT WORKBOOKS

This Module is supported by audit workbook(s) that have been prepared for each compliance element. Workbooks outline (where relevant) the audit criteria, associated legislative prescription(s), audit protocol guides and audit methodologies.

Workbooks provided in Module 6 – Harvesting Performance include:

- Workbook 6A: Allocation Order Compliance;
- Workbook 6B: Wood Utilisation Plans and Timber Release Plans;
- Workbook 6C: Cumulative Harvest Limits in Melbourne's Water Catchments; and
- Workbook 6D: Cumulative Harvest Limits in Special Management Zones.

Auditors should record their audit findings in the Audit Workbooks along with supporting evidence and information. Audit findings should then be collated and presented in an audit report that is prepared in accordance with the requirements outlined in Module 2.



4 REFERENCES

Relevant references to this module include the following.

Legislation

Allocation Order, Department of Sustainability and Environment, 2004.

Catchment and Land Protection Act 1994,

<u>Code of Forest Practice for Timber Production</u>, Department of Natural Resources and Environment, 2007.

<u>Code of Practice for Fire Management on Public Land</u>, Department of Sustainability and Environment, 2006.

Conservation, Forest and Lands Act 1987,

Environmental Protection Act 1970.

Flora and Fauna Guarantee Act 1988 (FFG Act),

<u>Sustainability Charter for Victoria's State Forests</u>, Department of Sustainability and Environment, 2007.

Sustainable Forests (Timber Harvesting) Regulations 2006.

Sustainable Forests (Timber) Act 2004.

Guidelines

Environmental Auditor Guidelines for Conducting Environmental Audits. Publication <u>953.2</u>, Environmental Protection Authority, 2007.

<u>Environmental Auditor Guidelines for Preparation of Environmental Audit Reports on</u> <u>Risk to the Environment. Publication 952.2</u>, Environmental Protection Authority, 2007.

<u>Environmental Auditor Guidelines for the Provision of Environmental Audit Reports,</u> <u>Certificates and Statements. Publication 1147</u>, Environmental Protection Authority, 2007.

<u>Environmental Auditor Guidelines for Appointment and Conduct. Publication 865.7,</u> Environmental Protection Authority, 2008.

<u>Management Procedures for Timber Harvesting, Reading and Regeneration in</u> <u>Victoria's State Forests</u>, Department of Sustainability and Environment, Victoria, 2009.

<u>Monitoring Annual Harvesting Performance in Victoria's State Forest</u>, Department of Sustainability and Environment, 2008.

Resource Allocation Guidelines for VicForests Operations, Department of Sustainability and Environment, 2006.

Resource Allocation Procedures – Monitoring, Department of Sustainability and Environment, November 2006.

Management plans and prescriptions

<u>Fire Salvage Harvesting Prescriptions 2009</u>, Department of Sustainability and Environment, Victoria, 2009.

<u>Management Procedures for Timber Harvesting and Associated Activities in State</u> <u>Forests in Victoria</u>, Department of Sustainability and Environment, Victoria, 2009.

Salvage Harvesting Prescriptions for the 2003 Eastern Victorian Fires Salvage Operations, Department of Sustainability and Environment, Victoria, 2003.



Annexures A – D

Electronic CD

Annex A

Workbook 6A: Allocation Order Compliance

Annex B

Workbook 6B: Wood Utilisation Plans / Timber Release Plans

Annex C

Workbook 6C: Cumulative Harvest Limits in Melbourne's Water Catchments

Annex D

Workbook 6D: Cumulative Harvest Limits In Special Management Zones

FOREST AUDIT PROGRAM - MODULE 6 HARVESTING PERFORMANCE



FOREST AUDIT PROGRAM - MODULE 6 HARVESTING PERFORMANCE

Prepared by Environmental Resources Management Australia Pty Ltd in collaboration with the Victorian Government Department of Sustainability and Environment Melbourne, April 2010

© The State of Victoria Department of Sustainability and Environment 2010

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DSE Customer Service Centre 136 186

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

www.dse.vic.gov.au







Appendix D Forest Audit Program Toolbox Module 6 – Workbooks



ENVIRONMENTAL AUDIT FOREST AUDIT PROGRAM TIMBER PRODUCTION IN STATE FORESTS

FMA: All

Module 6 Harvesting Performance Workbook 6A: Compliance with the Allocation Order

Measurement Methodology:

Assessing compliance with the Allocation Order requires monitoring of the annual level of harvesting and thinning undertaken in each FMA relative to the allowable level defined in the Allocation Order. This workbook does not assess the performance of predictive forest models for area and sawlog volume.

Reconciliation of VicForests performance relative to the Allocation Order requires logging history to be overlaid with the Full Extent dataset. This information, and exceptions reports provided by VicForests, should be analysed to provide summaries on harvesting performance. The logging history should include salvage performance information.

Specification source: Resource Allocation Guidelines for VicForests Operations (DSE, 2006) and Resource Allocation Procedures – Monitoring November 2006 (DSE, 2006).

Allocation Order Reconciliation for Harvested Areas

The following template/example may be adopted in principle for reporting harvesting performance against allocated resources:

		Harvest Season					Period 1 - Allocation Order ¹					
	Allocated Area (ha) Harvested ²	Additional Area (ha) Harvested ^a	Additional Area (ha) Total Area (ha) Harvested by Season larvested ³				Total Allocated Area (ha)	Area (ha) Remaining (July 2008)	Proportion of Period 1 Allocation Harvested by Season			
Allocation Order Forest Stand	2007/08		2004/05***	2005/065	2006/07	2007/08	Period 1		2004/05 to 2006/07	2007/08	Harvested to date	Remaining
Ash 10	958	67	1,271	1,078	850	1,024	7,810	3,587	41%	13%	54%	46%
Mixed Species 10	2,245	120	2,520	2,701	2,325	2,366	21,660	11,751	35%	11%	46%	54%
Understocked	28	0	15	52	63	28	1,185	1.027	11%	2%	13%	87%
Fire Affected Ash	1,041	16	330	335	697	1,056	19,610	17,192	7%	5%	12%	88%
Fire Affected Mixed Species	460	12	199	359	395	472	35,730	34,305	3%	1%	4%	96%
2003 Fire Salvage	0	0	437	563	84	0	1,200	116	116	. 1	0	0
Total Allocated Area Harvested	4,732	215	4,772	5,088	4,414	4,947	87,195	67,977	16%	8%	22%	78%
Unallocated > 1ha7	0	2	0	0	0	2			1			
Unallocated < 1ha8	0	35	19	24	13	35						
Non- allocated areas9	0	3	8	15	15	3						
Total Unallocated Area Harvested	0	40	27	39	28	40	1					
Total Area Harvested	4.732	255	4,799	5.127	4,442	4.987	1					

Notes:

1 Period 1 refers to the start of 2004-05 until the end of 2008-09.

2 Allocated Area Harvested refers to the harvesting of stands that were mapped as allocated stands in the Full Extent data set.

3 Additional Area Harvested refers to incorrectly mapped 'unallocated' AO stands (> 1ha) that were harvested and subsequently re-allocated to the most appropriate AO stand through the pre-harvest and/or the annual post-harvest exception report.

4 The 2004 05 season refers to the period between 1 August 2004 and 30 June 2005.

5 Following the 2007 Salvage Amendment to the Allocation Order, the full extent dataset was redescribed to reflect the change in allocation and forest condition. The 2004-05 and 2005-08 harvested areas have been reanalysed against the new dataset.

8 Salvage harvesting of 2003 fire affected areas are allocated against "2003 Fire Salvage", "Mixed Species (fire affected)" and some areas to nominally non-fire affected stands on the 2007 Allocation Order.

7 Unallocated stands > 1 ha refers to correctly identified unallocated AO stands that were harvested and cannot be assigned to an allocated stand. These areas and reasons for this discrepancy are identified in the annual post harvest report.

8 Unallocated stands < 1 ha in size do not need to be reported by VicForests but are reported here to show the total area harvested.

9 Non-allocated stands refer to areas outside Allocation Order forest stands that were not part of an existing Wood Utilisation Plan and cannot be assigned to an allocated stand. These areas and reasons for this discrepancy are identified in the annual post-harvest report.

10. Low Merchantability Ash and Mixed species forest types have been summarised and included as Ash or Mixed Species.

Allocation Order Reconciliation for Thinned Areas

The following template/example may be adopted in principle for reporting thinning performance against allocated resources:

			The state of the s	Harvest Se	alescut		-	Period 1 – Allocation Order					
	Allocation Order Forest Stand	Aliocated Area (ha) Harvested	Additional Area (hs) Harvested	Total A	rea (ha) Ha	irvested by	Season	Total Allocated Area (ha)	Area (ha) Remaining (July 2008)	Propertion o	l Period 1 A See	Wocation ison	Harvested by
		200706 200		2004/05	2005/06	2006/07	2007/06	Per	riad 1	2004/05 lo 2006/07	2007/08	Year lo Date	Remaining
East Dinneland	Ash	89	0	45	86	50	89	1,000	730	18%	9%	27%	73%
сава сафравла	Mixed Species	741	2	953	1051	846	743	8,480	4,887	34%	9%	42%	58%
Touch	Ash	182	0	0	0	0	182	500	318	0%	36%	36%	64%
TEMOO	Mixed Species	54	0	0	18	40	54	500	387	12%	11%	22%	77%
Pantrol	Ash	128	171	75	184	175	299	1,100	367	39%	27%	67%	33%
Cabimba	Mixed Species	45	D	4	31	22	45	200	98	29%	23%	51%	49%
Chain	Ash	399	171	120	270	225	570	2,600	1,415	24%	22%	46%	54%
quale	Mixed Species	840	2	957	1100	908	842	9,180	5,372	32%	9%	41%	59%
	Thinnings	1,239	173	1,077	1,370	1,133	1.412	23,560	13,574	15%	6%	21%	58%

Note:

.

