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# **Department of Sustainability and Environment**

## **Report for the Forest Audit Program**

### **Module 6 - Harvesting Performance**

August 2012



This Report for the Forest Audit Program Module 6 Harvesting Performance (*"Report"*) has been prepared in accordance with Part IXD of the Environmental Protection Act 1970. The report of Environmental Audit represents the Auditor's opinion of the environmental condition of the audited coupes and its suitability for beneficial uses at the date it is signed.

This report:

1. *has been prepared by Andrew Roy and the audit team identified in Section 2.5 for the Department of Sustainability and Environment;*
2. *may be used and relied on by the Department of Sustainability and Environment;*
3. *may be used by and provided to EPA and the relevant planning authority for the purpose of meeting statutory obligations in accordance with the relevant sections of the Environment Protection Act 1970;*
4. *may be provided to other third parties but such third parties' use of or reliance on the Report is at their sole risk, as this Report must not be relied on by any person other than those listed in 1-3 above without the prior written consent of GHD; and*
5. *may only be used for the purpose of assessing compliance under Module 6 Harvesting Performance between 1 July 2009 - 30 June 2010 and 1 July 2010 – 30 June 2011.*

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- *were undertaken in accordance with current profession practice and by reference to relevant environmental regulatory authority and industry standards in accordance with section 53V of the Environment Protection Act 1970.*
- *The opinions, conclusions and any recommendations in this Report are based on assumptions made by the Auditor, his team and GHD when undertaking services and preparing the Report ("Assumptions"), as specified throughout this Report.*
- *GHD and the Auditor expressly disclaim responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect.*
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The Auditor and GHD have prepared this Report on the basis of information provided by the Department of Sustainability and Environment, which the Auditor and GHD have not independently verified or checked (*"Unverified Information"*) beyond the agreed scope of work.



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## Executive Summary

The Department of Sustainability and Environment (DSE) has commissioned GHD Pty Ltd (GHD) to undertake an audit under DSE's Forest Audit Program 2011/2012. This audit aims to assess compliance against criteria (*Module 6 Harvesting Performance*) related to monitoring of annual harvest levels and compliance with Wood Utilisation Plans (DSE), the Allocation Order (VicForests), Timber Release Plans (VicForests), harvest limits in Melbourne's Water Catchments (DSE and VicForests), and harvest limits in Special Management Zones (DSE and VicForests) for activities conducted during the 2009-10 and the 2010-11 harvest seasons.

The scope for the environmental audit has been completed in accordance with the environmental auditor guidelines issued by the Environment Protection Authority (EPA) for the preparation of an environmental audit in relation to the risk of any possible harm or detriment to the environment (EPA Publication 952.2, August 2007). The audit was undertaken in accordance with the scope developed by the Department of Sustainability and Environment through the Forest Audit Program.

### Detail on the Appointment of the Auditor and Site Background

Auditor	Mr Andrew Roy
Auditor term of appointment	17 October 2006 to 19 January 2013
Name of person requesting audit	Lee Miezis, Executive Director Forests and Parks, Department of Sustainability and Environment (DSE)
Relationship to premises/location	DSE (Forest and Parks Division) is responsible for the regulation and management of commercial timber harvesting activities conducted in Victoria's State Forests. This Harvesting Performance Audit is part of the Forest Audit Program developed by DSE.
Date of request	17/08/2011
Completion date of the audit	10/08/2012
Reason for Audit	An audit under the DSE Forest Audit Program 2011/2012 to assess compliance against criteria related to monitoring of annual harvest levels and compliance with the AO, TRPs, and WUPs for activities conducted during the 2009-10 and the 2010-11 harvesting seasons. This will include an audit of the Cumulative Harvest Limits in selected Prescribed Water Catchments and the Cumulative Harvest Limits in SMZs.
Description of activity to be audited	Harvesting Performance in all harvested areas in Victoria.
EPA Region	State wide
Site/premises name	All harvested State forest areas
Building/complex sub-unit No.	N/A
Street/Lot – Lower No.	N/A



Street/Lot – Upper No.	N/A
Street Name	N/A
Street type (road, court, etc.)	N/A
Street suffix (North, South etc.)	N/A
Suburb	N/A
Postcode	N/A
GIS Coordinate of Site centroid	
Longitude / Northing (GDA94)	N/A
Latitude / Easting (GDA94)	N/A
Members of support team	Vanessa McKenzie, Auditor Assistant Estrella Melero-Blanca, Spatial Scientist Melinda Mylek, Forester

## Findings

### Allocation Order

This audit reports on the percentage of the Period 2 allocation that VicForests harvested during year 1 (1 August 2009 – 30 June 2010) and year 2 (1 July 2010 – 30 June 2011) of this period. The audit outcomes indicate that during year 1 of Period 2 VicForests harvested 23% of the Ash Forest Stand and 7% of the Mixed Species Forest Stand allocation for the period. During year 2, VicForests harvested 19% of the Ash Forest Stand and 7% of the Mixed Species Forest Stand allocated for the period.

The Allocation Order element of this audit also reports on compliance with the spatial harvesting limits defined in the Working Forest Area dataset. The audit identified three logging history events outside the extents of the Working Forest Area. Following further investigation, DSE informed the Auditor that the Working Forest Area shapefile has not been updated to reflect changes to the recent zoning and that the harvesting is legal.

### Timber Release Plans

#### *Harvesting season 2009/10*

Overall the audit found that in the 2009/10 season, 99.99% of the total area of the State forest harvested by VicForests as within the spatial limits. Of the 478 coupes harvested by VicForests, the audit identified two coupes that were partially harvested outside of the approved TRP area.

The two coupes that were partially harvested outside of the approved area had a total area of 0.2 ha non-compliance. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risk to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### *Harvesting season 2010/11*

Overall the audit found in the 2010/11 season, 99.99% of the total area of the State forest harvested by VicForests as within the spatial limits. Of the 478 coupes harvested by VicForests, the audit identified five coupes that were partially harvested outside of the approved TRP area.



The five coupes that were partially harvested outside of the approved area had a total area of 0.3 ha non-compliance. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

### **VicForests Quality Assurance Plan – Logging History**

The new conditions of the Allocation Order indicate that VicForests must provide quality assured data on harvesting extent (logging history) to DSE by the 30 September each year. VicForests has a framework in place to ensure that the data submitted to DSE is quality assured. The processes included in this framework are described in the document 'Vicforests Quality Assurance Plan – Logging History'. This audit reports on compliance with those measures specified in VicForests Quality Assurance Plan which have not previously been assessed by DSE.

The audit found potential non-compliances in two areas of the VicForests Quality Assurance Plan.

It was identified that four logging history events included in the VicForests Coupe Information System (CIS) were tagged as having been mapped but were not included in the logging history shapefile provided by DSE. VicForests and DSE informed the Auditor that these coupes were mapped and provided to DSE. The absence of these coupes from the logging history spatial dataset provided by DSE is due to an error during DSE's transfer of data to their corporate database. Therefore this finding does not constitute a non-compliance with the VicForests Quality Assurance Plan.

It was also identified that three VicForests' logging history records included in the logging history dataset provided by DSE were located outside the spatial extents of the Working Forest Area shapefile. This finding was researched as part of the compliance with the Allocation Order element of this audit and detailed information about it can be found in the Allocation Order section of this report. DSE informed the Auditor that the Working Forest Area shapefile has not been updated to reflect the recent zoning changes and that the harvesting is legal. Therefore, this finding does not constitute a non-compliance with the VicForests Quality Assurance Plan.

### **Wood Utilisation Plans**

#### *Harvesting season 2009/10*

Overall the audit found in the 2009/10 season, 95% of the areas of the State forests harvested by DSE were within the spatial limits. Of the 86 coupes harvested by DSE, the audit identified 7 coupes that were partially harvested outside of WUP spatial limits. The seven coupes that were partially harvested outside of the approved WUP area had a total area of 9.4 ha of non-compliance. This area of non-compliance was calculated after applying spatial allowances. These allowances attempt to avoid the identification of non-compliances caused by errors in GPS readings of logging history events and on-screen digitising of WUP boundaries (more information about spatial allowances is included in section 3.3.3 of this audit report). All non-compliant coupes were harvested on General Management Zones. The silviculture types used in the 7 non-compliant coupes were 'thinning from below' and 'single tree harvesting', highlighting the non-sensitive nature of this harvesting. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risk to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review. The audit found that there was one whole coupe harvested outside the approved WUP area. This coupe was 60 ha. The coupe address is included in Schedule 1 of the Horsham WUP 200910. However, according to 'log\_season200910', this logging history polygon is located in the Portland FMA area. This non-compliance is due to an error in the logging history dataset. This coupe was harvested in the Horsham FMA but was wrongly mapped in the Portland area.





#### *Harvesting season 2010/11*

Overall the audit found in the 2010/11 season, 99.94% of the total area of State forest harvested by DSE as within the spatial limits. Of the 24 coupes harvested by DSE, the audit identified two coupes that were partially harvested outside of the spatial limits of the approved WUP area. The audit found that there were no coupes harvested totally outside the approved WUP area.

The two coupes that were partially harvested outside of the approved area had a total area of 0.96 ha non-compliance. This area of non-compliance was calculated after applying spatial allowances that attempt to avoid the identification of non-compliances caused by errors in GPS readings of logging history events and on-screen digitising of WUP boundaries (more information about spatial allowances included in section 3.3.3 of this audit). The two non-compliant coupes were harvested on General Management Zones. The silviculture types used in the 2 non-compliant coupes was 'thinning from below', highlighting the non-sensitive nature of this harvesting. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### **Harvesting Limits in Prescribed Water Supply Catchments**

This audit analysed compliance against the harvesting limits described in the Management Procedures for the following Prescribed Catchments:

- Yarra Tributaries: Armstrong Creek West, Cement Creek, McMahon's Creek and Starvation Creek;
- Betka River; and
- Learmonth Creek.

#### *Yarra Tributaries*

Harvesting in the Yarra Tributaries catchments complied with the harvest limits prescribed by Section 2.3.3 of the Management Procedures. Harvesting in the Yarra Tributaries is limited to a maximum yearly average of 55 ha of Ash forest and 23 ha of Mixed species forests. Calculated as a rolling average commencing in 2004/05, an average of 41 ha of Ash forests has been harvested and 2 ha of Mixed species forests have been harvested annually and therefore harvesting in the Yarra Tributaries is compliant with the limits established in the Management Procedures.

The Auditor also assessed the compliance of the individual Yarra Tributaries catchments against the limits established by the Management procedures. Schedule 6 of the Management Procedures states that a maximum of 30% of these catchments is to be harvested over a 10 year period and that only 1 of the 4 restricted access catchments in any one year. The results from this assessment are presented below:

#### Armstrong Creek

A total area of 109 ha or 3% of the total catchment area (4,187 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

#### Cement Creek

No harvesting activity recorded for this catchment in the last 10 years.



#### McMahons Creek

A total area of 129 ha or 3% of the total catchment area (4,426 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

#### Starvation Creek

A total area of 311 ha or 9% of the total catchment area (3,646 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of 247 ha of Mountain Ash forest and 64 ha of Mixed Species forest.

The audit findings indicate that during the harvesting season 2009/10 there was harvesting in Starvation Creek catchment and Armstrong Creek catchment. This non-compliance is due to a small portion (2 ha) of logging coupe 09/348/501/0003/200910/01 having been harvested beyond the limits of the adjoining catchments. VicForests investigated the nature of this non-compliance and informed the Auditor that it is due to inaccuracies in the mapping of the *LoggingHistory1999\_2011* and the *pWSC100* datasets. The *pWSC100* dataset is adequate for using at scales of 1:100,000 or smaller. It is not an accurate depiction of the catchment boundary when it is used for large scale mapping and therefore small areas of logging history occurring beyond the boundaries are likely to be due to mapping inaccuracies rather than to non-compliances.

Another factor influencing this potential non-compliance is the flat nature of the terrain in the non-compliant part of this coupe (the portion of the coupe harvested within the Starvation Creek catchment). This means that even if a small part of logging history event 09/348/501/0003/200910/01 was harvested in the Starvation Creek Catchment during the 2009/10 season, limited drainage in the harvested area would be likely to occur **into** this catchment. Therefore the Auditor considers that this non-compliance does not present an imminent environmental hazard or unacceptable risk to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### *Betka River Catchment*

Schedule 6 of the Management Procedures states that the annual harvest in this catchment should be limited to 120 ha (1% of the catchment).

The audit results indicate that the harvest limits have not been exceeded and therefore harvesting in this catchment is compliant with the Management Procedures.

#### *Learmonth Creek*

No harvesting activity in this catchment in the last 10 years.

#### **Harvest Limits in Special Management Zones**

The FAP Module 6 workbook for the Cumulative Harvest Limits in Special Management Zones outlines two directives:

1. Areas and volumes available for timber production within the FMP should not be exceeded.
2. Areas harvested should not exceed limits established for target species under the Action Statement.

There was total compliance with these directives.



It was established that eight out of twelve SMZs had prescribed limits within a FMP. All of these had a very low percentage of available SMZ harvested in the 10 years to 2010/11. However, it is acknowledged that a complete assessment of harvesting performance was not able to be made due to incomplete information in the FMPs. In most of the FMPs the extent of the SMZ available for harvest was not clearly stated. The harvest limits were also unclear for the FMPs that ranged across a number of FMAs.

It is recommended that the FMPs relate solely to the related FMA. If this is not possible or practicable, the SMZ area for each FMA should be clearly outlined and compared to the area of the SMZ that is available for harvest.

It was found that the Action Statements did not provide SMZ harvest limits, rather they offer guidance for management actions if that particular value was in the SMZ. Therefore, it was not possible to compare the harvesting limits to the Action Statements.

## Conclusions

A high level of compliance was achieved for the elements within the *FAP Module 6 Harvesting Performance*. There were 22 partial non-compliances and two non-compliances.

## Recommendations

This report has incorporated a number of recommendations where it was considered by the Auditor that the **audit process** could be improved.

### Allocation Order

- **Recommendation 1:** It is recommended that *Workbook 6A: Compliance with the Allocation Order of Module 6- Harvesting Performance* is updated to remove all thinning reporting requirements as specified in the new conditions of the Allocation Order;
- **Recommendation 2:** It is recommended that the new coupe layer to be produced by VicForests is used to calculate gross harvested area for auditing of compliance with the Allocation Order conditions;
- **Recommendation 3:** It is recommended that subsequent Module 6 audit reports recalculate the area harvested for each year in period 2 of the Allocation Order to capture the edits and additions to the log\_season layer that are required following the log\_season errors and omissions that are identified in this report.

### Wood Utilisation Plans

- **Recommendation 4:** It is recommended that the logging history shapefiles are quality assured to avoid duplications and inconsistencies, particularly the coupe address field, which was found to be inconsistent with the coupe address of the underlying WUP area for a significant number of records.

### Harvest Limits in Water Supply Catchments

- **Recommendation 5:** It is recommended that a more accurate depiction of water supply catchment boundaries is used in the auditing of harvesting in catchments with limits instead of *pWSC100*;
- **Recommendation 6:** It is recommended that a process for the selection of a sample of water supply catchments with harvesting limits to be audited is implemented;



- **Recommendation 7:** It is recommended that *Workbook 6C: Harvesting in Catchments* of *Module 6- Harvesting Performance* is updated to clarify the inclusion in the audit process of other catchments with limits other than Melbourne's water supply catchments;

#### **Harvest Limits in Special Management Zones**

- **Recommendation 8:** It is recommended that the FMPs relate solely to the related FMA. If this is not possible or practicable, the SMZ area for each FMA should be clearly outlined and compared to the area of the SMZ that is available for harvest;
- **Recommendation 9:** It was found that the Action Statements did not provide actual limits to harvest in an SMZ, rather they offer guidance for if that particular value was in the SMZ. Therefore, it was not possible to compare the harvesting limits to the Action Statements. It is recommended that either Action Statements are updated, or the workbook is changed to represent that available information;

#### **Data Management**

- **Recommendation 10:** It is recommended that the transfer of data supplied by VicForests into the DSE's corporate database is quality assured in order to avoid loss of information.



# 1. Introduction

## 1.1 Background

The Department of Sustainability and Environment (DSE) is the regulator of timber harvesting operations on public land in Victoria. Timber harvesting operations and associated activities conducted in State forest must be undertaken in accordance with the *Sustainable Forests (Timber) Act 2004*. This Act is the overarching legislative document for management of commercial harvesting in Victoria, and includes requirements that these operations comply with the *Code of Practice for Timber Production 2007* (the Code). The Code is the key regulatory instrument applicable to commercial timber harvesting in Victoria, and is developed under the *Conservation, Forests and Lands Act 1987*. The *Management Procedures for Timber Harvesting, Roding and Regeneration in Victoria's State Forests 2009* (the Management Procedures) provide additional guidance to DSE and VicForests in meeting requirements of the Code, as well as specifying environmental and operational requirements additional to the Code.

In accordance with the *Conservation, Forests and Lands Act 1987* and the Code, the State forests in Victoria are divided into Forest Management Areas (FMAs). For each FMA, a Forest Management Plan (FMP) has been prepared by DSE. The FMP divides the area of State forest into three management zones. Special Protection Zones (SPZ) are managed for conservation and timber harvested is excluded from these areas. Special Management Zones (SMZ) are managed for specific values, including rare or threatened flora and fauna, habitat and breeding sites, wetlands and cultural heritage values, and the protection of landscape values and visual amenity. Harvesting is allowed within SMZ under certain conditions such as harvest area limits and temporal limits. General Management Zones (GMZ) caters for a range of uses with timber harvesting as a high priority.

The management zones and FMPs are developed by DSE in consultation with the community and other relevant stakeholders. In addition to responsibilities for the regulation and management of commercial forestry activities conducted in State forests, the DSE Forests and Parks Division is responsible for managing agreements in place between VicForests and the Minister for Environment and Climate Change relating to timber harvesting.

After a review of the previous forest auditing program administered by the Environment Protection Authority (EPA) by the Minister for Environment and Climate Change, the Forest Audit Program (FAP) was developed by DSE in 2009-10. It uses EPA appointed environmental auditors to assist in monitoring compliance with the environmental legislation and regulations put in place to manage commercial timber harvesting operations in Victoria's State forests.

A summary of the compliance elements in place for DSE and VicForests is described below.

### 1.1.1 DSE Forestry

Until December 2011 DSE managed the forestry operations in State forests across Victoria, apart from most of the harvesting operations in East Gippsland, Gippsland, Central and North East FMAs (managed by VicForests). In the areas managed by DSE, three yearly Wood Utilisation Plans (WUPs) were developed annually to provide a list of areas scheduled to be harvested, associated road requirements, details of the locations and approximate timing of timber harvesting, and the details of any associated access roads. The WUPs were prepared in accordance with the relevant FMP and the Code.



### 1.1.2 VicForests

In 2004 the Victorian Government introduced a framework for timber allocation to VicForests. Developed and managed by DSE, the *Allocation Order to VicForests* (Allocation Order (AO)) outlines the areas available for timber harvesting and allocated to VicForests for the purpose of harvest over a 15 year period. VicForests develops a Timber Release Plan (TRP) in accordance with the *Sustainable Forests (Timber) Act 2004*, and is to be consistent with the relevant FMP, the AO, and the Code. TRPs detail the location, nature and approximate timing of the timber harvesting by VicForests, including the location of associated access roads.

## 1.2 Scope of this report

DSE has commissioned GHD to undertake an audit under the DSE Forest Audit Program 2011/2012. The aim of this audit is to assess compliance against criteria (*Module 6 Harvesting Performance*) related to monitoring of annual harvest levels and compliance with Wood Utilisation Plans (DSE), the Allocation Order (VicForests), Timber Release Plans (VicForests), harvest limits in Melbourne's Water Catchments (DSE and VicForests), and harvest limits in Special Management Zones (DSE and VicForests) for activities conducted during the 2009-10 and the 2010-11 harvest seasons.

The Audit Scope is outlined in Chapter 2 of this report. The methods and findings are in Chapter 3 and 4 consecutively, and conclusions are in Chapter 5.

Table 1 summarises the appointment details of the Auditor.

**Table 1 Detail on the Appointment of the Auditor and Site Background**

Auditor	Mr Andrew Roy
Auditor term of appointment	17 October 2006 to 19 January 2013
Name of person requesting audit	Lee Miezis, Executive Director Forests and Parks, Department of Sustainability and Environment (DSE)
Relationship to premises/location	DSE (Forest and Parks Division) is responsible for the regulation and management of commercial timber harvesting activities conducted in Victoria's State Forests. This Harvesting Performance Audit is part of the Forest Audit Program developed by DSE.
Date of request	17/08/2011
Completion date of the audit	30/04/2012
Reason for Audit	An audit under the DSE Forest Audit Program 2011/2012 to assess compliance against criteria related to monitoring of annual harvest levels and compliance with the AO, TRPs, and WUPs for activities conducted during the 2009-10 and the 2010-11 harvesting seasons. This will include an audit of the Cumulative Harvest Limits in selected Prescribed Water Catchments and the Cumulative Harvest Limits in SMZs.
Description of activity to be audited	Harvesting Performance in all harvested areas in Victoria.
EPA Region	State wide



Site/premises name	All harvested State forest areas
Building/complex sub-unit No.	N/A
Street/Lot – Lower No.	N/A
Street/Lot – Upper No.	N/A
Street Name	N/A
Street type (road, court, etc.)	N/A
Street suffix (North, South etc.)	N/A
Suburb	N/A
Postcode	N/A
GIS Coordinate of Site centroid	
Longitude / Northing (GDA94)	N/A
Latitude / Easting (GDA94)	N/A
Members of support team	Vanessa McKenzie, Auditor Assistant Estrella Melero-Blanca, Spatial Scientist Melinda Mylek, Forester



## 2. Audit Scope

### 2.1 Objectives and scope of audit

The scope for this environmental audit has been completed in accordance with the environmental auditor guidelines issued by the Environment Protection Authority (EPA) for the preparation of an environmental audit in relation to the risk of any possible harm or detriment to the environment (EPA Publication 952.2, August 2007). Definition of the scope of the environmental audit is an important step in the process for undertaking a Statutory Environmental Audit conducted in accordance with Part IXD of the *Environment Protection Act 1970*.

EPA Publication 952 “Environmental Auditor Guidelines for the Preparation of Environmental Audit Reports on Risk to the Environment” (EPA Publication 952) provides guidance to environmental auditors undertaking an environmental audit pursuant to section 53V of then *Environment Protection Act 1970*. The Auditor has referred to the information contained in this guideline to address the requirements for the scope of the audit.

This audit was undertaken in accordance with the scope specified in the two procedural modules of the FAP: *Module 1 Overview* (Appendix A) and *Module 2 Audit Process* (Appendix B). The scope of the audit is outlined in FAP *Module 6 Harvesting Performance* for auditing of operational performance of timber harvesting operations against spatial limits. *FAP Module 6 Harvesting Performance* and associated workbooks are attached in Appendix C and Appendix D. The workbooks define the ‘Audit Criteria’ for which compliance is measured.

The objective of the audit 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 relevant legislation, regulations and government policies.

### 2.2 Segment and elements audited

The geographical extent of the segment of the environment to which the activity may pose a risk is the area within all relevant harvested areas in Victoria.

The environmental audit applies to harvesting activities undertaken between 1 July 2009 and 30 June 2010, and 1 July 2010 and 30 June 2011.

The elements of the environment (as defined in the *Environment Protection Act 1970*, as set out in FAP Module 1) considered in undertaking the audit are:

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





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

- Compliance with the Allocation Order (AO);
- Compliance with the Timber Release Plans (TRPs);
- Compliance with Wood Utilisation Plans (WUPs);
- Cumulative harvest limits in water catchments; and
- Cumulative harvest limits in Special Management Zones (SMZ).

### **2.2.1 Elements excluded from the audit**

Section 2.2.1 of *FAP Module 1 Overview* describes the elements that are defined as being beyond the scope of the FAP. These are:

- 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;
- Roding 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 plantation management planning processes, 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, roding, 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, with the noted exception of post-harvest burning undertaken in State forests.

Specifically excluded from the scope of *FAP Module 6 Harvesting Performance* is:

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



## 2.3 Beneficial uses

The actual and potential beneficial uses of the segment of the environment need to be identified before any risk of possible harm or detriment to them can be assessed.

The beneficial uses to be protected for certain segments of the environment are declared in State environment protection policies (SEPP).

In the case of this audit, the following beneficial uses are considered broadly relevant to the FAP (as set out in *FAP Module 1 Overview*):

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

## 2.4 Audit criteria

The audit criteria will seek to ensure that the objectives of the audit will be met, and have been derived from the *FAP Module 6 Harvesting Performance* and associated workbooks:

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

The workbooks address the following Compliance Element groups, as listed under Section 2 of *FAP Module 6 Harvesting Performance*:

- Compliance with Wood Utilisation Plans (WUPs);
- Compliance with 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.

The workbooks contain audit criteria identified from the Code of Practice for Timber Production 2007.



## **2.5 Audit support team**

The audit was led by:

- Andrew Roy - EPA appointed Environmental Auditor (Natural Resources), GHD.

The Auditor support team was:

- Vanessa McKenzie – Auditor Assistant, GHD;
- Estrella Melero-Blanca – Spatial Scientist, GHD; and
- Melinda Mylek – Forester, GHD.

The specific roles of each of the audit team members within the scope of the current audit are described below. Detailed information on the roles and responsibilities of the Auditor and audit team, to be followed during this audit, is available in Section 2.4 of *FAP Module 2 Audit Process*.

### **Andrew Roy**

- Andrew was the Lead Auditor for the Forest Audits.
- He oversaw the audit process, including liaison with DSE and stakeholders, and was responsible for the development of the audit plan and preparing the audit report.

### **Vanessa McKenzie**

- Vanessa provided support to the audit team, including preparation for the audit and project management.

### **Estrella Melero-Blanca**

- Estrella was the spatial Scientist for the audit and was responsible for the audit components of harvesting performance compliance elements.

### **Melinda Mylek**

- Melinda provided support to the audit team as required.



### 3. Audit Approach

The audit approach has been developed based on information of the key audit steps and deliverables set out in Modules 1, 2 and 6 of the Forest Audit Program Toolbox.

The FAP *Module 6 Harvesting Performance* is supported by audit workbooks for each compliance element. The workbooks outline the audit criteria, associated legislative prescriptions, audit protocol guides and audit methods. Workbooks provided in Module 6 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.

GHD's methods are set out in detail below.

#### 3.1 Audit target selection

A specific target selection process is not required under *Module 6 Harvesting Performance*. The audit was carried out at a strategic level and all of the relevant areas that were harvested in the 2009-2010 and 2010-2011 period were audited.

The exception to this was the audit of the cumulative harvest limits in the selected Prescribed Water Supply Catchments (PWSC). The catchments to be audited were supplied by DSE. This audit will analyse the compliance against the harvesting limits described in the Management Procedures for the following Catchments:

- Betka River;
- Yarra Tributaries: Armstrong Creek West, Cement Creek, McMahon's Creek and Starvation Creek; and
- Learmonth Creek.

#### 3.2 Sourcing relevant information

The Auditor obtained available GIS data from DSE for both DSE and VicForests managed FMAs. Further information was collected through meetings and email correspondence with the DSE Regulation and Compliance Unit. There was open communication with DSE throughout the audit process.



### 3.3 Desktop assessment

The desktop assessment involved an assessment of compliance against criteria related to monitoring of annual harvest levels and compliance with the Allocation Order (AO), Timber Release Plans (TRPs) and Wood Utilisation Plans (WUPs) for activities conducted during the 2009-10 and the 2010-11 harvesting seasons, using the outputs of the spatial analysis. This included an audit of the Cumulative Harvest Limits in the selected PWSCs and the Cumulative Harvest Limits in Special Management Zones (as outlined in *Module 6 Harvesting Performance*).