Benalla/Mansfield, North East, Dandenong and Central Gippeland do not current have an thinnings allocation. There were 24 he thinned in Central Gippeland which was not allocated as there is currently no AO for thinnings in Central Gippeland. These coupes were harvested on an approved Wood

Utilisation Plan and are not represented in this table.

Summary Page

Positive Observations:					
•					
•					
•					
•					
•					
Summary of Non-Compliance and/or Potential Risk of Harm to the Envi	ronment::				
•					
•					
•					
•					
•					
•					
Areas for Improvement:	Further evidence required:				
•	•				
•	•				
•	•				
•	•				
•	•				
•	•				

Previous Key Audit Findings

What key findings were observed during the previous environmental audit?

The auditor will require an understanding of previous key findings in order to provide commentary on current practices and improvements over time. Comments:

Note: If this is the first audit conducted under the new Forest Audit Program then this section can be ignored/deleted.

Forest Audit – Allocation Order Information

Allocation to VicForests Order:	No. S176	Date:	29 July 2004
Amendments:	2007 Amendment	Amendment Date:	21 March 2007
Comments:			
People Present:	Auditor and Audit Team:		Audit Date:
	Auditees		

General comments and observations

General notes:

Compliance with the Allocation Order:

Requirement Name	Section	Prescription	Audit Criteria	Compliance	Auditor Comments
Allocation to VicForests Order – 2004 (including amendments)	4.0 Allocation to VicForests	Timber for the purposes of harvesting and selling must not exceed the extent and location allocated under the Order.	What is the total area harvested under the allocation order (not including thinning operations) during the reporting period (filtered by broad forest stand and FMA),?		
			What percentage of the total area for period ¹ 1, 2 and 3 of the Allocation Order was harvested?		
			What percentage of the total area was harvested during years 1, 2, 3 and 4 of the allocation period? Is there a possibility of an allocation being exceeded in year 5?		
			What percentage of the total area was harvested from fire affected forest stands?		
			Were only approved fire-affected coupes harvested during the reporting period?		
			What exceptions were reported for the reporting year?		

¹ Note: Period 1: 2004/5 - 2009/10; Period 2: 2010/11 - 2015/16; Period 3: 2017/18 - 2022/23

Requirement Name	Section	Prescription	Audit Criteria	Compliance	Auditor Comments
			Has the accumulated harvest area and area remaining in the allocation for each forest stand been exceeded?		
			What is the total area harvested by thinning operations under the allocation order during the reporting period (filtered by broad forest stand and FMA)?		
Allocation to VicForests Order – 2004 (including amendments)	4.0 Allocation to VicForests	Timber for the purposes of thinning and selling must not exceed the extent and location allocated under the Order.	What percentage of the total area for period ² 1, 2 and 3 of the Allocation Order was thinned?		
			What percentage of the total available area was thinned during years 1, 2, 3 and 4 of the allocation period? Is there a possibility of an allocation being exceeded in year 5?		
			What percentage of the total area was thinned from fire affected forest stands?		
			Were only approved fire-affected coupes thinned during the reporting period?		

² Note: Period 1: 2004/5 - 2009/10; Period 2: 2010/11 - 2015/16; Period 3: 2017/18 - 2022/23

Requirement Name	Section	Prescription	Audit Criteria	Compliance	Auditor Comments
			What exceptions were reported for the reporting year?		
			Has the accumulated thinning area and area remaining in the allocation for each forest stand been exceeded?		
Monitoring and	Reporting	-			
Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests, 2009	2.2.2 Annual Reporting	By 30 September each year, VicForests will provide the Director, Forests with electronic and hardcopy information for the preceding financial year as specified within the: i). Resource Allocation Procedures – Monitoring Annual Harvest Report; and ii). Resource Allocation Procedures – Timber Harvesting Exceptions Report	Were VicForests annual harvesting reports provided by 30 September? Did VicForests participate in the verification and endorsement of those reports?		

ENVIRONMENTAL AUDIT FOREST AUDIT PROGRAM TIMBER PRODUCTION IN STATE FORESTS

FMA: ALL

Module 6 Harvesting Performance Workbook 6B: Wood Utilisation Plans & Timber Release Plans

Wood Utilisation Plan / Timber Release Plan

Measurement Methodology:

Assessing spatial compliance with the conditions specified in WUPs or TRPs will require the assessment of planning and operational related operations, review of documentary evidence and records, and interviews.

Logging history (comprising spatial harvesting data provided by VicForests in the Post-harvest Report) is verified by DSE through a separate process

GIS software can be used to review the verified spatial harvesting data against the approved coupes appearing on WUPs or TRPs (obtained from CIS).

By comparing actual harvested areas with the approved TRP areas, any harvesting/roading operations that have not occurred within the approved WUP or TRP coupes should be identified. Harvesting that occurs outside an approved WUP or TRP is considered to be a non-compliance

Specification source: Relevant WUPs and TRPs

Summary Page

Positive Observations:					
•					
•					
•					
•					
•					
Summary of Non-Compliance and/or Potential Risk of Harm to the Environment:					
•					
•					
•					
•					
•					
•					
Areas for Improvement:	Further evidence required:				
•	•				
•	•				
•	•				
•	•				
•	•				
•	•				

Previous Key Audit Findings

What key findings were observed during the previous environmental audit?

The auditor will require an understanding of previous key findings in order to provide commentary on current practices and improvements over time. Comments:

Note: If this is the first audit conducted under the new Forest Audit Program then this section can be ignored/deleted.

Forest Audit – FMA and WUP/TRP Information

FMA:	«FMA»	WUP/TRP:	
		Date:	
Comments:			
People Present:	Auditor and Audit Team:		Audit Date:
	Auditees:		

General comments and observations

General notes:

Wood Utilisation Plans / Timber Release Plans:

Wood Utilisation Plans / Timber Release Plans

Requirement Name	Section	Prescription	Audit Criteria	Compliance	Auditor Comments
<i>Relevant WUP/TRP</i>	As applicable	Timber for the purposes of harvesting and selling must not exceed the extent and location	What coupes (name/location) were harvested during the reporting year?		
	WUP/TRP.	Was all harvesting conducted within the time period permitted under the WUP/TRP?			
			What is the total coupe area harvested in Victoria's State forests (by FMA) during the reporting year by broad forest stand?		
			Were only approved coupes harvested during the reporting period?		
			Were any coupe harvest areas exceeded during the reporting year?		
			What exceptions were reported for the reporting year?		
<i>Relevant WUP/TRP</i>	As applicable	The collection of seed will be subject to a licence	Has a licence for the collection of seed been issued under <i>the Forests Act 1958</i>		

ENVIRONMENTAL AUDIT FOREST AUDIT PROGRAM TIMBER PRODUCTION IN STATE FORESTS

FMA: ALL

Module 6 Harvesting Performance Workbook 6C: Harvesting in Catchments

Harvesting in Catchments

Measurement Methodology:

Assessing compliance with the Management Procedures requires monitoring of the annual level of harvesting and thinning undertaken in each relevant catchment area relative to the allowable level defined in the Management Procedures (rolling annual average).

Section 2.3.3 of the Management Procedures (DSE, 2009) contains prescriptions that set harvesting limits in the Thomson, Tarago, Bunyip Catchments and Yarra Tributaries. These prescriptions were introduced in October 2005.

Reconciliation of VicForests performance relative to the allocated resources requires logging history to be overlaid with the Full Extent dataset. This information, and exceptions reports provided by VicForests, should be analysed to provide summaries on harvesting performance in catchment areas. The logging history should include salvage performance information.

Specification source: Section 2.3.3 of the Management Procedures (DSE, 2009).

Reconciliation for Catchment Areas

The following template/example may be adopted in principle for reporting harvesting performance against allocated resources for catchment areas:

	2007-08 Hectares Harvested (ha)							
Catchment	Ash	Mixed Species	Other	Total				
Thomson	48	1	0	49				
Tarago	27	17	0	44				
Bunyip	6	0	0	6				
Yarra Tributaries	68	4	0	72				
TOTAL	149	22	0	171				

Summary Page

Positive Observations:	
•	
•	
•	
•	
•	
Summary of Non-Compliance and/or Potential Risk of Harm to the Envi	ronment:
•	
•	
•	
•	
•	
Areas for Improvement:	Further evidence required:
•	•
•	•
•	•
•	•
•	•
•	•
Previous Key Audit Findings

What key findings were observed during the previous environmental audit?

The auditor will require an understanding of previous key findings in order to provide commentary on current practices and improvements over time. Comments:

Note: If this is the first audit conducted under the new Forest Audit Program then this section can be ignored/deleted.

Forest Audit – Forest Management Area Information

Forest Management Area:	«FMA»	Date:	
Amendments:		Amendment Date:	
Comments:			
People Present:	Auditor and Audit Team:		Audit Date:
	Auditees:		

General comments and observations

General notes:

Harvesting in Catchments

Harvesting in Catchments

Requirement Name	Section	Directive	Audit Criteria	Compliance	Auditor Comments
Code of Practice for Timber Production 2007	2.1.2 Wood Utilisation Plans or Timber	A WUP or TRP must minimise the impact of harvesting on water quality and quantity over a period of time within any particular catchment.	Does the current WUP or TRP include provisions for protection of water quality and quantity?		
			Does the WUP or TRP make note of water supply catchment prescriptions and Special Area Plans?		
			Have any special requirements for water quality protection set out in a regional River Health Strategy, or a Water Quality Plan prepared by a relevant Catchment Management Authority or Melbourne Water been included in the WUP or TRP?		
			Are the provisions for protection of water quality and quantity adequate and effective?		
Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests (DSF 2009)	Schedule 6 Water Supply Catchments	In relevant water supply catchments the area harvested must not exceed the limit allowed (i.e. Orbost {Rocky river} limit of 40ha maximum annual area harvested).	What is the total area harvested during the reporting period in the specified catchment area (filtered by broad forest stand and catchment)?		
			Do the harvested areas in relevant water supply catchments exceed nominated limits?		

Harvesting in Catchments

Requirement Name	Section	Directive	Audit Criteria	Compliance	Auditor Comments
Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests (DSE, 2009)	2.3.3(b) Harvesting in Water Supply Catchments	In the Thomson, Tarago and Yarra Tributaries water supply catchments the area harvested must not exceed the following limits measured as a rolling average (ha per annum) commencing July 2004: <i>i). Thomson - Ash forests 150ha,</i> <i>Mixed species forests 15ha;</i> <i>ii). Tarago - Ash forests 55ha,</i> <i>Mixed species forests 23ha; and</i> <i>iii). Yarra Tributaries - Ash forests 52ha, Mixed species forests 15ha.</i>	What is the total area harvested during the period relevant to the prescription in the specified catchment area (filtered by broad forest stand and catchment)? Does the annual rolling average of forest area harvested in Victoria's catchment areas ¹ during the reporting year by broad forest stand meet the harvest limits?		
Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests (DSE, 2009)	2.3.3(c) Harvesting in Water Supply Catchments	In the Bunyip and Learmonths Creek water supply catchments the area harvested must not exceed the following limits (hectares per annum), averaged over the previous 10 year period commencing July 1996 (for example in July 2007 the 10 year period commences July 1997): i). Bunyip - Ash forests 15ha, Mixed species 15ha; and ii). Learmonths Creek - Ash forests 7ha, Mixed species 3ha.	What is the total area harvested during the period relevant to the prescription in the specified catchment area (filtered by broad forest stand and catchment)? Does the annual rolling average of forest area harvested in Victoria's catchment areas ¹ during the reporting year by broad forest stand meet the harvest limits?		

Harvesting in Catchments

Requirement Name	Section	Directive	Audit Criteria	Compliance	Auditor Comments
Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests (DSE, 2009)	2.3.3(d) Harvesting in Water Supply Catchments	In the Thomson, Tarago and Yarra Tributaries water supply catchments serviced sanitary facilities must accompany harvesting operations.	Were serviced sanitary facilities commissioned for harvesting operations in the Thomson, Tarago and Yarra Tributaries water supply catchments?		

Notes: 1. Catchment areas include Thomson, Tarago, Bunyip, Yarra Tributaries and those outlined in Schedule 6 of the Management Procedures for timber harvesting, roading and regeneration in Victoria's State forests (DSE, 2009).

ENVIRONMENTAL AUDIT FOREST AUDIT PROGRAM TIMBER PRODUCTION IN STATE FORESTS

FMA: ALL

COUPE: Not Applicable

Module 6 Harvesting Performance Workbook 6D: Cumulative Harvest Limits in Special Management Zones

Cumulative Harvest Limits in Special Management Zones

Measurement Methodology:

Assessing compliance with the Forest Management Plans (cumulative harvest limits in SMZs) requires monitoring of the annual level of harvesting and thinning undertaken in each relevant FMA and SMZ relative to the allowable level defined in the relevant FMP.

Assessing compliance with the Action Statements requires monitoring of annual harvesting and thinning undertaken within relevant SMZs over the period of time defined in the relevant Action Statement.

Reconciliation of DSE/VicForests performance relative to the allowable resources requires logging history to be overlaid with the Forest Management Zone dataset. This information should be analysed to provide summaries on harvesting performance in SMZs with area limit prescriptions set out in FMPs and/or Action Statements. The logging history should include salvage harvesting levels in assessing this performance.

Specification source: Action Statements located here:

Flora and Fauna Guarantee Act, Action Statements.

Summary Page

Positive Observations:	Positive Observations:				
•					
•					
•					
•					
•					
Summary of Non-Compliance and/or Potential Risk of Harm to the Envi	ronment:				
•					
•					
•					
•					
•					
•					
Areas for Improvement:	Further evidence required:				
•	•				
•	•				
•	•				
•	•				
•	•				
•	•				

Previous Key Audit Findings

What key findings were observed during the previous environmental audit?

The auditor will require an understanding of previous key findings in order to provide commentary on current practices and improvements over time. Comments:

Note: If this is the first audit conducted under the new Forest Audit Program then this section can be ignored/deleted.

Forest Audit – Forest Management Area Information

Forest Management Area:	«FMA»	Date:	
Amendments:		Amendment Date:	
Comments:			
People Present:	Auditor and Audit Team: Auditees:		Audit Date:

General comments and observations

General notes:

Cumulative Harvest Limits in Special Management Zones:

Harvest Limits relating to Action Statements:

Cumulative Harvest Limits in Special Management Zones

Requirement Name	Section	Directive	Audit Criteria	Compliance	Auditor Comments
Relevant Forest Management Plan Plan pertainin to SMZ and area/volume prescriptions	Relevant section of Forest Management	 Areas and volumes available for timber production within the FMP should not be exceeded. 	Does the current FMP identify and include provisions for protection of SMZs?		
	to SMZ and area/volume prescriptions		What is the total FMA area and volume harvested in Victoria's State forests during the reporting year by broad forest stand (including thinning)?		
			What total area and volume of the FMA was harvested in SMZs - since the FMP promulgation and current reporting period?		
			What cumulative percentage of the total area and volume for the FMA was harvested in SMZs?		
			What exceptions were reported for the reporting year?		
			Has the accumulated harvest area/volume and area/volume remaining in the SMZs been exceeded?		
Relevant Action Statement	Relevant section	Areas harvested should not exceed limit established for target species under Action Statement.	Has the accumulated harvest area/volume and area/volume remaining in the SMZs been exceeded for target species?		

Appendix E Auditee Responses to Matters of Fact

VicForests comments on the draft FAP Module 6 Audit Report 10/03/11

Comments ref	Page	Coupe/Section	General Comments	Auditors consideration
1	vi	Figure 1 & Figure 5-1	This graph is misleading as it reports on coupes where boundaries have moved by less than 50m from the approved TRP boundary which is allowed for in the MPs. We do not believe they are non- compliances. This graph paints a picture that VF are only 30% comp	The graph has been updated in light of URS ref 4. The Auditor considers that the graph represents the results adequately and provides a comparison of compliance across all four Compliance Elements.
2	vi	Figure 1 & Figure 5-1	The percentage compliance based on the number of coupes gives a misleading impression of the scale of non-compliance. This scale would be better presented based on the percentage of area that is non-compliant.	
3	vi	TRP Compliance Element	Re. Para 2: They are not all 'non-compliant' as they comply with the MP's	The Auditor has reported as non-compliances those coupes >50 m from TRP boundary. The area and number of coupes <50m outside the TRP is reported in the text but are not recorded as non-compliance in the table of audit findings, noting that the audit did not assess why the boundaries were moved.
4	vi	Harvest limits Melb's water catchments	Re. Para 2: Is this really a systematic weakness? Would this not occur with any form of scale mapping and modelling?	Agree. Wording added changed and added accordingly. Sentence now reads 'The audit also identified a large proportion of coupes with a small area located outside of the TRP but within the procedural limits suggesting systemic limitations in precision of the TRP mapping due to the mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliance since they were assessed as having been located in accordance with procedural allowances'.
5	vii	na	Re. Para 1: Written advice to whom? Management procedures are regulatory requirements for VF, this should not be referred too.	This comments is repeated throughout the relevant sections of the report and addressed once here. The Auditor agrees with the comment and therefore proposes to remove Melbourne Water's written advice as audit criteria (thereby assessing against the requirements in the FMPs and Management Procedures only). The Auditor has included a paragraph addressing Melbourne Water 's written advice and the Recommendation (#1) relating to clarification of the agreements remains in the final report.
6	12	4.3.3	Re. Para 2: Why was this not assessed in the audit. A non compliance has been given for areas outside +/-10m?	The non-compliances have been reassessed and the areas outside of the TRPs but within the 50m procedural allowances have no longer been assessed as non-compliances. In Section 5.4.3 the Auditor has reported these areas (<50 m from TRP boundaries) in the text but has not reported them as non-compliances in the table of audit findings, noting that these areas were within the procedural allowances but that the audit did not assess why the boundaries were moved.
7	12	4.3.3	Re. Para 5: Why was this not buffered by 50 meters? This is the documented allowance for coupe boundary movement within the MP's, so all shapes should have been buffered by 50 meters. This has significant impact on results and clearly overstates VF inci	Text added: "For consistency, an instance of harvesting that has occurred outside of an approved WUP or TRP and is a distance of greater than 50 m from the WUP / TRP boundary is considered to be non-compliant with the WUP / TRP."
8	15	5.2 (TRP Compliance Element)	Re. Para 2: This should not be identified as a weakness but rather constraint on the mapping process and any subsequent audits. We are limited to the data layers available and when maps are based on 1:100000 scale there will be inherent errors based due to that scale (eg thickness of lines). Much more needs to be made of this in light of many of the non-conformances identified.	Agree. Wording added changed and added accordingly. Sentence now reads 'The audit also identified a large proportion of coupes with a small area located outside of the TRP but within the procedural limits suggesting systemic limitations in precision of the TRP mapping due to the mapping data being generated through large scale digital analysis based on modelling, aerial photography and other mapping sources. These coupes were not recorded as non-compliance since they were assessed as having been located in accordance with procedural allowances'.