#### 3.3.1 Data review

Prior to the spatial analysis of data provided by DSE, a data review was carried out. This process tested the data validity and allowed for any anomalies to be discovered and discussed with DSE before undertaking the spatial relationship queries for the compliance elements. The data review for each compliance element is discussed in more detail in Chapter 4 of this report.

#### 3.3.2 GIS analysis

The Geographic Information System (GIS) analysis for this harvesting performance audit involved a comparison of the approved spatial harvest limits and the actual harvesting boundaries of the relevant coupes. A series of spatial relationship queries was undertaken on the spatial data supplied by DSE in order to question each of the audit criteria as outlined in *FAP Module 6 Harvesting Performance*.

DSE supplied the spatial data relevant to this audit in shapefile format which is ESRI's vector GIS file format. Therefore, ESRI's ArcMap10 was selected as the software used to perform GIS analysis to assess harvesting compliance.

The audit involved the use of a wide range of GIS analysis tools, including but not limited to: Merging, dissolving, intersecting, buffering and clipping logging history polygons and prescribed harvesting areas. The audit also used ArcMap to calculate harvest and non-compliance areas and to export output datasets in tabular form to be used in Microsoft Access for further quantitative and qualitative analysis.

The *Management Procedures for Timber Harvesting, Roading and Regeneration in Victoria's State Forests 2009* (the Management Procedures) provides guidance to DSE and VicForests in meeting requirements of the Code, as well as specifying environmental and operational requirements additional to the Code. The objective of the Management Procedures is to standardise the management of timber harvesting operations and associated activities in all Victorian State forests. The Management Procedures include the following instructions that are relevant to the GIS spatial analysis of harvesting compliance.

#### **VicForests operations:**

- *Section 2.1.6. Identification of Coupe Boundaries and Exclusion Areas*
- *Section 2.1.3.3 Gross Coupe Area*
- *Section 2.2.4. TRP compliance auditing*
- *Section 2.3.3 Harvesting in Water Supply Catchments*



#### **DSE operations:**

- *Section 3.1.3. Logging History*
- *Section 3.2.2. Identification of Coupe Boundaries and Exclusion Areas*
- *Section 3.2.4 Amendments to the Forest Management Zoning Scheme*
- *Schedule 6: Water Supply Catchments*

#### **3.3.3 Mapping accuracy and GPS precision**

There are limitations to the accuracy of the spatial datasets used in this audit. A series of spatial allowances was applied in order to remove non-compliances due solely to mapping errors.

The Management Procedures allow for mapping errors in the WUP (DSE) and the TRP (VicForests) boundaries by prescribing allowable movement of coupe boundaries. The WUP and TRP datasets are digitised based on mapped data such as roads, contours and land tenure boundaries and therefore their accuracy is limited by the accuracy of those layers. The allowances for DSE and VicForests operations differ and are described below.

Section 2.1.6 of the Management Procedures describes allowances in the TRP (VicForests) boundaries and refers to situations where a 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). In these cases, 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.

Section 3.2.2 of the Management Procedures describes allowances in WUP (DSE) boundaries and refers to situations where the mapped coupe boundary is a physical feature that is not readily identifiable in the field or where the mapped coupe boundary relates to a modelled value (e.g. old growth forest or a non-descriptive EVC). In these cases, the field location of the coupe boundary must be located using a Global Positioning Unit (GPS) and must be marked in the field.

In order to standardise assessments of the WUP and TRP compliance elements and to allow for mapping errors, the Auditor applied the following criteria:

- The WUP and TRP boundary shape files will be buffered by 50 metres in order to allow for differences between the mapped coupe boundary and the coupe boundary identified in the field.

The logging history is mapped on the ground using GPS devices. The audit will also allow for GPS errors. The accuracy of a GPS can vary depending on several factors such as GPU unit specifications, satellite positions, atmospheric conditions and natural barriers to the signal. This varying level of accuracy may result in mapping errors which do not represent the actual harvesting performance. These errors may be misinterpreted as harvesting that has occurred outside the approved coupe areas. To avoid this, the Auditor applied the following criteria:

- An error of +/- 10 m will be applied as a GPS standard error. This is based on the accuracy of standard handheld GPS. The logging history shape file will be buffered by -10 m in order to allow for GPS inaccuracies.

### **3.4 Environmental impact assessment**

The Environmental Impact Assessment Tool does not relate to the *FAP Module 6 Harvesting Performance*.



### **3.5 DSE stakeholder consultation**

No liaison or consultation with stakeholders is required for the FAP *Module 6 Harvesting Performance*.

### **3.6 Reporting audit findings**

The audit findings and the draft report are consistent with the requirements of *Environment Protection Act 1970* and *EPA Publication No 952.2 (2007) Environmental Auditor Guidelines for Preparation of Environmental Audit Reports on Risk to the Environment*. The report documents positive and negative findings, and all non-compliances detected. Evidence was used to support audit findings in the audit report.

Audit conclusions capture the nature and extent of any harm, or risk of possible harm, to beneficial uses of any segment of the environment, consistent with the *Environment Protection Act, 1970*.

Non-compliances will be reviewed by the auditee prior to finalisation of the draft report to make sure all relevant information has been reviewed.



## 4. Audit Findings

A summary of overall compliance is provided in Section 4.1. This is followed by detailed results of the audit process for the compliance elements.

### 4.1 Summary of overall compliance

#### 4.1.1 Allocation order

This audit reports on the percentage of the Period 2 allocation that VicForests harvested during year 1 (1 August 2009 – 30 June 2010) and year 2 (1 July 2010 – 30 June 2011) of this period. The audit outcomes indicate that during year 1 of Period 2 VicForests harvested 23% of the Ash Forest Stand and 7% of the Mixed Species Forest Stand allocation for the period. During year 2, VicForests harvested 19% of the Ash Forest Stand and 7% of the Mixed Species Forest Stand allocated for the period.

The logging history dataset provided for this audit contains logging history records starting from 1 July 2009. Logging history recorded as having started between 1 and 31 of July 2009 has been attributed to Period 1 and reported separately in the tables provided in this audit. Period 1 of the Allocation Order has already been finalised and assessed in the Monitoring Annual Harvesting Performance (MAHP) in Victoria's State Forests 2008-09 report. In the 2008-09 MAHP report Period 1 was tallied from 1 July 2004 to 30 June 2009 when in fact it should have been tallied from 1 August 2004 to 31 July 2009.

The Allocation Order element of this audit also reports on compliance with the spatial harvesting limits defined in the Working Forest Area dataset. The audit identified three logging history events outside the extents of the Working Forest Area. Following further investigation, the DSE informed the Auditor that the Working Forest Area shapefile has not been updated to reflect changes to the recent zoning changes and that the harvesting is legal.

#### 4.1.2 Timber Release Plans

##### *Harvesting season 2009/10*

Overall the audit found in the 2009/10 season, 99.99% of the total area of State forest harvested by VicForests as within the spatial limits. Of the 478 coupes harvested by VicForests, the audit identified two coupes that were partially harvested outside of the approved TRP area. The harvest areas included in the TRP were not exceeded during the reporting year.

The two coupes that were partially harvested outside of the approved TRP had a total area of 0.2 ha non-compliance. This area of non-compliance was calculated after applying spatial allowances that attempt to avoid the identification of non-compliances caused by errors in GPS readings of logging history events or on-screen digitising of TRP boundaries (more information about spatial allowances included in Section 3.3.3 of this audit). The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.





#### *Harvesting season 2010/11*

Overall the audit found in the 2010/11 season, 99.99% of the areas of the State forests harvested by VicForests were within the spatial limits. Of the 478 coupes harvested by VicForests, the audit identified five coupes that were partially harvested outside of the approved TRP area. The harvest areas included in the TRP were not exceeded during the reporting year.

The five coupes that were partially harvested outside of the approved TRP had a total area of 0.3 ha non-compliance. This area of non-compliance was calculated after applying spatial allowances that attempt to avoid the identification of non-compliances caused by errors in GPS readings of logging history events or on-screen digitising of TRP boundaries (more information about spatial allowances included in Section 3.3.3 of this audit). The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### **4.1.3 VicForests Quality Assurance plan – logging history**

The audit found potential non-compliances in two sections of the VicForests Quality Assurance Plan. It was found that four logging history records included in the VicForests Coupe Information System (CIS) and identified as having been mapped were not included in the logging history shapefile provided by DSE. VicForests and DSE informed the Auditor that these coupes were mapped by VicForests and provided to DSE. The absence of these coupes from the logging history spatial dataset provided by DSE is due to an error during DSE's transfer of data to their corporate database. Therefore this finding does not constitute a non-compliance with the VicForests Quality Assurance Plan.

The audit also identified three logging history records in the logging history dataset which were located outside the spatial extents of the Working Forest Area shapefile. This finding was researched as part of the compliance with the Allocation Order element of this audit and detailed information about it can be found in the Allocation Order section of this report. DSE informed the Auditor that the Working Forest Area shapefile has not been updated to reflect the recent zoning changes and that the harvesting is legal. Therefore, this finding does not constitute a non-compliance with the VicForests Quality Assurance Plan.

#### **4.1.4 Wood utilisation plans**

##### *Harvesting season 2009/10*

Overall the audit found in the 2009/10 season, 95% of the total area of State forest harvested by DSE as within the spatial limits. Of the 86 coupes harvested by DSE, the audit identified seven coupes that were partially harvested outside the spatial limits of the approved WUP area. The seven coupes that were partially harvested out of the approved area had a total area of 9.4 ha of non-compliance. All non-compliant coupes were harvested on General Management Zones. This area of non-compliance was calculated after applying spatial allowances that attempt to avoid identification of non-compliances caused by errors in GPS readings of logging history events or on-screen digitising of WUP boundaries (more information about spatial allowances is included in Section 3.3.3 of this audit report). The silviculture types used in the seven non-compliant coupes were 'thinning from below' and 'single tree harvesting', highlighting the non-sensitive nature of this harvesting. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.



The audit found that there was one coupe harvested outside the approved WUP area. This coupe was 60 ha. This coupe is included in Schedule 1 of the Horsham WUP 200910. However, according to 'log\_season200910', this logging history polygon is located in the Portland FMA area. This non-compliance is likely to be due to an error in the WUP shapefile.

#### *Harvesting season 2010/11*

Overall the audit found in the 2010/11 season, 99.94% of the total area of State forest harvested by DSE as within the spatial limits. Of the 24 coupes harvested by DSE, the audit identified two coupes that were partially harvested outside of the approved WUP area. The audit found that there were no coupes harvested totally outside the extents of the approved WUP area.

The two coupes that were partially harvested out of the approved area had a total area of 0.96 ha of non-compliance. This area of non-compliance was calculated after applying spatial allowances that attempt to avoid non-compliances caused by errors in GPS readings of logging history events and on-screen digitising of WUP boundaries (more information about spatial allowances is included in Section 3.3.3 of this audit report). The two non-compliant coupes were harvested on General Management Zones. The silviculture types used in the two non-compliant coupes was 'thinning from below', highlighting the non-sensitive nature of this harvesting. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### **4.1.5 Harvesting limits in water supply catchments**

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). Schedule 6 of the Management Procedures provides a list of water supply catchments and associated requirements.

This audit analysed the compliance against the harvesting limits described in the Management Procedures for the following Catchments:

- Yarra Tributaries: Armstrong Creek West, Cement Creek, McMahons Creek and Starvation Creek;
- Betka River; and
- Learmonth Creek.

#### **Yarra Tributaries**

The harvesting in the Yarra Tributaries catchment complied with the harvest limits prescribed by Section 2.3.3 of the Management Procedures. This Section limits the harvesting in the Yarra Tributaries to a maximum yearly average of 55 ha of Ash forest and 23 ha of Mixed species forests. Calculated as a rolling average commencing in 2004/05, an average of 41 ha of Ash forests has been harvested and 2 ha of Mixed species forests have been harvested annually.

The Auditor also assessed the compliance of the individual Yarra Tributary catchments against the limits established by the Management procedures. Schedule 6 of the Management Procedures states that a maximum of 30% of these catchments is to be harvested over a 10 year period and that only one of the four restricted access catchments in any one year.



#### *Armstrong Creek*

A total area of 109 ha or 3% of the total catchment area (4,187 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

#### *Cement Creek*

No harvesting activity in this catchment in the last 10 years.

#### *McMahons Creek*

A total area of 129 ha or 3% of the total catchment area (4,426 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

#### *Starvation Creek*

A total area of 311 ha or 9% of the total catchment area (3,646 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of 247 ha of Mountain Ash forest and 64 ha of Mixed Species forest.

The audit findings indicate that during the harvesting season 2009/10 there was harvesting in Starvation Creek catchment and Armstrong Creek catchment. This non-compliance is due to a small portion (2 ha) of logging coupe 09/348/501/0003/200910/01 having been harvested beyond the limits of the adjoining catchments. VicForests investigated the nature of this non-compliance and informed the Auditor that it is due to inaccuracies in the mapping of the *LoggingHistory1999\_2011* and the *pWSC100* datasets. The *pWSC100* dataset is adequate for using at scales of 1:100,000 or smaller. It is not an accurate depiction of the catchment boundary when it is used for large scale mapping and therefore small areas of logging history occurring beyond the boundaries are likely to be due to mapping inaccuracies rather than to non-compliances.

Another factor influencing this potential non-compliance is the flat nature of the terrain in the non-compliant part of this coupe (the portion of the coupe harvested within the Starvation Creek catchment). This means that even if a small part of logging history event 09/348/501/0003/200910/01 was harvested in the Starvation Creek Catchment during the 2009/10 season, limited drainage in the harvested area would be likely to occur **into** this catchment. Therefore the Auditor considers that this non-compliance does not present an imminent environmental hazard or unacceptable risk to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### *Betka River Catchment*

Schedule 6 of the Management Procedures states that the annual harvest in this catchment should be limited to 120 ha (1% of the catchment).

The audit results indicate that the harvest limits have not been exceeded and therefore harvesting in this catchment is compliant with the Management Procedures.

#### **Learmonth Creek**

No harvesting activity in this catchment in the last 10 years.



#### **4.1.6 Harvest Limits in Special Management Zones**

The FAP Module 6 workbook for the Cumulative Harvest Limits in Special Management Zones outlines two directives:

1. Areas and volumes available for timber production within the FMP should not be exceeded.
2. Areas harvested should not exceed limits established for target species under the Action Statement.

There was total compliance with these directives.

It was established that eight out of twelve had prescribed limits within an FMP. All of these had a very low percentage of available SMZ harvested in 10 years to 2010/11.

However, it is acknowledged that a complete assessment of harvesting performance was not able to be made due to incomplete information in the FMPs. In most of the FMPs it was not clearly stated the extent of the SMZ that was available for harvest. The harvest limits were also unclear for the FMPs that ranged across a number of FMAs.

It is recommended that the FMPs relate solely to the related FMA. If this is not possible or practicable, the SMZ area for each FMA should be clearly outlined and compared to the area of the SMZ that is available for harvest.

It was found that the Action Statements did not provide actual limits to harvest in an SMZ, rather they offer guidance for if that particular value was in the SMZ. Therefore, it was not possible to compare the harvesting limits to the Action Statements.

#### **4.2 Allocation Order Compliance**

The Allocation Order allocates areas of State forest to VicForests for the purposes of harvesting and selling timber resources. The Allocation Order is for a period of 15 years (divided into three five-year periods) and may be extended.

VicForests is allocated timber in ash and mixed species forest stands. The Allocation Order sets the gross area (in hectares) of each forest stand to which VicForests has access for the purpose of harvesting and selling timber resources over a 15-year period.

##### **4.2.1 Audit criteria**

The Allocation Order is made under section 13 of the *Sustainable Forests (Timber) Act 2004*. The harvest limits used by the Auditor incorporate the 2007 amendment, the 2010 amendment and the 2010 further amendment to the Allocation to VicForests Order 2004. The Allocation Order establishes quantitative harvesting limits which define the total area available for harvesting by forest stand in each 5 year period. The Allocation Order also establishes limits on the location of harvesting by requiring that any harvesting occurs within the spatial limits of the Working Forest Area. As a result of the five year review completed by the Minister for Environment and Climate Change on 31 July 2009 a new five year period (Period 4) was added to the Allocation Order.

This audit assesses compliance against the harvesting limits established by the Allocation Order for year 1 and year 2 of Period 2 of the current 20 year time frame. Period 2 started on 1 August 2009 and will finish on 31 July 2014.



This audit will present the total gross area harvested by VicForests by forest stand type in year 1 (01/08/2009-30/06/2010) and year 2 (01/07/2010-30/06/2011) of Period 2. The audit will also assess whether the areas harvested by VicForests in year 1 and year 2 of Period 2 were within the allocated spatial extents established by the Working Forest Area dataset. The logging history datasets supplied by the DSE included logging history events with starting dates ranging from 1 July 2009 to 30 June 2011. Logging from harvesting events that commenced between the 1<sup>st</sup> and the 30<sup>th</sup> of July 2009 will be accounted as having been logged during Period 1.

**Table 2 Gross area that VicForests can harvest in each five year period of the Allocation Order. Source: VicForests allocation of state forest factsheet September 2010**

Forest stand type	Nominal gross area available for timber harvesting in each five-year period (ha)	Gross area (ha)		
		Period 2	Period 3	Period 4
Ash	14,400	17,400	13,400	12,400
Mixed species	71,800	71,800	71,800	71,800

The audit process incorporates the following criteria taken from the new conditions of the Allocation Order:

- VicForests will only harvest and sell timber resources from State forests in Eastern Victoria (East of the Hume Highway);
- As a transitional arrangement pending agreement and approval of a Working Forest Plan, VicForests is permitted to tend forest stands, including the undertaking of thinning operations in accordance with its Thinning Strategy, to produce high value timber resources for the future in line with Victoria's sustainable forest management framework. Therefore, thinning from above and thinning from below operations will be excluded from this audit;
- In each 5-year period, the total area (the gross area) of timber harvesting coupes and the estimated net area of roadline coupes on an approved Timber Release Plan must not exceed the available area for timber harvesting for that period;
- In each 5-year period, timber harvesting in any part of a timber harvesting coupe on an approved Timber Release Plan will result in the total area (the gross area) of that coupe being attributed to the available area for timber harvesting for that period. Where timber harvesting occurs in a coupe over more than one period, the total area (the gross area) of the coupe will be attributed to the available area for timber harvesting in the first period that timber harvesting occurs only. The new conditions of the Allocation Order apply from Period 2 (starting on 1 August 2009). The area harvested during Period 1 will be calculated as net area.
- In period 2, as a transitional arrangement pending agreement and approval of a Working Forest Plan, the actual area (the net area) harvested in a fire salvage coupe will be attributed to the available area for timber harvesting for that period;
- In each 5-year period, the actual area (the net area) of roadline operations in a roadline coupe will be attributed to the available area for timber harvesting for that period; and



- VicForests must divide the total available area of the forests stands to which it has access into contiguous harvesting units (coupes) and assign each harvesting unit a coupe number by 30 June 2012.

#### **4.2.2 The forest stands described in the Allocation to VicForests (Further Amendment) Order 2010 are the Working Forest Area. Data review**

The following spatial datasets were supplied by DSE and were used by the Auditor to assess compliance against the Allocation Order harvesting limits:

- *Logseason\_200910.shp*: Includes all logging history polygons for harvesting that occurred between 01/07/2009 and 30/06/2010. The audit is based on coupes harvested by VicForests and classified harvesting into Period 1 (01/07/2009-31/07/2009) and year 1 of Period 2 (01/08/2009-30/06/2010);
- *Logseason\_201011.shp*: Includes all logging history polygons for harvesting that occurred between 01/07/2010 and 30/06/2011. The audit is based on coupes harvested by VicForests. Harvesting in this period is assessed as harvesting that occurred in year 2 of Period 2;
- *trp\_current.shp*. Gross extent and location of coupes on an approved Timber Release Plan for the period 19 August 2010 onward;
- *trp\_20100107.shp*. Extent and location of coupes on an approved Timber Release Plan for the period: 07/01/2010 to 19/08/2010; and
- *wfa\_easternVic.shp*: Spatial dataset containing the spatial extents of the working forest area for Eastern Victoria.

The logging history dataset provided by DSE includes silviculture information which allows the Auditor to apply the conditions established in the Allocation Order for the calculation of total harvested area. The following silviculture systems are found in the coupes harvested by VF for the study period:

- Clearfelling;
- Clearfelling salvage;
- Group (or Gap) Selection;
- Road Alignment – construction;
- Road Alignment – Improvement;
- Seed Tree (includes retained overwood);
- Thinning from below;
- Unlogged area within logged coupe; and
- Unknown.



For the purpose of assessing compliance with the Allocation Order, for Period 2, harvesting in any part of a seed tree coupe, a clearfelling coupe, a group selection coupe, an unlogged area within a logged coupe or an unknown silviculture coupe results in the gross area of that coupe being attributed to the harvested area for that period. The TRP boundaries included in the TRP shapefiles provided by DSE are used by the Auditor to calculate the coupe gross area. VicForests is in the process of creating a coupe layer which will divide the total available area of the forests stands to which it has access into contiguous harvesting units (coupes) and will assign each harvesting unit a coupe number. The area of the coupes in this new layer will be used in future audits as the gross harvested area. Consequently the total harvested area for year 1 and 2 will have to be revised in future audits in order to be consistent with the new coupe layer. The area of coupes where harvesting has occurred over more than one period is attributed as having been harvested in the period when harvesting commenced only. Consequently, harvesting that commenced between 01/07/2009 and 31/07/2009 was attributed to Period 1 only.

The new conditions of the Allocation order indicate that the area harvested in fire salvage and roadline coupes are to be calculated as net harvested area. Consequently the total area harvested in clearfelling salvage and road alignment coupes is calculated as the actual harvested area derived from the logging history dataset.

The area harvested during Period 1 is calculated as net area for all silviculture types, due to Period 1 being prior to the application of the new conditions of the Allocation Order.

As indicated in the Allocation Order, thinning from below is excluded from this audit.

The Auditor assessed compliance with the spatial harvesting limits established by the Allocation Order by identifying whether any harvesting occurred outside the spatial boundaries of the Working Forest Area shapefile.

#### **4.2.3 Level of compliance with the quantitative harvesting limits**

At the end of year 2 of period 2 VicForests was compliant with the harvesting limits established by the Allocation Order for Period 2; having harvested 42% of the ash forest area and 14% of the mixed species forest area allocated for the five year-period.

Table 3 shows the total area harvested by VicForests by forest stand for year 1 (1 August 2009 – 31 July 2010) and year 2 (1 July 2010 to 30 June 2011) of Period 2. Harvesting that started between the 1 and the 31 July 2009 was included in the logging history datasets provided to the Auditor but following directions from the new Allocation Order is reported as harvesting that occurred in Period 1.



**Table 3 VicForests Harvesting levels compared to the Allocation Order**

Allocation Order Forest Stand	Harvest Season		Period 2 Allocation Order				
	Period 1	Period 2					Proportion of Period 2 Allocation Harvested by Season
		Year 1	Year 2	Total Allocated Area (ha)	Area Remaining (July 2011)	Year 1	Year 2
	01/07/09 - 31/07/09	01/08/09-30/06/10	01/07/10-30/06/11			01/08/09-30/06/10	01/07/10-30/06/11
Ash	217	3,941	3,376	17,400	10,083	23%	19%
Mixed species	478	4,527	5,082	71,800	62,191	7%	7%

At the end of year 2 of period 2, VicForests had harvested 42% of the ash forest area and 14% of the mixed species forest area allocated for the five year-period. An explanation about the methodology applied for the audit of this compliance element is available in Appendix G of this report.

#### 4.2.4 Level of compliance with the spatial harvesting limits

The spatial overlap between the logging history shapefiles and the Working Forest Area dataset highlighted that three logging history events took place outside the spatial extents of the WFA boundaries. The three logging history records are contiguous and overlay logging coupe 287-507-0001 of the Alexandra logging district. This coupe is included in TRP 2011-2016. The details of the three logging history records outside the extents of *wfa\_easternVic.shp* are included in Table 4.

**Table 4 Logging history records outside the spatial extents of *wfa\_easternVic.shp***

FMA	Coupe Address	Season	Coupe Area (ha)	LOGHISTID	Silviculture System	Coupe Name
Central	08/287/507/0001	200910	10.3	08/287/507/0001/200910/01	Seed Tree	Archibald
Central	08/287/507/0001	201011	2.5	08/287/507/0001/201011/02	Clearfelling Salvage	Archibald
Central	08/287/507/0001	201011	1.1	08/287/507/0001/201011/01	Clearfelling Salvage	Archibald

Appendix H of this audit report includes detailed maps showing the location and extents of these coupes.

DSE investigated the source of this potential non-compliance and confirmed that the Working Forest Area dataset has not been updated to reflect recent zoning changes and that the harvesting is legal.





### 4.3 Timber Release Plans

In 2004 the Victorian Government introduced a framework for timber allocation to VicForests. Developed, and managed by DSE at the time, the *Allocation Order to VicForests* (Allocation Order (AO)) outlines the areas available for timber harvesting and allocated to VicForests for the purpose of harvest over a 15 year period. VicForests develops a Timber Release Plan (TRP) in accordance with the *Sustainable Forests (Timber) Act 2004*, and is to be consistent with the relevant FMP, the AO, and the Code. TRPs detail the location, nature and approximate timing of the timber harvesting by VicForests, including the location of associated access roads.

#### 4.3.1 Audit criteria

An objective of the audit is to assess spatial compliance with the conditions specified in TRPs. Harvesting exceeding the extent of the DSE provided TRP boundaries dataset is reported as non-compliant. Non-compliant coupes are checked against the relevant TRP document.

On the publication of a notice of the approval of a TRP in the Victorian 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 the audit.

The TRPs and TRP amendments that are relevant to the audit are:

- Timber Release Plan for Benalla-Mansfield, Central, Central Gippsland and Dandenong Forest Management Areas 2011-2016
- 2009-2014 TRP for the East-Gippsland, Tambo and North-East FMAs
- New TRP 2006 – 2011 (September 2006)
- Change to TRP 2006 – 2011 (March 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)
- Change to TRP 2006 – 2011 (August 2009)
- Change to TRP 2006 – 2011 (January 2010)
- Change to TRP 2006 – 2011 (August 2010)
- Change to TRP 2006 – 2011 (January 2011)

#### *Harvesting season 2009/10*

In total, 478 coupes were harvested by VicForests in the 2009/10 financial year. This equates to a total of 5,049 ha across six FMAs (Table 5).

**Table 5 Number of coupes and area harvested by VicForests in 2009/10**

FMA	Number of coupes harvested	Area harvested (ha)
Central	183	1,721
Central Gippsland <sup>(1)</sup>	61	524
Dandenong	25	210
East Gippsland <sup>(2)</sup>	193	2,436
North-East	8	40
Tambo	8	118
Total	478	5,049

- (1) At the time of the audit, *log\_season200910* included 54 coupes harvested by VicForests during 2009/10 in Central Gippsland. DSE notified the Auditor that 7 additional coupes were harvested by VicForests in this FMA. These coupes are wrongly labeled as DSE harvested coupes in the *log\_season200910* shapefile.
- (2) At the time of the audit, *log\_season200910* included 191 coupes harvested by VF during 2009/10 in East Gippsland. DSE notified the Auditor that 2 additional coupes were harvested by VicForests in this FMA. These coupes are wrongly labeled as DSE harvested coupes in the *log\_season200910* shapefile.