Appendix E

Comments ref	Page	Coupe/ Section	General Comments	Auditors consideration
9	18	5.3.1 & 5.4.2	Re. Para 5: Was further investigation undertaken to determine if there was a reason for this other than an error. Eg was the WUP coupe a firewood/minor produce coupe to be operated either before or after TRP timber harvesting took place? DSE would have no reason to 'log' a coupe for sawlog/pulpwood in Central Highlands or Central Gippsland. Similarly VF had no jurisdiction to log in Bendigo, Horsham, Mid-Murray, Midland, Otway or Portland FMAs.	This comment is made twice in the report and addressd once here. Further investigation as to the reason for harvesting outside of the WUP is considered to be outside of the scope of the audit.
10	24	5.4.1	Re. Last Para: Why has this been considered a non compliance when there is allowance for harvesting of up to 50 meters outside of the approved TRP shape, in the MP's	All areas outside of the TRP but located at a distance of < 50 m from the TRP boundary have been removed as non-compliances but the area and number of coupes is reported.
11	29	5.4.3	Re. Last Para: This is an inherent limitation of the mapping data available rather than a "weakness" that can be simply fixed.	Agree. Wording changed to 'systemic limitation in precision'
12	29	5.5	Re. Para 1: Leading statement. Please remove the value statements.Can this sentence be: play a role in ensuring Melbourne's water supply	Sentence deleted.
13	34	Table 5-9	The data in this table varies to the 2007 EPA audit and our own data. What dataset was used and why is it different to the last 2007 EPA audit? We have also caompared the table against outr own daatsets and have found a variance in the values.	The data provided by DSE to undertake the audit for 2008/09 was PWSC100 shapefile and Log_season 99-09 as outlined in Section 5.5.2 of the report. The audit methodology is provided in Appendix G - section G-3. The differences between the 2007 EPA audit and the 2010 DSE audit results appear to be largely due to the grouping of Shining gum into the Mixed species forest type in the 2007 EPA audit. One comment was received from DSE regarding three coupes with the forest type and silviculture system of XXX (unknown). However these records were changed to Mountain Ash and CFE and incorporated into the audit analysis following provision of the data from DSE. Therefore this may also account for differences between the 2007 and 2010 reports.
14	34	Table 5-9	VF provided a spreadsheet that DSE provided to VF in 2008 that has since been maintained by VF for 2009 and 2010. The results vary for both total harvest area and species slit figures.	The Auditor cannot account for the variation between the VicForests monitoring and the MAHP report as we do not have the datasets that were used or the methodology. However it appears that the forest type of some harvesting records may differ between versions or LogHistory versus LogSeason and that perhaps the harvesting season also. The Auditor is unaware if the catchment boundaries have changed overtime but if this has occurred this would also create variation in the datasets.
15	34	Table 5-9	VF use PWSC100 from DSE as a guide to identify catchments but use the VicMap 1:25000 contour data to determine accurate boundaries of catchments. The varying base catchment layer for which the audit was based on may be a source of erro. Can VicForests b	VicForests have also advised that they use a different (more precise mapping (VicMaps 1:25000) to define the catchment boundaries as opposed to using PWSC100. This context is provided in Section 5.5.3 of the final report along with recommendations.

DSE	comments	on the	draft FAF	• Module 6	Audit Re	port 10/03/11
	commento	011 1110	ananci Ai	module 0	Addit No	

Comment ref	Page	Coupe/Section	General Comments	Auditors consideration
1			Can the examples of good practice outlined in the conclusion also be placed in the exec summary along with the non compliances?	Yes. All examples of good practice have been included in paragraph 6 of the Executive Summary.
2			Put some scope around the type of operation and the resulting impact.	The Auditor has added the harvesting operation type when describing the non-compliance in Section 5.3 and 5.4. A broad statement has been made in the Executive Summary regarding the Auditors view of the impact. More specific discussion is provided in Section 5.3.3 including the two relevant sentences: 'The majority of the area of non-compliance is therefore of a relatively low environmental risk in terms of the less intensive silviculture systems used'; and 'The Auditor considers that the 18 non-compliances do not present imminent environmental hazards or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to desktop review. An EIA is specifically not required in the FAP Module.
3			We need to acknowledge that LOGSEASON is fairly variable in its quality.	For each Compliance Element, the Auditor has considered the limitations of the datasets in the data review process and in the findings of the audit and level of compliance.
4			Silviculture system descriptions: XXX = unknown and REF = reforestation.	REF coupes removed from findings of Harvesting in Catchments. Not applicable for WUP and TRP analysis. See URS ref 27. XXX coupes were changed to the appropriate silviculture system on the receipt of this information from DSE.
5			In general the results make DSE harvesting look bad if compared to VF without clarifying the smaller impact type harvesting being used.	See comment at ref 2 & 3 above.
6	v		It might be worthwhile to mention that compliance with the allocation order (section 2.2 of module 6) was taken out because DSE was currently undertaking the work and repetition was unnecessary. – Or something similar.	Reference to the allocation order has been added to paragraph 2.
7	16		Have the areas outside the WUP and TRP boundaries, but within 50m of the boundary been considered as non-compliances? My position is that they shouldn't.	The audit has reported these areas (<50 m from TRP / WUP boundaries) in the text but these instances have not been reported as non-compliance in the table of audit findings, noting that the 50m allowance is in accordance with the Management Procedures, however the audit did not assess why the boundaries were moved.
9	18		Silviculture needs to be mentioned somewhere in this section to make it clear that while the area figures seem large in WUPs sometimes only a single tree may have been cut and it may have been for domestic firewood collection rather than a commercial operation	See comment at ref 2 & 3 above.
10	25	Table 5-4	If a finding does not affect the audit findings, should it be included.	The Auditor considers that all of the findings of the data verification should be presented to ensure the audit findings are read in the context of the fact that there is a small amount of 'noise' in the data.
11	26		Line 2: DSE is not responsible for the management of CIS with regard to TRPs. DSE has access to CIS for its "regulator" responsibilities.	This reference is not assigning responsibilities, rather it is outlining the checks that were conducted by the Auditor to gain a level of confidence in the data before conducting the audit with the datasets provided.
12	34		Harvest calculations for the Bunyip River Catchment. - Three areas inside the catchment should not be included here - 1999/00 34.5 ha and 200/01 12.6 ha are REF which = reforestation, thus they were not harvested, but reforested following fire. - 1.1 ha are defined as XXX, which = unknown. Not labelled as CFE of STR.	REF coupes removed from findings of Harvesting in Catchments. The Auditor requested further information regarding the harvested areas had an unknown forest type and or silviculture system. The 1.1 ha relates to coupe 09/350/000/0062. DSE provided the forest type and silviculture for the coupe (and two others) as Mountain Ash and CFE. This information was updated in the database and used in the analysis.



Appendix E

Comment ref	Page	Coupe/Section	General Comments	Auditors consideration
13	44	5.6	Recommendation made in this section regarding review and update of FAP Module 6 refers to further discussion in Section 5.7 but Section 5.7 does not appear to address this issue, rather is confined to catchments.	The recommendation has been made in Section 5.7.
14	44	5.7	Is there only one recommendation? What about changes to the FAP?	The recommendation has been made in Section 5.7.
15	45	6.2	First sentence: can something similar to the first sentence be put in the exec summary along with the non compliances?	Yes. Following sentence added to paragraph 7 'With regards to the non-compliances, the audit did not identify any imminent environmental hazards or unacceptable risks to the beneficial uses of the environment (life, health and wellbeing of humans, organisms and ecosystems, local amenity and aesthetic enjoyment), noting that the scope of the audit was limited to desktop review'.
16	43-44	SMZ Summary of results	I expected a relevant recommendation:	Added: Recommendation 2: It is recommended that the FAP Module 6 Harvesting Performance and associated 6D Workbook are reviewed and updated, with consideration given to the objectives of the audit and the analysis sought.
17	43-44	SMZ Summary of results	The third (excellent) point is currently being addressed with development of shapefiles with conglomerated features re-sectioned and attributed to facilitate interrogation regarding a single attribute. Additional support for this program would be welcome. The first two points relate to the effectiveness of FMP's and action statement which cannot be measured or implemented.	Paragraph added to Section 5.6 'The Auditor understands that DSE is currently updating the SMZ database (shapefile) by re-sectioning the individual attributes (SMZ values) to facilitate interrogation of the SMZ layer. The Auditor considers that the update of the SMZ database by DSE is a positive initiative that will facilitate the identification of potential impacts of harvesting on specific SMZ values and enable demonstration of compliance with harvest limits through future external and internal auditing and monitoring processes. The Auditor also notes that the effectiveness of the FMPs and FFG Action Statements cannot and are not intended to be measured under the FAP Module 6'.

Appendix F List of databases audited and reference documents

F.1 Key documents and databases

Title	Further detail		
DSE Forest Audit Program Toolbox - Module 1 Overview	See Appendix A		
DSE Forest Audit Program Toolbox - Module 2	See Appendix B		
DSE Forest Audit Program Toolbox - Module 6 Harvesting Performance	See Appendix C		
DSE FAP Workbook 6b: Wood Utilisation Plans & Timber Release Plans	See Appendix D		
DSE FAP Workbook 6c: Harvesting in Catchments			
DSE FAP Workbook 6d: Cumulative Harvest Limits in Special Management Zones			
Log_Hist200809	DSE ArcGIS shapefile		
Log_season9909	DSE ArcGIS shapefile		
Catchment_PWSC100_copy	DSE ArcGIS shapefile		
FMZ100	DSE ArcGIS shapefile		
Copy_Forests_TRP_shapefile_20100819	DSE ArcGIS shapefile		
VicLine	DSE ArcGIS shapefile		
Gippslandwup0809	DSE ArcGIS shapefile		
northeastpwup_dd94	DSE ArcGIS shapefile		
northwestwup0809_dd94	DSE ArcGIS shapefile		
Southwestwup0809_dd94	DSE ArcGIS shapefile		
Approved 2006-2011 Timber Release Plans and subsequent Amendments and/or Modifications (August 2004 to June 2009)	Victoria Government Gazettes		
Tambo Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Bendigo Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Benalla-Mansfield Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Central Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Central Gippsland Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Dandenong Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
East Gippsland Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Horsham Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Midlands Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Mildura Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Mid-Murray Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
North East Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
Otway Forest Management Area - Wood Utilisation Plans 2007/08 & 2008/09 to 2010/11	DSE		
Portland Forest Management Area - Wood Utilisation Plan 2008/09 to 2010/11	DSE		
URS letter to Melbourne Water requesting interpretation on catchments with harvest limits dated 10/08/2005	URS		
Melbourne Water response letter to URS advising of harvest limits in catchments dated 17/08/2005	Melbourne Water		



Title	Further detail
Flora and Fauna Guarantee Act 1988 and Action Statements	

F.2 References

Title	Author
Code of Practice for timber production (2007)	DSE
Management procedures for timber harvesting, roading and regeneration in Victoria's State forests 2007 & 2009	DSE
Fire salvage harvesting prescriptions March 2008	DSE
Timber Harvesting Operator's Procedures (2008)	DSE
Bendigo Forest Management Plan (2007) and associated Management Plan Maps	DSE
Bendigo FMA Prescriptions to maintain habitat in timber harvesting areas	DSE
(Central) Gippsland Forest Management Plan (2004) and associated Management Plan Maps 1 - 4	DSE
Central Highlands Forest Management Plan and Appendices (1998)	DSE
East Gippsland Forest Management Plan (1995) and FMP Amendment (1997)	DSE
Midlands Forest Management Plan (1996)	DSE
Mid-Murray Forest Management Plan (2002)	DSE
Mildura Forest Management Plan (2004) and associated Management Plan Maps 1 - 2	DSE
North East Forest Management Plan and Appendices (2001) and associated Management Plan Maps	DSE
Otway Forest Management Plan (1992)	DSE
Portland Horsham Proposed Forest Management Plan (2005) and associated Management Plan Maps 1 - 2	DSE
Monitoring Annual Harvesting Performance in Victorian State forests (2007-08)	DSE Public report
Monitoring Annual Harvesting Performance in Victorian State forests (2008-09)	DSE Public report
Allocation Order 2004	
2007 Amendment to the Allocation Order	
Allocation Order 2004, incorporating the 2007 amendment and the 2010 amendment - Consolidated Working Document	
Audit Report VicForests' compliance with conditions of the Allocation Order and Approved Timber Release Plan (2007-08)	DSE Public report
Audit Report VicForests' compliance with conditions of the Allocation Order and Approved Timber Release Plan (2008-09)	DSE Public report
Sustainability Charter for Victoria's State forests	DSE
Timber Release Plan - Development, Endorsement and Modification (2005)	VicForests Instructions
Verification of VicForests' Logging History by DSE (2008)	VicForests Instructions
Logging History Data Capture and Processing (2008)	VicForests Instructions
Forest Audit Program Review Report (2008)	SKM
EPA Auditor Guidelines for appointment and conduct. Publication 865.7 (Oct, 2008)	EPA
EPA Auditor Guidelines for the preparation of environmental audit reports on risk to the environment. Publication 952.2 (Aug, 2007)	EPA

Appendix F

Title	Author			
EPA Auditor Guidelines for the preparation of environmental audit reports on risk to the environment. Publication 952.2 (Aug, 2007)	EPA			
EPA Auditor Guidelines for provision of environmental audit reports, certificates and statements. Publication 1147 (Sept, 2007)	EPA			
DSE and VicForests Joint Sustainable harvest Level Statement (May, 2008)	DSE & VicForests			
DSE Writing Style Guide (March, 2008)	DSE			
Wood Utilisation Planning Guidelines, Incorporating the Timber Release Plan endorsement and approvals process (Aug 2005)	DSE			
Resource Allocation Procedures, Preparation of Spatial Datasets (Jun 2006)	DSE			
Resource Allocation Procedures, Harvesting Exceptions Report (Jun 2006)	DSE			
Resource Allocation Procedures, Integrated Forest Planning System (Jun 2006)	DSE			
Resource Allocation Procedures, Monitoring Annual Harvesting Performance (Nov 2006)	DSE			
Resource Allocation Guidelines for VicForests Operations	DSE			
Utilisation Procedures V4.0 (2007) and V5.0 (2008)	VicForests			
Sustainable Forests (Timber) Act 2004	Legislation - Victoria			
Sustainable Forests (Timber) (Amendment) Act 2004	Legislation - Victoria			
Sustainable Forests (Timber Harvesting) Regulations 2006	Legislation - Victoria			
Catchment and Land Protection Act 1994	Legislation - Victoria			
Environment Protection and Biodiversity Conservation Act 1999	Legislation - Commonwealth			
Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Act 1999	Legislation - Commonwealth			
FFG Action Statement No. 015 Spot-tailed Quoll (2003)	DSE			
FFG Action Statement No. 058 Long-footed Potoroo (2009)	DSE			
FFG Action Statement No. 060 White-bellied Sea Eagle (1994)	DSE			
FFG Action Statement No. 062 Leadbeaters Possum (1995)	DSE			
FFG Action Statement No. 65 Barred Galaxias (1995)	DSE			
FFG Action Statement No. 092 Powerful Owl (1999)	DSE			
FFG Action Statement No. 93 Marble Daisy Bush and Silurian Limestone <i>Pomaderis</i> Shrubland (2009)	DSE			
FFG Action Statement No. 112 Spotted Tree Frog (2000)	DSE			
FFG Action Statement No. 116 Barking Owl (2001)	DSE			
FFG Action Statement No. 117 Sooty Owl (2001)	DSE			
FFG Action Statement No. 120 Egret species (2001)	DSE			
FFG Action Statement No. 124 Masked Owl (2001)	DSE			
FFG Action Statement No. 130 Sedge rich <i>Eucalyptus camphora</i> swamp (2001)	DSE			
FFG Action Statement No. 169 Squirrel Glider (2002)	DSE			
FFG Action Statement No. 169 Swift Parrot (2002)	DSE			
FFG Action Statement No. 182 Five lowland temperate grassland and grassy woodland communities (2003)	DSE			
FFG Action Statement No. 192 Loss of hollow bearing trees (2003)	DSE			
FFG Action Statement No. 195 Rocky Chenopod open scrub (2003)	DSE			
FFG Action Statement No. 238 Rainforest communities & Myrtle wilt (2009)	DSE			



Appendix F

Title	Author		
FFG Action Statement No. 037 Red Tailed Black Cockatoo (2006)	DSE		
FFG Action Statement No. 061 Giant Burrowing Frog (1994)	DSE		
FFG Action Statement No. 079 Brush-tailed Phascogale (1997)	DSE		
FFG Action Statement No. 123 Lowly Greenhood (2001)	DSE		
FFG Action Statement No. 184 Murray and Glenelg Spiny Crayfish (2003)	DSE		
2007 Bioregional Conservation Status of EVCs	DSE		
Aboriginal Heritage Act 2006	Legislation - Victoria		
Bunyip River Water Supply Catchment Notice of Proclamation (1963) and Notice of Determination (1968)	Victorian Government Gazette		
Kinglake and Yarra Ranges National Parks Catchment Management Agreement 1995	National Parks and Melbourne Water		
Learmonth, Skipton, Streatham, Mininera, Mortlake, Dunkeld Water Supply Catchments - A Proposal for Proclamation (1991)	Department Conservation and Environment		
Report on Land Use Determination in the Tarago River Catchmen(1973)	Soil Conservation Authority		
Tarago River Water Supply Catchment, Notice of Determination on Land Use (1972)	Victorian Government Gazette		
Thomson Catchment Management Agreement (2007)	DSE & Melbourne Water		
Land Use Determination for the Thomson River, Stages 1 and 2 Water Supply Catchment (1974)	Soil Conservation Authority		
Thomson River, Stage 3 Proclamation Report (1982)	Soil Conservation Authority		
Melbourne's water supply catchments and reservoirs (viewed November 2010) - <u>http://www.melbournewater.com.au/content/water_storages/water_supply_</u>	Melbourne Water		
The allocation of State forest areas to VicEorests for harvesting and selling	DSF		
timber resources – Factsheet (September 2010)			

Appendix G GIS analysis methodology

G.1 Wood Utilisation Plan (WUP)