#### *Harvesting season 2010/11*

In total, 478 coupes were harvested by VicForests in the 2010/11 financial year. This equates to a total 4,994 ha across the six FMAs (Table 6).

**Table 6 Number of coupes and area harvested by VicForests in 2010/11**

FMA	Number of coupes harvested	Area harvested (ha)
Central	159	1,189
Central Gippsland	72	588
Dandenong	20	141
East Gippsland	186	2,520
North-East	10	20
Tambo	31	535
Total	478	4,993

#### **4.3.2 Data review**

DSE provided the Auditor with the following shapefiles with which to conduct the audit:

- *log\_season200910.shp*: Includes all logging history polygons for harvesting occurred between 01/07/2009 and 30/06/2010. The audit is based on coupes harvested by VicForests only.
- *log\_season201011.shp*: Includes all logging history polygons for harvesting occurred between 01/07/2010 and 30/06/2011. The audit is based on coupes harvested by VicForests only.



- *trp\_current.shp*. Gross extent and location of coupes on an approved Timber Release Plan for the period 19 August 2010 onward.
- *trp\_20100107.shp*. Extent and location of coupes on an approved Timber Release Plan for the period: 07/01/2010 to 19/08/2010.

As part of the data review process it was verified that all logging history coupes included a logging history identifier, relevant FMA, harvest season, forest type and silviculture system.

The audit identified that the TRP and the WUP shapefiles have an overlapping area of 1,519 hectares. As a consequence, 29 VicForests coupes have been partially or totally harvested on approved WUP areas. The 29 coupes are within the spatial limits of the TRP dataset and are therefore compliant with the TRP element. In instances where the overlap between the WUP and TRP shapefiles occurs along the boundaries of adjacent coupes, the overlap is due to DSE and VicForests doing operations on the same coupe at different times. Nine of the 29 VicForests coupes had more than 1 hectare harvested on WUP approved areas. 3 of those 9 coupes were totally harvested on WUP coupe number 486-502-0017, included in Schedule 1 of Erica WUP 2009/10. One of the nine coupes was totally harvested on the WUP approved coupe 467-502-0006, included in Schedule 1 of Noojee WUP 2009/10.

#### 4.3.3 Level of compliance

The audit assessed the extent of logging that occurred in the 2009/10 and 2010/11 harvesting seasons against the spatial harvesting limits established by the TRP boundaries included in the supplied *trp\_current* and *trp\_20100107* datasets. The area of non-compliance is calculated for harvesting occurred outside the spatial limits of the TRP datasets after applying procedural allowances (50 m buffering of the TRP boundaries) and accounting for GPS error (-10 m buffering of the logging history records).

##### *Harvesting season 2009/10*

Overall the audit found that in the 2009/10 season, 99.99% of the total area of State forest harvested by VicForests as within spatial limits. Of the 478 coupes harvested by VicForests, the audit identified two coupes that were partially harvested outside of the approved TRP area.

The audit findings are summarised in Table 7, followed by a list of the coupes that were partially harvested outside the approved area.

**Table 7 TRP Compliance element – Summary of compliance. Season 2009/10**

	VicForests				TYPE
	Season	Number of coupes harvested	Coupe Area (ha)	Area of Non Compliance (ha)	
Compliant Coupes	200910	476	5,033	-	Compliant
Coupes partially harvested outside a TRP	200910	2	16	0.2	Partial non-compliance
TOTALS		478	5,049	0.2	

**Table 8 Coupes partially outside the TRP approved areas. Season 2009/10**

FMA	Coupe name	Logging History ID	Coupe area (ha)	Area of non-compliance	Silviculture
Central Gippsland	Beynon spur thinnings	11/486/502/0017/200910/01	1.4	0.14	Thinning from below
East Gippsland	Briefman	15/842/518/0036/200910/01	15	0.06	Seed Tree (includes retained overwood)

The two coupes that were partially harvested outside of the approved area had a total area of 0.2 ha non-compliance. These two coupes were overlaid with the forest management zone dataset provided by DSE (*fmz100\_current*) and it was identified that both coupes were harvested on general management zones. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review. Appendix H of this document includes detailed maps showing the area of non-compliance.

#### *Harvesting season 2010/11*

Overall the audit found that in the 2010/11 season, 99.99% of the total area of State forest harvested by VicForests as within the spatial limits. Of the 478 coupes harvested by VicForests, the audit identified five coupes that were partially harvested outside of the approved TRP area.

The audit findings are summarised in Table 9, followed by a list of the coupes that were partially harvested outside the approved area.

**Table 9 TRP Compliance element – Summary of compliance. Season 2010/11**

	VicForests				
	Season	Number of coupes harvested	Coupe Area (ha)	Area of Non Compliance (ha)	TYPE
Compliant Coupes	200910	473	4,956	0	Compliant
Coupes partially harvested outside a TRP	200910	5	37	0.3	Partial non-compliance
TOTALS		478	4,993	0.3	



The details of the two VicForests harvested coupes which were partially outside the boundaries of the TRP shapefile after applying procedural allowances (50 m) for the TRP approved areas and GPS error (+/- 10 m) for the logged coupes are in Table 10.

**Table 10 Coupes partially outside the TRP approved areas. Season 2010/11**

FMA	Coupe name	Logging History ID	Coupe area (ha)	Area of non-compliance	Silviculture
Central Gippsland	Mt Gregory Tk	11/458/509/0001/201011/01	5	0.05	Clearfelling
East Gippsland	Grumpy	15/872/509/0006/201011/03	4	0.01	Seed Tree (includes retained overwood)
Central Gippsland	Sucklings Spur	11/458/502/0018/201011/01	14	0.06	Clearfelling
East Gippsland	Third Man	15/830/504/0006/201011/01	13	0.06	Seed Tree (includes retained overwood)
Central Gippsland	Ballantynes Road	11/461/502/0050/201011/01	2	0.14	Road Alignment - Improvement

The five coupes that were partially harvested out of the approved area had a total area of 0.3 ha non-compliance. These five coupes were overlaid with the forest management zone dataset provided by DSE (*fmz100\_current*) and it was identified that the five coupes were harvested on general management zones or special management zones with no threatened species identified. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review. Appendix H of this document includes detail maps showing the area of non-compliance.

#### 4.4 VicForests Quality Assurance Plan - Logging History

As a requirement of the Allocation Order Amendment 2010, "VicForests must provide quality assured data on harvesting extent (logging history) to the Secretary of the Department of Sustainability and Environment (DSE) by 30 September each year."

The VicForests Quality Assurance Plan- Logging History document describes VicForests processes to ensure that systems are in place to provide quality assured logging history data to DSE.

According to VicForests Quality Assurance Plan- Logging History, VicForests implements a number of measures to monitor the data supplied to DSE and correct this data if required.

This audit reports on compliance with those measures specified in VicForests Quality Assurance Plan which have not previously been assessed by DSE.



#### 4.4.1 Completeness of logging history submission to DSE

##### Audit criteria

It is a requirement of the Quality Assurance Plan that all coupes that have had harvesting starting in a given financial year are included in the logging history shapefile provided to DSE for that year.

Coupes fulfilling one of the following conditions are exempt from having to be included in the logging history dataset:

- Less than 1 Ha harvested within a coupe;
- Coupe was used as a roadline to access the next coupe; and
- Volume removed from a coupe landing but no actual harvesting for that year.

VicForests runs a Coupe Information System report (CIS) to identify coupes that potentially require being included in the logging history shapefile. Coupes exempt from having to be submitted in the logging history shapefile include a description of the exemption. This audit has been conducted assuming that the CIS reports supplied by VicForests include data from the contractor and sales database systems as the Quality Assurance Plan requires.

##### Data review

VicForests supplied a copy of their CIS reports for the 2009/10 and 2010/11 harvesting seasons. The audit assesses whether all coupes that had any volume removed were included in the logging history for each financial year.

The files used to assess compliance with this quality assurance element are listed below:

- *log\_season200910.shp*: Includes all logging history polygons for harvesting occurred between 01/07/2009 and 30/06/2010. The audit is based on coupes harvested by VicForests only.
- *log\_season201011.shp*: Includes all logging history polygons for harvesting occurred between 01/07/2010 and 30/06/2011. The audit is based on coupes harvested by VicForests only.
- *trp\_current.shp*: Gross extent and location of coupes on an approved Timber Release Plan for the period 19 August 2010 onward.
- *trp\_20100107.shp*: Extent and location of coupes on an approved Timber Release Plan for the period: 07/01/2010 to 19/08/2010.
- *200910 Logging History CIS Report.xls*: CIS report for harvesting season 2009/10.
- *VF\_LH\_CIS\_Report.xls*: CIS report for harvesting season 2010/11.



## Level of compliance

### Harvesting season 2009/2010

The logging history shapefile for harvesting season 2009/10 (*log\_season200910.shp*) includes 478 VicForests harvesting records occurring in 331 harvesting coupes (i.e. harvesting may occur in multiple areas within a coupe in a season)<sup>1</sup>.

VicForests' CIS report for harvesting season 2009/10 (*200910 Logging History CIS Report.xls*) includes 402 coupes which could potentially require a logging history submission.

The comparison between *log\_season200910.shp* and *200910 Logging History CIS Report.xls* produced the following outcomes:

- 331 of 402 coupes listed in *200910 Logging History CIS Report.xls* were included in *log\_season200910.shp*
- 67 of 402 coupes are identified by VicForests as not having been mapped in the logging history shapefile. The CIS report includes a justification of why these coupes were not included in the logging summary shapefile.
- 4 of 402 coupes are identified by VicForests as having been mapped to the logging history shapefile. However, the audit identified that these logging history records are not included in *log\_season200910.shp*. The details of these coupes and the results of the investigation conducted on each of them are included below.

**Table 11 Harvested coupes not included in *log\_season200910.shp***

FMA	Coupe address	Coupe name
Central	299-507-0002	Middie
Central Gippsland	486-502-0001	Witches nose
Central Gippsland	486-502-0013	Beynons Creek
East Gippsland	831-505-0003	Tarlton Track

- Coupe 299-507-0002 is included in VicForests' Approved TRP with amendments applied 2011-2016' (TRP 2011-2016). The spatial overlay of *log\_season200910.shp* and *TRP\_current* does not show any logging history on this coupe.
- Coupe 486-502-0001 is included in VicForests' TRP 2011-2016 document. The coupe address of the logging history polygon overlaying coupe 486-505-0001 is 486-502-0012 (coupe name: Beynon Ck Rd)<sup>2</sup>.

<sup>1</sup> The original logging history shapefile provided by DSE included 469 logging history records assigned to VicForests. The audit revealed that 9 records in this file were wrongly labelled as DSE harvested coupes. See section 4.5.2 of this audit report for more information about this finding..

<sup>2</sup> The three logging history polygons referencing 'Beynon Ck Rd' coupe in *log\_season200910.shp* had been wrongly labelled as DSE harvested. See section 4.5.2 of this audit report for more information about this finding..



- Coupe 486-502-0013 is not included in VicForests' TRP 2011-2016 but it is included in *trp\_20100107.shp*. The coupe address of the logging history polygon overlaying TRP coupe 486-502-0013 is 298-505-0003 (coupe name: Plane Hill).
- Coupe 831-505-0003 is included in VicForests map of 'Approved TRP with amendments applied 2009-2014' and in the DSE supplied *TRP\_current.shp*. The coupe address of the logging history polygon overlaying TRP coupe 831-505-0003 is 836-517-0003 (coupe name: Luke's Lair).

Appendix H of this audit report includes detailed maps showing the location and extents of these coupes. Therefore the audit identified four logging history records listed by VicForests as having being included in the logging history dataset which were not included in the logging history shapefile provided by DSE. VicForests and DSE investigated the cause of this inconsistency and they informed the Auditor that these coupes were mapped by VicForests and provided to DSE. The absence of these coupes from the logging history spatial dataset provided to the Auditor by DSE is due to an error during DSE's transfer of data to their corporate database. Therefore this finding does not constitute a non-compliance with the VicForests Quality Assurance Plan.

#### *Harvesting season 2010/2011*

The logging history shapefile for harvesting season 2010/11 (*log\_season201011.shp*) includes 478 harvesting records occurring in 325 harvesting coupes (i.e. harvesting may occur in multiple areas of one coupe in a season).

VicForests' CIS report for harvesting season 2010/11 (*VF\_LH\_CIS\_Report.xls*) includes 392 coupes which could potentially require a logging history submission.

The comparison between *log\_season201011.shp* and *VF\_LH\_CIS\_Report.xls* produced the following outcomes:

- 325 of the 392 coupes listed in *VF\_LH\_CIS\_Report.xls* were included in *log\_season201011.shp*.
- 67 of 392 coupes are identified by VicForests as not having been mapped in the logging history shapefile. The CIS report includes a justification of why these coupes were not included in the logging summary shapefile.

The audit identified that an appropriate description of the relevant exemption was included for all logging records that were not submitted in the logging history shapefile for season 2010/11 (*log\_season200910.shp*).

#### **4.4.2 Accuracy of submission to DSE**

##### **Audit criteria**

It is a requirement of the Quality Assurance Plan that a number of spatial checks are conducted on the logging history shapefile submitted to DSE to ensure that the boundary locations of each coupe are correct.

Appendix 2 of the Quality Assurance Plan includes a list of checks to be undertaken to ensure accuracy of the logging history dataset. These checks and the actions taken by the Auditor are described below:

- The coupe boundaries included in the logging history shapefile should not overlap each other or previous years logging history: DSE assesses this when the data is uploaded to the Department's corporate database. Therefore, this audit will not assess this quality assurance element;





- The method of data capture and associated error limits for coupe boundaries should be recorded and included for all coupes. The Auditor has not had access to information regarding data capture methods and mapping errors and therefore compliance with this quality assurance element will not be assessed; and
- All harvesting outside the Working Forest Area (WFA) boundaries should be explained. This check was undertaken as part of the assessment of compliance with the Allocation Order. Refer to Section 4.2 of this report for details.

#### **4.4.3 Records in logging history are correctly formatted**

As part of the Quality Assurance Performance Plan, VicForests checks the logging history shapefile to check that the dataset is topologically correct. This includes but is not limited to, checking that the dataset does not overlap with itself and that harvesting areas are recalculated if polygon boundaries are changed. DSE assesses formatting of all spatial data before uploading into the Department's corporate database. Therefore, this has not been assessed by the Auditor and it is assumed that VicForests logging history dataset is correctly formatted.

#### **4.4.4 Records in logging history are correctly attributed**

The Quality Assurance Performance Plan states that every polygon in the logging history dataset has to be checked to ensure that all coupes include the correct coupe ID, harvest type and forest type and that every field has an entry. VicForests uses a 'validator' that checks the format of all spatial and textual attributes to ensure they are correct. Within the timeframe and scope of the present audit, the Auditor has only undertaken a check of the logging history shapefile to identify whether there is attribute information missing from the logging history dataset.

The audit identified that all fields in the logging history datasets have an entry for coupe ID, and forest type. Two logging history records are missing the silviculture system information. Both logging history events are located in East Gippsland FMA. The coupe addresses of these records are listed below:

- 15/864/503/0008
- 15/866/512/0002

### **4.5 Wood Utilisation Plans**

Until December 2011 DSE managed forestry operations in State forests across Victoria, apart from most of the harvesting operations in East Gippsland, Gippsland, Central and North East FMAs (managed by VicForests). In the areas managed by DSE, three yearly Wood Utilisation Plans (WUPs) were developed annually to provide a list of areas scheduled to be harvested, associated road requirements, details of the locations and approximate timing of timber harvesting, and the details of any associated access roads. The WUPs were prepared in accordance with the relevant FMP and the Code.

#### **4.5.1 Audit criteria**

An objective of the audit is to assess spatial compliance with the conditions specified in WUPs. Harvesting exceeding the extent and location specified in the relevant WUP is reported as non-compliant.



DSE published the Wood Utilisation Plans (WUPs) for the period 2009/10 to 2011/12 for Forest Management Areas across Victoria. The WUPs indicate the planned areas for sawlog, firewood and minor forest produce production for the period 2009/10 to 2011/12. The WUPs for each FMA are available from the DSE website ([www.dse.vic.gov.au](http://www.dse.vic.gov.au)).

Coupes harvested for domestic firewood collection were excluded from this audit.

DSE provided the Auditor with the following relevant WUP documents and associated maps.

### **Gippsland**

- Central Gippsland FMA WUP 2010/11 to 2012/13
- Central Gippsland FMA WUP 2009/10 to 2011/12
- East Gippsland FMA WUP 2010/11 to 2012/13
- East Gippsland FMA WUP 2009/10 to 2011/12
- Tambo FMA WUP 2010/11 to 2012/13
- Tambo FMA WUP 2009/10 to 2011/12
- Dandenong FMA WUP 2009/10 to 2011/12

### **North East**

- North East FMA WUP 2009/10 to 2011/12
- North East FMA WUP 2010/11 to 2012/13

### **North West**

- Bendigo FMA WUP 2009/10 to 2011/12
- Bendigo FMA WUP 2010/11 to 2012/13
- Mid-Murray FMA WUP 2009/10 to 2011/12
- Mid-Murray FMA WUP 2010/11 to 2012/13

### **South West**

- Horsham FMA WUP 2009/10 to 2011/12
- Horsham FMA WUP 2010/11 to 2012/13
- Midlands FMA WUP 2009/10 to 2011/12
- Midlands FMA WUP 2010/11 to 2012/13
- Otway FMA WUP 2009/10 to 2011/12
- Otway FMA WUP 2010/11 to 2012/13
- Portland WUP 2009/10 to 2011/12
- Portland WUP 2010/11 to 2012/13



DSE also provided the Auditor with GIS datasets showing: a) logging history for the relevant seasons and b) spatial extents of the WUP approved areas. The audit assessed compliance based on the spatial intersection of the supplied logging history and the WUP datasets. DSE coupes that were identified as being totally or partially outside the WUP boundaries were checked against their respective WUP document.

In total, 86 coupes were harvested by DSE in the 2009/10 financial year (domestic firewood coupes excluded). This equates to a total of 1,329 ha across eight FMAs (Table 12).

**Table 12 Number of coupes and area harvested by DSE in 2009/10**

FMA	Number of coupes harvested	Area harvested (ha)
Bendigo	38	883
Central	1	8
Central Gippsland	3	15
Horsham	9	261
Mid Murray	2	70
Midlands	22	70
North-East	3	8
Otway	8	14
<b>Total</b>	<b>86</b>	<b>1,329</b>

A total of 24 coupes were harvested during harvesting season 2010/11 (domestic firewood coupes excluded), resulting in a total of 954 ha across four FMAs (Table 13).

**Table 13 Number of coupes and area harvested by DSE in 2010/11**

FMA	Number of coupes harvested	Area harvested (ha)
Horsham	5	885
Midlands	10	32
North-East	4	20
Portland	5	17
<b>Total</b>	<b>24</b>	<b>954</b>



#### 4.5.2 Data review

DSE provided the Auditor with the following shapefiles with which to conduct the audit:

- Logging history boundaries for the 2009/10 and 2010/11 harvesting seasons:
  - *log\_season200910*: Includes all logging history polygons for harvesting occurred between 01/07/2009 and 30/06/2010. The audit is based on coupes harvested by DSE only.
  - *log\_season201011*: Includes all logging history polygons for harvesting occurred between 01/07/2009 and 30/06/2010. The audit is based on coupes harvested by DSE only,
- Approved WUP boundaries for all FMAs for the period 2009/10 to 2011/12:
  - *pwup\_0910\_dd94.shp*
  - *wup.shp*
  - *wup\_additional1\_dd94.shp*
  - *wup\_additional2\_dd94.shp*

As part of the data review process all DSE coupes that were identified as being totally or partially outside the WUP shapefile boundaries were checked against their respective WUP document.

A list of domestic firewood coupes was supplied by DSE and checked against the relevant WUP documents. These coupes were removed from the logging history shapefiles. 31 and 34 domestic firewood coupes were removed from the logging history shapefiles for 2009/10 and 2010/11 seasons respectively.

The audit process verified that all logging history coupes include a logging history identifier, the relevant FMA, harvest season, forest type and silviculture system.

The audit revealed that every logging history record in *log\_season200910* is duplicated, each polygon appearing twice in the dataset. The *log\_season200910* shapefile was dissolved by logging history ID and therefore the duplicated records were removed from the audit.

The data review process identified nine coupes included in *log\_season200910* that were wrongly labeled by DSE's corporate database as having been harvested by DSE. These coupes were originally identified as non-compliant coupes due to having been harvested outside the spatial limits of the WUP shapefiles. Following conversations among the Auditor, DSE and VicForests it was confirmed that these nine coupes were harvested by VicForests and were included in the relevant TRP documents. DSE will amend this error in the Department's corporate database.

The data review process identified that all logging history records included in *log\_season200910* for 'Rocklands Woohlpooer' coupe in Horsham FMA (02/035/016/0037) have a negative coupe area in the dataset's attribute table. The Auditor assumed that this is an error in the database and converted the area into positive values.

The audit identified that for a significant number of logging history records, the coupe address identifier included in the attribute tables of *log\_season200910* and *log\_season201011* do not match the coupe address identifier of the underlying WUP area. The Auditor provided DSE with mapped examples of this finding. The cause of this inconsistency was not identified.



### 4.5.3 Level of compliance

The audit assessed the extent of logging that occurred in the 2009/10 and 2010/11 harvesting seasons against the spatial harvesting limits established by the WUP boundaries included in the supplied shapefiles. The level of compliance is provided for 2009/10 harvesting season and 2010/11 harvesting season. The area of non-compliance was calculated after applying procedural allowances and accounting for GPS error.

#### *Harvesting season 2009/10*

Overall the audit found that in the 2009/10 season, 95% of the total area of the State forest harvested by DSE as within the spatial limits. Of the 86 coupes harvested by DSE (domestic firewood coupes excluded), the audit identified seven coupes that were partially harvested outside of the approved WUP spatial extents. The audit also found that there was one coupe harvested totally outside the WUP extents. The area of this coupe was 60 hectares.

The audit findings are summarised in Table 14, followed by a more detailed discussion below.

**Table 14 WUP Compliance element – Summary of compliance. Season 2009/10**

	DSE				
	Season	Number of coupes harvested	Coupe Area (ha)	Area of Non Compliance (ha)	TYPE
Compliant Coupes	200910	78	959	0	Compliant
Coupes partially harvested outside a WUP	200910	7	310	9.4	Partially non-compliant
Coupes harvested outside a WUP	200910	1	60	60	Non-compliant
TOTALS		86	1,329	69.4	

The details of the DSE coupe harvested totally outside the boundaries of the WUP dataset provided by DSE are included below:

- FMA: Horsham, coupe name: Rocklands Woohlpooer, logging history ID: 02/035/016/0037/200910/01, harvested area according to *log\_season200910*: 60 ha

Coupe 035-016-0037 is included in Schedule 1 of the Horsham WUP 2009/10 document.

*log\_season200910* includes eight additional logging history records on this coupe for season 2009/10, all of them within the spatial extents of the supplied WUP shapefile. The non-compliant logging history polygon in *log\_season200910* is referencing Rocklands Woohlpooer coupe in Horsham FMA but it is located within the extents of the Portland FMA. Therefore, this non-compliance is likely to be due to an error in the mapping of the logging history event in *log\_season200910*.

The details of the seven DSE coupes harvested partially outside the boundaries of the WUP shapefile are included in Table 15. The non-compliance areas were calculated after applying procedural allowances (50 m) for the WUP approved areas and GPS error (+/- 10 m) for the logged coupes.

**Table 15 Coupes partially outside the WUP approved areas. Season 2009/10**

FMA	Coupe name	Logging History ID	Coupe area (ha)	Area of non-compliance	Silviculture	Site values recorded in WUP
Midlands	Possum gully	06/174/506/0003/20 0910/01	16	2.14	Thinning from below	Electro Hydraulic Sluicing Co  Historic site. Adjacent to Special Protection Zone.
Midlands	Squires	06/195/517/0005/20 0910/01	8.73	0.59	Thinning from below	Korw einguboorra catchment special  Management area. CFI plot. Silvicultural research plot on site.
Bendigo	Timor road south	05/149/002/0004/20 0910/02	65	4.97	Single Tree Selection	-
Bendigo	Bulldog	05/146/014/0001/20 0910/07	24.13	0.82	Thinning from below	EVCs
Bendigo	Brays	05/143/005/0005/20 0910/02	46.07	0.65	Thinning from below	-
Bendigo	Wild paddock 3	05/156/009/008C/20 0910/02	119.36	0.25	Single Tree Selection	Pow erful Owl
Bendigo	Sammy 2	05/147/019/008B/20 0910/03	30.60	0.02	Thinning from below	SPZ Grassy Woodlands

The seven coupes that were partially harvested outside of the approved area had a total area of 9.4 ha non-compliance (procedural allowances applied). The audit overlaid these partially non-compliant coupes with the Forest Management Zones spatial layer provided by DSE and identified that all of these coupes were harvested on General Management Zones. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### *Harvesting season 2010/11*

Overall the audit found that in the 2010/11 season, 99.94% of the total area of the State forest harvested by DSE as within the spatial limits. Of the 24 coupes harvested by DSE (domestic firewood coupes excluded), the audit identified two coupes that were partially harvested outside the extents of the WUP spatial layer. The audit found that there were no coupes harvested totally outside the WUP layer.

The audit findings are summarised in Table 16, followed by a more detailed discussion below.



**Table 16 WUP Compliance element – Summary of compliance. Season 2010/11**

	DSE				TYPE
	Season	Number of coupes harvested	Coupe Area (ha)	Area of Non Compliance (ha)	
Compliant Coupes	201011	22	942	0	Compliant
Coupes partially harvested outside a WUP	201011	2	12	0.96	Partially non-compliant
<b>TOTALS</b>		<b>24</b>	<b>954</b>	<b>0.96</b>	

The details of the two DSE coupes harvested partially outside the boundaries of the supplied WUP shapefile are included in Table 17. The non-compliant areas were calculated after applying procedural allowances (50 m) for the WUP boundaries and GPS error (+/- 10 m) for logging history records.

**Table 17 Coupes partially outside the WUP approved areas. Season 2010/11**

FMA	Coupe name	Logging History ID	Coupe area (ha)	Area of non-compliance	Silviculture	Site values recorded in WUP
Midlands	Possum Gully	06/174/506/0003/ 201011/01	7	0.01	Thinning from below	Electro Hydraulic Sluicing Co historic site. Adjacent to Special Protection Zone.
Midlands	Snake Valley	06/174/509/0012/ 201011/01	5	0.95	Thinning from below	Golden Star Co and Phillips Reef Working Historic Site.

These two coupes have a total of 0.96 ha of non-compliance. These two coupes were overlaid with the forest management zones (*fmz\_current*) spatial layer provided by DSE and it was identified that both coupes were harvested on general management zones. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

#### 4.6 Harvest Limits in Water Supply Catchments

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). Schedule 6 and Section 2.3.3 of the Management Procedures provide a list of water supply catchments with harvesting limits and associated requirements. A subset of all water supply catchments with harvesting limits was selected to assess compliance with the Management Procedures.

#### 4.6.1 Audit criteria

This audit assesses compliance against the limits established in the Management Procedures 2009 for the following catchments with harvesting limits: Yarra Tributaries (Armstrong Creek West, Cement Creek, McMahon's Creek and Starvation Creek), Learmonth Creek and Betka River. The limits established by the Procedures for these catchments are summarised in the table below.