- 1. All WUP shapes were merged and dissolved (Gippsland, North west, South west and North east 2008/11) → merged *WUP* shapefile.
- 2. Log History 08/09 was intersected with the merged WUP shapefile and the output was the Log History 08/09 that occurred inside and outside of the WUP shape → Log History 08/09_WUP.
- 3. Six DSE records from *Log History 08/09* did not intersect with the merged *WUP* shapefile but were selected and added into the derived *Log History 08/09_WUP*.
- 4. Seven VicForests' records from *Log History 08/09* intersected both the merged *WUP* and TRP shapefiles. Three of these records were relevant to the audit and four records were removed from the WUP analysis.
- 5. Log History 08/09_WUP was overlayed and clipped with the merged WUP shapefile \rightarrow Log History 08/09_WUP_inside and Log History 08/09_WUP_outside.
- 6. Buffered the *Log History 08/09_WUP* by minus 10 m to account for GPS error → *Log History 08/09_WUP_10m* shapefile.
- 7. Log History 08/09_WUP_10m shapefile was overlayed and clipped with the merged WUP shapefile → Log History 08/09_WUP_10m_inside and Log History 08/09_WUP_10m_outside shapefiles.
- 8. The area (ha) of *Log History 08/09_WUP_10m_inside* and *Log History 08/09_WUP_10m_outside* shapefiles were calculated within ArcGIS using the 'calculate geometry tools'.
- Buffered the merged WUP shapefile by 50 m to account realignment of WUP boundary to geographical feature (s 2.1.4 Management Procedures 2007) → WUP_buffer_50m shapefile.
- 10.Log History 08/09_WUP_10m_outside shapefile was overlayed and clipped with the WUP_buffer_50m shapefile \rightarrow Log History 08/09_WUP_10m_ outside_buffer_50m.
- 11.The area (ha) *Log History 08/09_WUP_10M_outside_buffe_50mr* shapefile were calculated within ArcGIS using the 'calculate geometry tools'
- 12.Outputs were exported to Excel tables and identified non-compliant areas were compared with aerial images (Microsoft Bing Maps and Google Earth Pro) where possible and with the WUP documents (FMA WUP's and maps).

G.2 Timber Release Plan (TRP)

- 1. Current TRP shape and Secondary TRP shape were merged and dissolved \rightarrow *TRP* shapefile.
- 2. Log History 08/09 was intersected with the TRP shapefile and the output was the Log History 08/09 that occurred inside and outside of the TRP shapefile \rightarrow Log History 08/09_TRP.
- 3. Seven VicForests' records from *Log History 08/09* intersected both the merged *WUP* and TRP shapefiles. Four of these records were relevant to the audit and three records were removed from the TRP analysis.
- 4. Log History 08/09_TRP was overlayed and clipped with the TRP shapefile \rightarrow Log History 08/09_TRP_inside and Log History 08/09_TRP_outside.
- 5. Buffered the Log History $08/09_TRP$ by minus 10 m to account for GPS error \rightarrow Log History $08/09_TRP_10m$ shapefile.
- 6. Log History 08/09_TRP_10m shapefile was overlayed and clipped with the TRP shapefile → Log History 08/09_TRP_10m_inside and Log History 08/09_TRP_10m_outside shapefiles.
- 7. The area (ha) of *Log History 08/09_TRP_10m_inside* and *Log History 08/09_TRP_10m_outside* shapefiles were calculated within ArcGIS using the 'calculate geometry tools'.
- Buffered the *TRP* shapefile by 50 m to account realignment of TRP boundary to geographical feature (s 2.1.4 Management Procedures 2007) → *TRP_buffer_50m* shapefile.



Appendix G

- 9. Log History 08/09_TRP_10m was intersected with the TRP_50m_buffer shapefile → Log History 08/09_TRP_10M_outside_buffer_50m shapefile.
- 10. The area (ha) *Log History 08/09_TRP_10M_outside_buffer_50m* shapefile were calculated within ArcGIS using the 'calculate geometry tools'
- 11.Outputs were exported to Excel tables and identified non-compliant areas were compared with aerial images (Microsoft Bing Maps and Google Earth Pro) where possible and with the TRP documents including the *Obsolete TRP* shapefile (TRP 2006-2009) and TRP documents (August 2004 January 2010).

G.3 Cumulative harvest limits in Melbourne's water supply catchments

- To derive a shape file of Melbourne's water catchments (s 2.3.3 Management Procedures 2007), catchments Thomson River, Tarago River, Bunyip River and the Yarra Tributaries (McMahons Creek, Starvation Creek, Cement Creek and Armstrong Creek West) were selected from the attribute table of *PWSC100* shapefile → *Melbourne's_water_supply_catchments* shapefile.
- To derive the harvested area within Melbourne's water catchments, SMZ Log-season 99-09 was intersected and clipped with the Melbourne's_water_supply_catchments and the output was the SMZ Log-season 99/09 that occurred inside the Melbourne's_water_supply_catchments shapefile → MWSC_Log-season99/09 inside.
- 3. The area (ha) of *MWSC_Log-season99/09_inside* were calculated within ArcGIS using the 'calculate geometry tools'.
- 4. The attribute table of *MWSC_Log-season99/09_inside* was exported to an Excel table.
- 5. Analysis of the *MWSC_Log-season99/09_inside* Excel spreadsheet involved summarising the Forest Types the Catchments as per Table G-1 and Table G-2 below.
- 6. Pivot tables were used to generate summary data and rolling and annual averages were calculated from summarised data. Relevant tests were conducted to ensure analysis was correct.

G.3.1 Analysis definitions

Table G-1 Summarised forest type

Forest Type	Summary forest type used for analysis
Mountain Ash	Ash
Alpine Ash	Ash
Foothill Mixed Species	Mixed species
Mountain Mixed Species	Mixed species
Shining Gum	Ash
Unknown	Requested data provided by DSE

Table G-2 Summarised water catchment name

Catchment	Summary catchment used for analysis		
STARVATION CREEK	Yarra Tributaries		
ARMSTRONG CREEK	Yarra Tributaries		
MCMAHONS CREEK	Yarra Tributaries		

Appendix G

Catchment	Summary catchment used for analysis			
BUNYIP RIVER	Bunyip River			
TARAGO RIVER	Tarago River			
THOMSON RIVER (STAGES 1, 1A, 2)	Thomson River			
THOMSON RIVER (STAGE 3)	Thomson River			

G.4 Cumulative harvest limits in Special Management Zones (SMZ)

- 1. To derive the SMZ harvested area, the SMZ logged 99-09 shapefile was joined to the Log-season (Post 1998) shapefile \rightarrow SMZ Log-season 99-09 shapefile.
- 2. From *FMZ100* shapefile, SMZ areas were selected (from attribute table) and exported as a shapefile \rightarrow *SMZ Boundaries* shapefile.
- 3. *SMZ Log-season 99-09* was intersected with the *SMZ Boundaries* and the output was the *SMZ Log-season 99/09* that occurred inside the *SMZ Boundaries shape* → *SMZ Log-season99/09 inside* shapefile.
- 4. The area (ha) of *SMZ Log-season99/09 inside* shapefile were calculated within ArcGIS using the 'calculate geometry tools'
- 5. The attribute table of *SMZ Log-season99/09 inside* was exported to an Excel table and analysed.



Appendix H Detail of non-compliance with the WUPs

Coupe ID	FMA	Silviculture System	Forest type	Start date	End date	Harvesting Organisation	Area harvested (ha)	Area (ha) of non- compliance
C1	Bendigo	Thinning from below	Box Ironbark	1/07/2008	30/06/2009	DSE	47.4	2.1
C2	Bendigo	Thinning from below	Box Ironbark	1/09/2008	30/06/2009	DSE	8.4	0.2
C3	Bendigo	Thinning from below	Box Ironbark	1/07/2005	30/06/2009	DSE	4.3	4.3
C4	Bendigo	Thinning from below	Box Ironbark	1/07/2008	30/06/2009	DSE	3.1	0.5
C5	Bendigo	Thinning from below	Box Ironbark	12/01/2009	30/06/2009	DSE	8.6	0.9
C6	Bendigo	Thinning from above	Box Ironbark	1/06/2007	30/06/2009	DSE	6.8	0.1
C7	Bendigo	Clearfelling	Box Ironbark	1/09/2008	30/06/2009	DSE	1.7	1.7
C8	Bendigo	Thinning from below	Box Ironbark	10/06/2003	30/06/2009	DSE	18.5	0.3
C9	Bendigo	Thinning from below	Box Ironbark	21/11/2008	30/06/2009	DSE	18.0	0.6
C10	Bendigo	Thinning from below	Box Ironbark	1/09/2008	30/06/2009	DSE	34.4	0.6
C11	Mid Murray	Single Tree Selection	River Red Gum	1/07/2008	30/06/2009	DSE	131.7	131.7
C12	Mid Murray	Single Tree Selection	River Red Gum	1/07/2008	30/06/2009	DSE	47.9	40.8
C13	Mid Murray	Single Tree Selection	River Red Gum	12/08/2009	12/08/2009	DSE	66.4	1.5
C14	Mid Murray	Thinning from below	River Red Gum	1/07/2008	30/06/2009	DSE	427.7	0.2
C15	Midlands	Thinning from below	Foothill Mixed Species	1/07/2008	30/06/2009	DSE	16.4	0.1
C16	Otway	Group (or Gap) Selection	Foothill Mixed Species	26/05/2008	30/06/2008	DSE	2.0	1.0
C17	Otway	Thinning from below	Foothill Mixed Species	1/07/2008	30/06/2008	DSE	0.4	0.4
C18	Portland	Thinning from below	Foothill Mixed Species	23/06/2009	24/08/2009	DSE	12.0	12.0