**Table 18 Harvesting limits in audited water supply catchments. Source: Schedule 6 and Section 2.3.3 of Management Procedures 2009**

Catchment	Status	Stream Buffers	Harvest limits	Additional yearly limits
Armstrong Creek	Restricted	40 m in major streams only	A maximum of 30% of these catchments is to be harvested over a 10 year period. There is to be harvesting in only 1 of the 4 restricted access catchments in any one year.	Total for Yarra Tributaries: Ash forests 55 ha, Mixed species forests 23 ha <sup>(2)</sup> .
Cement Creek	Restricted			
McMahon's Creek	Restricted			
Starvation Creek	Restricted			
Betka River	SWSC <sup>(1)</sup>	150 m on main river, 0 m on major tributaries and other permanent streams.	120 ha (1% of catchment) max annual harvest	
Learmonth Creek		40 m in major streams only	1 coupe per year	Ash Forests 7 ha, Mixed species 3 ha

(1) Special Water Supply Catchment

(2) The area harvested must not exceed this limits measured as a rolling average (ha per annum) commencing July 2004

#### 4.6.2 Data review

DSE provided the Auditor with the following datasets with which to conduct the audit for this compliance element:

- *LoggingHistory1999\_2011.shp*: All logging history events recorded between season 1999/00 and season 2010/11.
- *pWSC100.shp*: Prescribed water supply catchments boundaries.

The harvesting limits established for the Yarra Tributaries require the total area harvested in the last 10 years to be calculated. Therefore, only harvesting history events recorded between season 2000/01 and 2010/11 were considered. Their harvesting areas were aggregated and the yearly average harvesting area calculated.

As part of the data review process, the boundaries of *pWSC100* in Melbourne water supply catchments were checked against VicMap contour data. It was observed that *pWSC100* has accuracy limitations and is only appropriate to be used on small scale mapping. *PWSC100* catchment boundaries do not match the watershed boundaries in some instances and it is recommended that a more accurate depiction of the catchments is used in the future.





All coupes logged within the extents of the selected water supply catchments were harvested by VicForests.

Table 19 and Table 20 present a summary of harvesting by forest stand and logging season for the selected water supply catchments.



**Table 19 Summary of annual harvested areas in Yarra Tributaries Catchments. 2000/01-2010/11**

Harvest Season	YARRA TRIBUTARIES											
	Armstrong Creek			Cement Creek	McMahons Creek			Starvation Creek			ALL YARRA TRIBUTARIES	
	Number of coupes	Ash (ha)	Mixed species (ha)	Number of coupes	Number of coupes	Ash (ha)	Mixed species (ha)	Number of coupes	Ash (ha)	Mixed species (ha)	Ash (ha)	Mixed species (ha)
201011	0	0	0	0	0	0	0	4	28	16	28	16
200910	5	43	0	0	0	0	0	1	2	0	45	0
200809	0	0	0	0	0	0	0	3	20	0	20	0
200708	3	66	0	0	0	0	0	1	0	1	66	1
200607	0	0	0	0	0	0	0	4	38	0	38	0
200506	0	0	0	0	7	47	0	0	0	0	47	0
200405	0	0	0	0	4	44	0	0	0	0	44	0
200304	0	0	0	0	3	24	0	0	0	0	24	0
200102	0	0	0	0	0	0	0	7	80	4	80	4
200001	0	0	0	0	0	0	0	12	79	43	79	43
TOTAL	8	109	0	0	14	115	0	32	247	64	471	64
Yearly avg since 2000/01		11		0		12	0		25	6	47	6
Yearly avg since 2004/05		16		0		13	0		13	2	41	2



#### 4.6.3 Level of compliance

##### Yarra Tributaries

The harvesting in the Yarra Tributaries catchment complied with the harvest limits prescribed by Section 2.3.3 of the Management Procedures. This Section limits the harvesting in the Yarra Tributaries to a maximum yearly average of 55 ha of Ash forest and 23 ha of Mixed species forests. Calculated as a rolling average commencing in 2004/05, an average of 41 ha of Ash forests has been harvested and 2 ha of Mixed species forests have been harvested annually.

The Auditor also assessed the compliance of the individual Yarra Tributary catchments against the limits established by Schedule 6 of the Management procedures. Schedule 6 states that a maximum of 30% of these catchments is to be harvested over a 10 year period and that only 1 of the 4 restricted access catchments in any one year.

##### *Armstrong Creek*

A total area of 109 ha or 3% of the total catchment area (4,187 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

##### *Cement Creek*

No harvesting activity in this catchment in the last 10 years.

##### *McMahons Creek*

A total area of 129 ha or 3% of the total catchment area (4,426 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of Mountain Ash forest.

##### *Starvation Creek*

A total area of 311 ha or 9% of the total catchment area (3,646 ha) has been harvested in the last ten years (2000/01-2010/11). The total harvested area is made up of 247 ha of Mountain Ash forest and 64 ha of Mixed Species forest.

The audit findings indicate that during the harvesting season 2009/10 there was harvesting in Starvation Creek catchment and Armstrong Creek catchment. This non-compliance is due to a small portion (2 ha) of logging coupe 09/348/501/0003/200910/01 having been harvested beyond the limits of the adjoining catchments. VicForests investigated the nature of this non-compliance and informed the Auditor that it is due to inaccuracies in the mapping of the *LoggingHistory1999\_2011* and the *pWSC100* datasets. The *pWSC100* dataset is adequate for using at scales of 1:100,000 or smaller. It is not an accurate depiction of the catchment boundary when it is used for large scale mapping and therefore small areas of logging history occurring beyond the boundaries are likely to be due to mapping inaccuracies rather than to non-compliances.

Another factor influencing this potential non-compliance is the flat nature of the terrain in the non-compliant part of this coupe (the portion of the coupe harvested within the Starvation Creek catchment). This means that even if a small part of logging history event 09/348/501/0003/200910/01 was harvested in the Starvation Creek Catchment during the 2009/10 season, limited drainage in the harvested area would be likely to occur **into** this catchment. Therefore the Auditor considers that this non-compliance does not present an imminent environmental hazard or unacceptable risk to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.



**Table 20 Summary of annual harvested areas in selected water supply catchments 2000/01-2010/11**

Harvest Season	Betka River			Learmonth Creek
	Number of coupes	Ash (ha)	Mixed species (ha)	Number of coupes
201011	0	0	0	0
200910	3	0	48	0
200809	0	0	0	0
200708	0	0	0	0
200607	1	0	28	0
200506	1	0	28	0
200405	10	0	71	0
200304	2	0	29	0
200102	1	0	33	0
200001	1	0	30	0
TOTAL	19	0	267	0
Yearly avg since 2000/01		0	27	
Yearly avg since 2004/05		0	25	

#### **Betka River**

Schedule 6 of the Management Procedures states that the annual harvest in this catchment should be limited to 120 ha (1% of the catchment).

The audit results indicate that the harvest limits have not been exceeded and therefore harvesting in this catchment is compliant with the Management Procedures.

#### **Learmonth Creek**

No harvesting activity in this catchment in the last 10 years.



## 4.7 Harvest Limits in Special Management Zones

In accordance with the *Conservation, Forests and Lands Act 1987* and the Code, the State forests in Victoria are divided into Forest Management Areas (FMAs). For each FMA, a Forest Management Plan (FMP) has been prepared by DSE. The FMP divides the area of State forest into three management zones:

- Special Protection Zones (SPZ) are managed for conservation and timber harvested is excluded from these areas;
- General Management Zones (GMZ) caters for a range of uses with timber harvesting as a high priority; and
- Special Management Zones (SMZ) are managed for specific values, including rare or threatened flora and fauna, habitat and breeding sites, wetlands and cultural heritage values, and the protection of landscape values and visual amenity. Harvesting is allowed within SMZ under certain conditions such as harvest area limits and temporal limits.

### 4.7.1 Audit criteria

It is a requirement of the Forest Audit Program that timber harvesting needs to be cognisant with the harvesting limits imposed by the FMPs for the SMZs. In addition, harvesting limits have been established in some Action Statements prepared under the *Flora and Fauna Guarantee Act 1988* (FFG Act). These will also be considered as part of this audit.

### 4.7.2 Data review

The following spatial datasets were supplied by DSE and were used by the Auditor to calculate cumulative 10 year harvest areas in SMZs for each FMA:

- *fmz100\_current.shp*: This dataset includes a classification of forests into general categories for forest management. Includes a general description of why a particular SPZ or SMZ area has been reserved; and
- *LoggingHistory1999\_2011.shp*: All logging history events recorded between season 1999/00 and season 2010/11.

GIS queries were run from the intersection of *fmz100\_current* and *LoggingHistory1999\_2011* to generate a list of the values that are being managed within the harvested SMZs across all of the FMAs. However the information is not detailed enough to determine whether the harvesting limits are appropriate for the value.

Some such values of the SMZs are:

- Apiary;
- Research sites;
- Catchment areas;
- Wetlands;
- Tourist roads;



- Ecological Vegetation Classes;
- Landscape values;
- Waterbird habitat (including breeding habitat);
- Mature tree sites;
- Road landscape;
- Recovery monitoring;
- Thinning plots; and
- Threatened flora.

The provided datasets were used to determine the cumulative 10 year harvest in SMZs for each FMA. This was then compared to the harvesting limits set in the FMP for that area. This is discussed in more detail in Section 4.7.3 . Cumulative harvests in SMZ by FMA and forest type are provided in Table 21 and Table 22.

#### **4.7.3 Review of Forest Management Plans**

In order to determine compliance for the harvesting limits for SMZs, it was first necessary to review the FMPs for the total area of SMZs within the State forests and the prescribed harvesting limits within the SMZs for each FMP. A detailed description of the process undertaken to obtain the required information to determine compliance with harvesting limits for SMZs and the assumptions made is provided below. Table 21 then presents the results from the FMP review and Table 22 provides a summary of the forest types that were harvested in each SMZs.

Out of the 12 relevant FMAs, only six had both the total area of SMZ in state forest, and the total area of SMZ available for harvest defined in the FMP. These FMP are:

- Benalla-Mansfield;
- Central Highlands;
- Central Gippsland;
- Dandenong (within Central Highlands FMP);
- Mid Murray; and
- North East.



**Table 21 Summary of SMZ areas harvested in FMAs for the period 2000/01 to 2010/11**

FMA	Number of SMZs harvested 2000/01-2010/11	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 2010/11 for FMA	Percentage of available SMZ harvested in 10 years to 2010/11
Benalla-Mansfield	3	6,804 (22,072 total SMZ in FMP)	6,804	247	3.6
Bendigo	47	9,423	Not defined	1,502	CBA
Central	26	9,278 (17,900 total SMZ in FMP <sup>3</sup> )	9,278	701	7.5
Central Gippsland <sup>4</sup>	20	10,471 (CG) + 4,811 (CH)	1,508 (CG) + 4,811 (CH)	195	3.1
Dandenong	5	3,817 (17,900 total SMZ in FMP)	3,817	23	0.6
East Gippsland	227	37,900 <sup>5</sup>	Could not access appendix	9,450	CBA
Horsham	5	26,851	Not defined	1,302	CBA
Mid Murray	22	15,920	12,435	381	3.1
Midlands	21	28,900	Not defined	927	CBA
Mildura	1	NA	NA	0.2	2
North-East	6	15,267 (22,072 total SMZ in FMP)	15,267	277	1.8
Tambo	12	Not defined	1,340	49	3.7
CBA	Cannot be assessed				
NA	Not Available				

<sup>3</sup> 17,900 ha is total area for FMP (covers three FMAs)

<sup>4</sup> Central Gippsland FMA is managed through two FMPs, Central Gippsland and Central Highlands

<sup>5</sup> The area allocated to SMZ prior to the 2011 review.



### **Benalla-Mansfield and North East**

The Benalla-Mansfield FMA is included in the North East FMP. The North East FMP states that the total SMZ area in State forest is 22,072 ha (Table 2.1 in FMP). In Appendix N, it states that the timber resource area in SMZ is 6,804 ha for the Benalla-Mansfield FMA and 15,267 ha in the North East FMA. This total is approximately the same as the total SMZ value (22,071 ha) in State forest as stated in the North East FMP. Therefore, it was assumed that the total SMZ area in both FMAs is available for harvest (Table 21).

### **Bendigo**

The Bendigo FMP states the area of SMZ in the FMA is 9,423 ha (Table 1 in FMP). It does not define the total area of the SMZ available for harvest. It may be the case that the whole SMZ area is open to harvest, however this is not clear in the FMP.

### **Central Highlands and Dandenong**

Another aspect of the FMP system that is unclear is that there are partial FMAs covered within one FMP. For example, the Central Highlands FMP states that:

*This plan applies to the 400 000 ha of State forest in the Central Highlands of Victoria. This area includes the Central Forest Management Area (FMA), the northern section of the Dandenong FMA and the western section of the Central Gippsland FMA. No State forest exists in the southern section of Dandenong FMA and planning for the forests in the balance of the Central Gippsland FMA will be undertaken separately.*

The total area (17,900 ha) of SMZ in State forest (Table 2.1 in FMP) is approximately the same as the sum of the three FMA SMZ areas allocated for harvesting (Appendix S in FMP). It is therefore assumed that the area available for harvest is the total area of SMZ in the FMA for Central Highlands and Dandenong, and the remainder is allocation for the western section of the Central Gippsland FMA.

### **Central Gippsland and Tambo**

The Central Gippsland FMA is separated over two Forest Management Plans, Central Highlands and Central Gippsland. The areas of SMZ in state forest and the area of SMZ available for harvest has been calculated from both FMPs for the Central Gippsland FMA (as discussed above).

The Tambo FMA is covered solely in the Central Gippsland FMP. It is not defined in the FMP how much of the total SMZ covered in the FMP is in the FMA area. However, it does state that 1,340 ha are available for harvest.

### **East Gippsland**

The East Gippsland FMP directly relates to the East Gippsland FMA. However, the Appendix that outlines the areas and volumes available for timber production (Appendix M) is not available on the website. Numerous attempts were made to access a copy of the appendix from a few different DSE offices without success.

There has been a review of the harvesting limits in 2011. This audit considered the previous copy of the FMP due to the timeframe being audited. There were 37,900 ha of SMZ within the State forests of East Gippsland.





### **Horsham**

The Horsham FMP states the area of SMZ in the FMA is 26,851 ha (Table B 2 in FMP). It does not define the total area of the SMZ available for harvest. It may be the case that the whole SMZ area is open to harvest, however this is not clear in the FMP.

### **Mid Murray**

The Mid Murray FMP correlates with the Mid Murray FMA. Table 2.1 in the FMP states that there are 15,920 ha of SMZ in the Mid Murray FMA. Table 3.1 of the FMP states that there are 480 ha of Northern Plains Woodland, 5 ha of Black Box Woodland, and 12,435 ha of Riverine Grassy Woodland. The FMP then goes on to say:

*Commercial timber harvesting is excluded from all occurrences of Buloke Woodland (Casuarina luehmannii), White Cypress Pine (Callitris glaucophylla), Black Box Woodland and Northern Plains Grassy Woodland within State forest.*

Therefore it is assumed that the only vegetation type that is open to harvesting is Riverine Grassy Woodland (12,435 ha).

### **Midlands**

The Midlands FMP states the area of SMZ in the FMA is 28,900 ha (Table 1 in FMP). It does not define the total area of the SMZ available for harvest. It may be the case that the whole SMZ area is open to harvest, however this is not clear in the FMP.

### **Mildura**

There is no FMP for the Mildura FMA on DSE's website. The following reasons were given:

*The Mildura FMA located in the far North West corner of Victoria includes areas of State Forest in what is known as 'Sunset Country' and the 'Big Desert'. The regions unique landscape changes from river floodplain to vast semi-arid mallee bushland, and contains important cultural sites and a diverse range of environmental values. The 2008 VEAC River Red Gum Forests investigation of the "River Redgum forests on public land along the Murray River and its tributaries" resulted in all areas of State Forest along the Murray River floodplain being reclassified as National Park. The only areas of State Forest remaining in the Mildura FMA are located in the dryland areas of the mallee to the south of the Murray River.*

*As part of the Victorian Government's response to the 'Victorian Environment Assessment Council River Red Gum Forests Investigation', Parks Victoria are currently developing a firewood plan for the region. Because of this plan, there will be no Wood Utilisation Plan 2009/2010 to 2011/2012 for the Mildura FMA.*

It was therefore assumed that no further harvesting had taken place since the previous audit and that the percentage of available SMZ harvested in the 10 years to 2010/11 would be the same (2%).



**Table 22 Summary of the forest types harvested in SMZs 2000/01 to 2010/11**

FMA	Number of SMZs harvested 2000/01-2010/11	SUMMARY FOREST TYPE						Total
		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	Shinning Gum (ha) and percentage total area	Unknown (ha) and percentage total area	
Benalla-Mansfield	3	-	247 (100%)	-	-	-	-	247
Bendigo	47	-	-	727 (48%)	-	-	775 (52%)	1501
Central	26	412 (59%)	269 (38%)	-	-	-	20 (3%)	701
Central Gippsland	20	130 (66%)	65 (33%)	-	-	0.2 (0%)	-	195.2
Dandenong	5	15 (65%)	8 (35%)	-	-	-	-	23
East Gippsland	227	35 (0.4%)	9382 (99%)	-	-	32 (0.3%)	2 (0%)	9451
Horsham	5	-	-	165 (13%)	1060 (81%)	-	78 (6%)	1303
Mid Murray	22	-	-	-	230 (60%)	-	151 (40%)	381
Midlands	21	-	-	859 (93%)	-	-	68 (7%)	927
Mildura	1	-	-	0.2 (100%)	-	-	-	0.2
North-East	6	274 (99%)	-	-	-	-	3 (1%)	277
Tambo	12	15 (31%)	-	33 (69%)	-	-	-	48



#### 4.7.4 Review of Flora and Fauna Guarantee Act 1988 Action Statements

The *Flora and Fauna Guarantee Act 1988* 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 Department of Sustainability and Environment for each item following its listing.

Action Statements provide some background information about the species, including its description, distribution, habitat, life history, and the reasons for its decline and the threats which affect it. Action Statements are designed to apply for three to five years, after which time they will be reviewed and updated.

Once the GIS analysis determined which values were present in the harvested SMZs over the past ten years, a list was extracted of the flora and fauna values that may have an Action Statement prepared. These were then cross referenced with the Action Statements available on the DSE website.

There is 24 flora species relevant to the FMAs, only two of which had Action Statements prepared. Neither of these discussed SMZs or harvesting limits.

It was found that all of the relevant fauna species had an Action Statement prepared (Table 23). Rather than providing specific harvesting limits within an SMZ, the Action Statements provide guidance to the buffer zones required and other restrictions to be incorporated in the FMPs for the species FMAs that the species is found in. Two Action Statements do not discuss SMZs at all; these are the Red-tailed Black Cockatoo and White-bellied Sea-Eagle. The Spotted Tree Frog Action Statement assumes protection of the frog habitat through stream buffers as prescribed in the Code.

**Table 23 Fauna species recorded as SMZ values**

FMA	SMZ Value	Number of SMZ harvested	Area Harvested (2000-2011)	Action Statement
Bendigo	Barking Owl	1	347.3	Yes
Bendigo	Squirrel Glider	2	77.7	Yes
Bendigo, Mid Murray	Swift Parrot	1	0.5	Yes
Bendigo, Midlands	Powerful Owl	1	0.2	Yes
Horsham	Red-tailed Black Cockatoo	2	364.8	Yes
Mid Murray	White-bellied Sea-Eagle	1	17.9	Yes
North-East	Long Footed Potoroo	1	5.9	Yes
North-East	Spotted Tree Frog	1	266.2	Yes



#### **4.7.5 Level of compliance**

The FAP Module 6 workbook for the Cumulative Harvest Limits in Special Management Zones outlines two directives:

1. Areas and volumes available for timber production within the FMP should not be exceeded.
2. Areas harvested should not exceed limits established for target species under the Action Statement.

There was total compliance with these directives.

It was established that eight out of twelve had prescribed limits within an FMP. All of these had a very low percentage of available SMZ harvested in 10 years to 2010/11.

However, it is acknowledged that a complete assessment of harvesting performance was not able to be made due to incomplete information in the FMPs. In most of the FMPs it was not clearly stated the extent of the SMZ that was available for harvest. The harvest limits were also unclear for the FMPs that ranged across a number of FMAs.

It is recommended that the FMPs relate solely to the related FMA. If this is not possible or practicable, the SMZ area for each FMA should be clearly outlined and compared to the area of the SMZ that is available for harvest.

It was found that the Action Statements did not provide SMZ harvest limits, rather they offer guidance for management actions if that particular value was in the SMZ. Therefore, it was not possible to compare the harvesting limits to the Action Statements.

## 5. Conclusions and Recommendations

### 5.1 Audit Conclusions

The objective of the audit is to assess whether timber harvesting operations conducted in 2009-2010 and 2010-2011 were done in accordance with the *Module 6 Harvesting Performance*. This is related to monitoring of annual harvest levels and compliance with the Wood Utilisation Plans (DSE), Allocation Order (VicForests), Timber Release Plans (VicForests), harvest limits in Prescribed Water Supply Catchments (DSE and VicForests), and harvest limits in Special Management Zones (DSE and VicForests).

A high level of compliance was achieved for the elements within the FAP *Module 6 Harvesting Performance*. There were 22 partial non-compliances and two non-compliances. It is acknowledged that these may be due to an error in the data. A summary is provided below.

Compliant:

- At the end of year 2 of period 2 VicForests was compliant with the harvesting limits established by the Allocation Order for Period 2; having harvested 42% of the ash forest area and 14% of the mixed species forest area allocated for the five year-period;
- Overall the audit found in the 2009/10 season, 99.99% of the TRPs were within the spatial limits;
- Overall the audit found in the 2010/11 season, 99.99% of the TRPs were within the spatial limits;
- Overall the audit found in the 2009/10 season, 95% of the total area of the WUPs were within the spatial limits;
- Overall the audit found in the 2010/11 season, 99.94% of the total area of the WUPs were within the spatial limits; and
- There was insufficient information to carry out a complete assessment as guided by the workbook for Special Management Zones. With the information that was available, both DSE and VicForests were compliant with the harvest limits within the Special Management Zones.

Partial Non-compliance:

- Of the 478 coupes harvested by VicForests in the 2009/10 season, the audit identified two coupes that were partially harvested outside of the approved TRP area. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review;
- Of the 478 coupes harvested by VicForests in the 2010/11 season, the audit identified five coupes that were partially harvested outside of the approved TRP area. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review;
- Of the 86 coupes harvested by DSE in the 2009/10 season, the audit identified seven coupes that were partially harvested outside of the approved WUP area. The seven coupes that were partially harvested out of the approved area had a total area of 9.4 ha non-compliance. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review; and



- Of the 24 coupes harvested by DSE in the 2010/11 season, the audit identified 2 coupes that were partially harvested outside of the approved WUP area. The two coupes that were partially harvested out of the approved area had a total of 0.96 ha non-compliance. The Auditor considers that this area of non-compliance does not present an imminent environmental hazard or unacceptable risks to the beneficial uses of the environment, noting that the scope of the audit was limited to a desktop review.

Non-compliant:

- The audit found that there was one coupe harvested outside the approved WUP area in the 2009/10 season. This coupe was 60 ha. The logging history identifier of this harvesting event in *log\_season200910* references an approved WUP coupe (035-016-0037, included in Schedule 1 of the Horsham WUP 200910). However, the logging history record in *log\_season200910*, is mapped in Portland FMA. This non-compliance is likely to be due to an error in the logging history shapefile; and
- There was one non-compliance for the harvesting limits in water supply catchments. The audit findings indicate that during the harvesting season 2009/10 there was harvesting in Starvation Creek catchment and Armstrong Creek catchment. Schedule 6 of the Management Procedures 2009 state that there is to be harvesting in only one of the four restricted access catchments (McMahons Creek, Starvation Creek, Cement Creek and Armstrong Creek) in any one year. This non-compliance is due to a small portion (2 ha) of logging history record 09/348/501/0003/200910/01 having been harvested beyond the limits of the adjoining catchments. VicForests investigated the nature of this non-compliance and informed the Auditor that it is due to inaccuracies in the mapping of the *LoggingHistory1999\_2011* and the *pwsc100* datasets. The *pwsc100* dataset is adequate for using at scales of 1:100,000 or smaller. It is not an accurate depiction of the catchment boundary when it is used for large scale mapping and therefore small areas of logging history occurring beyond the boundaries are likely to be due to mapping inaccuracies rather than to non-compliances.

## 5.2 Risks to Beneficial Uses

The audit did not identify any imminent environmental hazards or unacceptable risk to the beneficial uses relevant to this audit, being:

- 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.



### 5.3 Recommendations

This report has incorporated a number of recommendations where it was considered by the Auditor that the **audit process** could be improved.

#### Allocation Order

- **Recommendation 1:** It is recommended that *Workbook 6A: Compliance with the Allocation Order of Module 6- Harvesting Performance* is updated to remove all thinning reporting requirements as specified in the new conditions of the Allocation Order;
- **Recommendation 2:** It is recommended that the new coupe layer to be produced by VicForests is used to calculate gross harvested area for auditing of compliance with the Allocation Order conditions;
- **Recommendation 3:** It is recommended that subsequent Module 6 audit reports recalculate the area harvested for each year in period 2 of the Allocation Order to capture the edits and additions to the log\_season layer that are required following the log\_season errors and omissions that are identified in this report.

#### Wood Utilisation Plans

- **Recommendation 4:** It is recommended that the logging history shapefiles are quality assured to avoid duplications and inconsistencies, particularly the coupe address field, which was found to be inconsistent with the coupe address of the underlying WUP area for a significant number of records.

#### Harvest Limits in Water Supply Catchments

- **Recommendation 5:** It is recommended that a more accurate depiction of water supply catchment boundaries is used in the auditing of harvesting in catchments with limits instead of *pWSC100*;
- **Recommendation 6:** It is recommended that a process for the selection of a sample of water supply catchments with harvesting limits to be audited is implemented;
- **Recommendation 7:** It is recommended that *Workbook 6C: Harvesting in Catchments of Module 6- Harvesting Performance* is updated to clarify the inclusion in the audit process of other catchments with limits other than Melbourne's water supply catchments;

#### Harvest Limits in Special Management Zones

- **Recommendation 8:** It is recommended that the FMPs relate solely to the related FMA. If this is not possible or practicable, the SMZ area for each FMA should be clearly outlined and compared to the area of the SMZ that is available for harvest;
- **Recommendation 9:** It was found that the Action Statements did not provide actual limits to harvest in an SMZ, rather they offer guidance for if that particular value was in the SMZ. Therefore, it was not possible to compare the harvesting limits to the Action Statements. It is recommended that either Action Statements are updated, or the workbook is changed to represent that available information;

#### Data Management

- **Recommendation 10:** It is recommended that the transfer of data supplied by VicForests into the DSE's corporate database is quality assured in order to avoid loss of information.



## 6. 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 predominantly by VicForests in eastern-Victoria, as well as those managed by DSE (now the Department of Primary Industries) 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.

### **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.

### **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.





### **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 uneven-aged 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.

- Roding (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.



### **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.



## 7. Acronyms

AO	Allocation to VicForests Order 2004 (as amended) – generally referred to as the “Allocation Order”
CIS	Coupe Information System
The Code	<i>Code of Practice for Timber Production 2007</i>
DSE	Department of Sustainability and Environment
EIA	Environmental Impact Assessment
EPA	Environment Protection Authority
FAP	Forest Audit Program
FCP	Forest Coupe Plan
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
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 2009
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



DATED: 28 August 2012

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SIGNED: 

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ANDREW ROY

ENVIRONMENTAL AUDITOR

(Appointed pursuant to the Environment Protection Act 1970)





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