Appendix I Detail of non-compliance with the TRPs

Coupe ID	FMA	Silviculture System	Forest type	Start date	End date	Harvesting Organisation	Area harvested (ha)	Area (ha) of non- compliance
C1	Central	Clearfelling Salvage	Mountain Ash	1/04/2009	30/06/2009	VF	21.4	0.02
C2	Central	Clearfelling Salvage	Alpine Ash	18/09/2008	21/04/2009	VF	10.3	0.01
C3	Central Gippsland	Clearfelling Salvage	Foothill Mixed Species	1/07/2008	4/07/2008	VF	2.7	0.05
C4	Central Gippsland	Clearfelling Salvage	Mountain Ash	13/05/2009	25/06/2009	VF	8.0	0.3
C5	Central Gippsland	Clearfelling Salvage	Alpine Ash	20/01/2009	23/03/2009	VF	20.1	0.01
C6	Central Gippsland	Clearfelling	Mountain Ash	10/01/2009	13/05/2009	VF	18.0	0.02
C7	East Gippsland	Road Alignment - Improvement	Mountain Mixed Species	9/02/2009	10/02/2009	VF	3.3	0.1
C8	East Gippsland	Seed Tree (includes retained overwood)	Coastal Mixed Species	1/07/2008	20/07/2008	VF	6.4	2.4
C9	East Gippsland	Thinning from below	Coastal Mixed Species	19/08/2008	8/09/2008	VF	45.8	1.0
C10	East Gippsland	Thinning from below	Foothill Mixed Species	12/06/2009	30/06/2009	VF	6.2	0.1
C11	East Gippsland	Seed Tree (includes retained overwood)	Mountain Mixed Species	11/02/2009	30/05/2009	VF	16.7	0.01
C12	East Gippsland	Thinning from below	Coastal Mixed Species	2/07/2008	19/08/2008	VF	83.4	0.3
C13	East Gippsland	Thinning from below	Coastal Mixed Species	3/06/2009	24/06/2009	VF	2.0	0.06



l

Appendix J Map of Melbourne's water supply catchments



J



Appendix K Harvest limits in Special Management Zones

K.1 Examples of consistency of FMP species protection requirements with the FFG Action Statements

The *East Gippsland FMP (1997)* states that the target number of protected Powerful Owl is 100 pairs. Known Powerful Owl localities will be protected by excluding from timber harvesting 800 ha of forest dominated by old tress within 1,500 ha area of the detection site. The FMP describes the aim of the Powerful Owl management area (POMA) is to integrate harvesting and wildlife conservation and lists the following actions that are required to be implemented:

- 1. Identifying and protecting the areas of best habitat within the SMZ;
- 2. Allowing modified harvesting in areas of moderate habitat value using techniques such as:
 - Retaining additional habitat trees and advanced regrowth on coupes;
 - Avoiding hot slash burns that kill retained trees;
 - Using mechanical disturbance as an alternative method of seedbed preparation to slash burns;
 - Concentrating harvesting in areas of lower value to the featured species (for example, in a foothill forest where Owls are the featured species, harvesting could be concentrated on ridges and upper slopes with progressively more selective harvesting used toward the gullies).
- 3. Allowing normal harvesting in areas of least habitat value within a site.

The Auditor notes that in this instance the *East Gippsland FMP (1997)* requirements for the management of the Powerful Owl are inconsistent with the requirements in the current Powerful Owl Action Statement which was published in 1999.

The *Mid-Murray FMP (2002)* states that the bulk of Victoria's Squirrel glider population occurs in the Mid-Murray FMA. In order to protect the species, the FMP prescribes the following conservation measures that are applicable to SMZs and timber harvesting (note that other conservation guidelines that do not relate to timber harvesting are not provided):

- 1. A linear SPZ of at least 50 m width is established on either side of the Goulburn River;
- 2. All other State forest along the Goulburn and Ovens Rivers is included in the SMZ;
- 3. Protect key components of Squirrel glider habitat in the SMZs along the Goulburn and Ovens Rivers, principally the Silver Wattle understorey and an adequate number of large and hollowbearing trees, during timber harvesting and other operations; and
- 4. Undertake prescribed burning to promote regeneration of Silver Wattle, where appropriate, in Squirrel glider habitat.

The Auditor notes that in this instance the *Mid-Murray FMP* requirement for the management of the Squirrel glider is consistent with the requirements in the current FFG Action Statement.

K.2 Examples of prescribed harvest limits in FMPs

Harvest limits are specified for some SMZ values. For example the *Central Highlands FMP (1998)* states that habitat to support 100 pairs of Powerful Owl will be protected in a SPZ or a SMZ and that:

- 1. Timber harvesting operations are permitted within the SMZ subject to higher retention levels of existing or potential hollow bearing trees;
- 2. A 250 m radius SMZ around nesting or residency sites should be established for trees used within the last five (5) years; and
- 3. Within this SMZ, timber harvesting and other activities likely to disturb breeding activity will be excluded during the breeding season, and nest trees and all trees within a radius of 100 m from the nest tree will be protected.



Appendix K

In this example, the entire SMZ is available for harvesting subject to additional retention of habitat trees, the harvest season and application of an exclusion zone around nest trees.

The *Central Gippsland FMP (2004)* states that the management and protection of the Spot-tailed Quoll requires the following:

- 1. The establishment of a 500 ha SPZ and a 1,000 ha SMZ contiguous to the SPZ for each confirmed record;
- 2. Preparation of a Special Plan prior to the commencement of harvesting of the Spot-tailed Quoll SMZ.
- 3. *Single Tree Selection* or *Group Selection* are the only silviculture systems permitted where the whole Spot-tailed Quoll SMZ is proposed for harvesting;
- 4. Clearfall or Seed Tree Clearfall operations are permitted where important prey components such as hollow bearing trees are retained and at least 500 ha of the SMZ with suitable prey habitat is maintained at all times;
- 5. Protection of known latrine and den sites with a 200 m buffer where they are not otherwise protected,
- 6. Limiting use of 1080 bait in these sites; and
- 7. Identification and protection of a minimum of 10 sites followed by review of FMP guidelines.

The area 'available for harvest' (made up of GMZ and SMZ) referred to in the FMPs are modelled and calculated, and mapped using GIS analyses based on point (data) localities of significant features including historic sites, research sites and populations of key threatened flora and fauna species. In the case of a very small SMZ, for example a 250 m buffer placed around an historic site, the SMZ 'flags' the area as having important values. Forest management activities such as harvesting, road construction or fuel reduction burning are only to be undertaken after consultation with appropriate specialists. Management of these sites will be considered on a case-by-case basis and often managed within the FMA.

K.3 Examples of FFG Action statements that provide management actions related to timber harvesting but do not prescribe a spatial harvest limit

The Action Statement for the Lowly Greenhood *Pterostylis despectans* (No. 123) 2001, states that the management actions (relating to timber harvesting on State forests) as the exclusion of firewood collection and other forest production activities from State forests sites supporting Lowly Greenhood, and the consideration of carefully planned and implemented thinning operations at sites with the specific purpose of aiding the survival of Lowly Greenhood.

The Action Statement for the Spotted Tree Frog *Litoria spenceri* (No. 112) 2000, requires a 300 m protection zone for off-stream habitat around known populations and mapped habitat areas with additional streamside buffers to minimise disturbances for at least 1 km upstream of the populations. In addition, an interim approach was initiated requiring that:

- No new stream crossings to be constructed within 1 km upstream of the populations of the Spotted Tree Frog;
- 2. Existing roads or tracks not required for management, harvesting or protection purposes to be progressively closed and/or rehabilitated; and
- 3. Fuel reduction burning to be restricted to protect in-stream and off-stream habitat for the frog.

Appendix L SMZ GIS analyses

Table L-3 below describes the areas of forest types harvested within the SMZs over the 10 year period 1999/00 – 2008/09. Of the areas of SMZs harvested, around half (49.1%) were Mixed species forests comprising Mountain mixed species, Coastal mixed species and Foothill mixed species. A further 23% of the harvested area within SMZs was River Red Gum forests and 10.2% of the area was Ash forests (made up of Alpine Ash, Mountain Ash and Shining Gum).

	No. of SM7s	SUMMARY FOREST TYPE						
FMA	harvested 1999/00 – 2008/09 (10 years)	Ash (ha) and percentage total area	Mixed species (ha) and percentage total area	Box Ironbark (ha) and percentage total area	River Red Gum (ha) and percentage total area	Unknown (ha) and percentage total area		
Benalla – Mansfield	3		279 (100%)					
Bendigo	38			1174 (100%)				
Central Highlands	22	275 (46%)	298 (50.2%)			20 (3%)		
Central Gippsland	20	160 (62%)	70 (27%)			27 (10%)		
Dandenong	5	4 (15%)	24 (85)					
East Gippsland	75*	2 (0.1%)	1410 (99.9%)					
Horsham	1				83 (100%)			
Mid-Murray	30			1 (0.1%)	1623 (99.9%)			
Midlands	20*		1422 (100%)					
Mildura	1				0.2 (100%)			
North East	6	280 (100%)						
Tambo	12	15 (32%)	33 (68%)					
Totals	233*	737 (10%)	3536 (49%)	1175 (16%)	1707 (24%)	47 (1%)		

Table L-3 Summary of the forest types harvested in SMZs 1999/00 to 2008/09

*Data incomplete



Appendix L

Figure L-1 below illustrates Table L-3 showing the summarised forest types of the areas harvested within the SMZs over the 10 year period 1999/00 - 2008/09.





Figure L-2 below provides the areas harvested within the SMZs by the silviculture system over the 10 year period 1999/00 - 2008/09. It shows that more than 50% of the total area harvested within SMZs over the ten year period were thinning and single tree selection harvesting operations. 16% were shelterwood (1 & 2) harvesting systems and a further 16% were seed tree harvesting operations.





Appendix M Alternate audit approach for the SMZ Compliance Element

The current audit scope suggests that DSE seeks to assess whether SMZs have been appropriately harvested to manage and protect the values of the SMZs. Based on the data provided, the audit was able to assess, at a strategic level, the total area harvested in SMZs against the FMP's stated total *approximate* area of SMZs available for harvest, where those limits exist. However, compliance of timber harvesting operations with the spatial harvest limits in FFG Action Statements were unable to be assessed due to the limitations of the data provided and the complexity and scale of this analysis being beyond the intended scope of the audit of the SMZ Compliance Element.

The Auditor considers that to provide meaningful findings that address the various and complex requirements for specific values protected by SMZs, an alternate audit approach that assesses each value of the SMZ separately against relevant legislation, FMP requirements and local prescriptions or decisions would be required.

If the alternate audit approach was undertaken, further data would be required by the Auditor to enable assessment of compliance with the conditional spatial harvest limits of the FFG Action Statements such as the threatened species point-source location GIS data and associated modelling of habitats and/or distribution and the protection buffers (SPZ and SMZs) that have been applied in the GIS. If the audit goes as far as assessing compliance of timber harvesting operations against all SMZ values, the management decisions made at the FMA level regarding harvesting within SMZs would also be required by the Auditor.

A complicating factor is the time period to which the audit is applied since spatial harvest limits, prescribed management actions and silviculture systems are not defined or limited by a specific period of time. This issue will need to be addressed by DSE through the revision of this Compliance Element.

To enable the SMZ Compliance Element to be audited would ideally involve the following steps:

- 1. Review and update the audit objectives and scope;
- 2. Review the status of data sets necessary to provide to the Auditor;
- 3. Review the audit criteria;
- 4. Design and draft the audit process and methodology; and
- 5. Update the FAP Module 6 Harvesting Performance and 6D Workbook.

Each stage is discussed in more detail below.

Review and update the audit objectives, scope and methodology

Asking the question 'What do we want to know about the timber harvesting operations within SMZs?' is an important first step. The current audit scope suggests that DSE wants to know if the SMZs have been appropriately harvested to manage and protect the values of the SMZs. The Auditor suggests that to provide meaningful findings that address the various and complex requirements for specific values protected by SMZs, each value of the SMZ would be best to be separately audited against relevant legislation, FMP requirements and local prescriptions or decisions. The current audit scope and datasets provided to the Auditor to assess compliance of timber harvesting operations with the spatial harvest limits of SMZs however do not allow for the assessment of the protection or maintenance of the SMZ values.



Appendix M

This is due in part to the GIS data that is currently provided to the Auditor. The SMZ GIS shapefile maps single SMZ areas which have aggregated SMZ values and as a result the audit cannot determine which SMZ value has been impacted by the timber harvesting. If the individual SMZ values were separated in the SMZ GIS shapefile rather then aggregated, the audit would currently be able to determine the proportion of the SMZ of a particular value that had been harvested providing the Department, the EPA and the public more through audit findings and potentially recommendations of more value.

However if the Department were to maintain the audit scope as it is, the Auditor would simply require the provision of more detailed databases such as the threatened species population point-source location GIS data, associated modelling of habitats and/or distribution and the protection buffers (SPZ).

If DSE seeks a more complete assessment of timber harvesting operations within SMZs that would enable assessment of compliance of timber harvesting operations with the conditional spatial harvest limits in FFG Action Statements, the current audit scope would require review and revision to reflect that the audit is assessing the operational performance of timber harvesting operations in *protecting or maintaining the SMZ values* through the application of spatial harvesting limits established under various forest management planning processes and legislative requirements. The Auditor considers however, that limiting the audit scope to spatial harvest limits only is a narrow assessment of compliance and protection of SMZ values. This is evident through many of the legislative management prescriptions which relate to silviculture systems, surveys and monitoring and burning practices.

Review the status of datasets necessary to provide to the Auditor

To enable the Auditor to assess the compliance of timber harvesting operations with the spatial limits established under various forest management planning processes and legislative requirements to protect SMZ values, the datasets for each SMZ value will need to be reviewed.

A summary of the key values of the SMZs that were harvested between 1999/00 and 2008/09 is provided below:

- Species of rare or threatened flora (including the habitat of the species);
- Species of rare or threatened fauna (including the habitat of the species and breeding sites);
- Wetlands;
- Ecological Vegetation Communities (EVC);
- Old growth forests / mature tree sites;
- Landscape values (such as tourist access routes);
- Historic sites;
- Cultural heritage sites; and
- Research sites.

For each of the values listed above, the Auditor will require the point-source data (preferably GIS shapefiles), associated modelling of habitats and/or distribution and the protection buffers (SPZ and SMZs) that have been applied in the GIS (preferably shapefiles).

A non-exhaustive list of the datasets currently required to undertake the audit is provided below:

 Known locations and modelled habitat within SPZ and SMZ buffers of Powerful Owl, Barking Owl, Sooty Owl, and Masked Owl;

Appendix M

- Known locations and modelled habitat within SPZ and SMZ buffers of Swift Parrot and Turquoise Parrot;
- Red-tailed Black Cockatoo known locations; modelled habitat within SPZ and SMZ buffers;
- White bellied sea eagle and Square-tailed Kite known locations and SMZ buffers;
- Known locations and SMZ buffers for Brush-tailed Phascogale and Long-footed Potoroo;
- Known locations and modelled habitat within SPZ and SMZ buffers of Easter Horse-shoe Bat, Bent-wing Bat and Southern/Large-footed Myotis;
- Known locations and buffers for Squirrel Glider, Greater Glider and Mountain Brush tail Possum;
- Known locations and buffers for Giant Burrowing Frog and Spotted Tree Frog;
- Known locations and modelled habitat of the Murray Spiny Crayfish;
- Tourist access routes or Visual Management System zones within SMZs;
- Locations of recreation sites within SMZs;
- Research sites within SMZs and buffers;
- Lowly Greenhood known locations and buffers;
- Known locations and modelled distribution for a further 26 flora genera;
- GIS shapefiles of EVCs;
- Known sites of mature trees within SMZs;
- GIS shapefile of water catchments and wetlands;
- GIS shapefile of 'Heritage Rivers' and associated SPZs and SMZs;
- FMA datasets of historic and cultural heritage sites and buffers;
- The relevant Forest Coupe Plans for each harvested areas in a SMZ (this information is necessary to check the spatial harvest limits or conditional timber harvesting prescriptions); and
- Any Special Plans (such as that required by the Central Gippsland for Spot-tailed Quoll) that have been drafted in response to harvesting in SMZs.

The Auditor would be required to conduct data verification on a sample of the datasets against the source data. This is likely to involve validating records in models, survey field sheets or interviews with relevant Database Managers, Project Managers, Researchers and regional DSE officers.

The Department will also need to investigate how the SMZ shapefile (or SMZ value shapefiles) are going to be managed through time with regards to new data and modifications to the SMZ boundaries. This will be necessary to enable the Auditor to make accurate findings.

Review the audit criteria

As discussed in Section 5.6.2, the current audit criteria largely comprises the FMPs and FFG Action Statements however the criteria are often not stated as spatial harvest limits but rather presented as protection requirements. Additionally, some FMP criteria are inconsistent with the current FFG Action Statements. The time constraints associated with the harvest limits also need to be addressed.

The Department requires a register of the spatial harvest limits (and preferably the other management constraints and time constraints) for each SMZ value. The register could cross-reference the SMZ number (unique identifier).



Appendix M

Design and draft the audit process

The general audit approach of *FAP Module 6 Harvesting Performance* (Appendix C) is an acceptable process and is described in detail in Section 4 of this report. However the size and complexity of an audit of the entire SMZ may be deemed inappropriate due the budgetary and time constraints associated with the FAP. It appears that an audit of the entire SMZ may not be required to be undertaken annually especially in light of the relatively small areas harvested over the ten year period (see Section 0).

The Auditor suggests that the Department might consider an 'Audit Target Selection' process similar to that used in FAP Module 5. Using this approach, audit targets (SMZ values and / or FMPs for example) would be selected thorough a risk assessment process (compliance themes could also be applied). The Auditor suggests that an annual audit could target/select a single SMZ value or a small number of SMZ values within a single FMA to meet the audit objective, be repeatable through time and be of a size that enables the Auditor to generate useful findings and recommendations.

The Department will be required to define a time period constraint for the audit. However this might be best defined by the audit target selected in any given year since a single time period for all of the SMZ values may be inappropriate.

Update the FAP Module 6 Harvesting Performance and 6D Workbook

The last step is self-explanatory however stakeholder consultation could also be considered.




URS Australia Pty Ltd Level 6, 1 Southbank Boulevard Southbank VIC 3006 Australia T: 61 3 8699 7500 F: 61 3 8699 7550

www.ap.urscorp.com