AUDITOR-GENERAL'S REPORT
PERFORMANCE AUDIT

Sustaining Native Forest Operations

Forests NSW

The Legislative Assembly
Parliament House
SYDNEY NSW 2000

The Legislative Council
Parliament House
SYDNEY NSW 2000

In accordance with section 38E of the *Public Finance and Audit Act 1983*, I present a report titled **Sustaining Native Forest Operations: Forests NSW.**

Peter Achterstraat
Auditor-General

Sydney
April 2009

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Foreword

Timber is an important resource. It is a popular building material used in the construction of homes, furniture, and floorboards. The timber industry contributes nearly $1 billion to the state economy each year and directly supports over 7,000 jobs in regional towns across NSW.

Various governments have transferred large parcels of state forests to national parks to preserve the natural heritage. Today, state forests make up around ten per cent of forested areas in NSW. Ninety per cent of state forests are native forests and only two per cent are hardwood plantations. The remaining eight per cent are softwood plantations.

Logging of native forests can be controversial and can generate a lot of interest in the community. Some community groups raise concerns about the negative impacts that logging can have on the forest ecosystem and the preservation of native fauna. Others are concerned about the effect that any reduction in timber supply will have on the industry.

It is the role of Forests NSW to sustainably manage state forests and timber supply. It also provides community amenities such as camping areas and picnic grounds. In order to achieve this, Forests NSW must balance resource management with conserving the natural environment and comply with the many laws and regulations that control where and what may be logged.

This audit examines whether Forests NSW manages the supply of hardwood to meet wood supply commitments and sustain our native forests.

Peter Achterstraat
Auditor-General

April 2009

Executive summary

The focus of our audit

Timber is an important resource. It is a popular building material used in the construction of homes, furniture, and floorboards. The timber industry directly supports over 7,000 jobs in regional towns across NSW.

Timber is a renewable resource, meaning if managed properly, forests will regrow. There are laws and regulations in place to help ensure our native forests are maintained.

Forests NSW is a public trading enterprise within the NSW Department of Primary Industries. Its key role is to sustainably manage state forests and maintain timber supply.

The timber industry has undergone many changes. Since 1997 around a third of state forest area in NSW has been converted to national parks or reserves. From 1999 onwards the Government also entered into wood supply agreements with industry for up to 20 years to provide certainty of supply and encourage long term investment.

This reduction in capacity to supply timber and the long-term obligations to supply have led to concerns about whether there is enough timber to meet contractual commitments. In the Auditor-General's report to Parliament (1999 volume two) we stated the period of greatest financial and operational risk was within the first eight years of the wood supply agreements. The agreements at that time had a clause allowing a reassessment of timber yield after eight years and a reduction in volume with no compensation being payable to sawmills.

This audit aimed to assess whether Forests NSW manages the supply of hardwood to meet wood supply commitments and sustain our native forests. Specifically we wanted to find out whether Forests NSW:

- knows how much native forest and plantation hardwood is available for harvesting, presently and in the future
- has promised to sell more native forest and plantation hardwood than it can sustainably supply.

This audit included all hardwood species and cypress pine. We also examined all hardwood timber products including sawlog and pulpwood. The audit did not review softwood plantations and associated supply obligations.

Audit opinion

We found that Forests NSW has adequate estimates of how much timber is available from native forests, now and into the future. It uses an industry accepted process to develop estimates, but more could be done to improve reliability. For instance, yield estimates for the South coast, Eden and Tumut are well overdue for review.

We also found that Forests NSW should have sufficient timber to meet its wood supply commitments which are fixed for periods up to 2023 using both native and plantation hardwood. However, the cost and difficulty of harvesting and hauling this timber is likely to increase over time. This presents a significant challenge for Forests NSW to manage.

Sawlog production over the last five years indicates that contractual commitments for sawlog products in some regions have not been met. This gap cannot be readily explained by information collected by Forests NSW. It argues that part of the gap is due to downturns in demand, and we have evidence to support this.

Forests NSW have also advised that there have been some supply issues with lags in production. And in some cases, substitutions have been made with mill owners receiving smaller logs rather than the premium large sawlogs which is allowable under a number of the contracts.

These issues indicate that Forests NSW faces difficulties managing supply especially for large, high quality sawlogs.

This is due in part to the actions of Government in negotiating a new wood supply agreement for the north coast in 2003 and the loss of forest estate.

In this new agreement, the Government waived its rights to reduce commitments without compensating industry for any loss. This removed Forests NSW's ability to better manage supply risks by adjusting commitments. In addition, timber volumes were more or less maintained despite the loss of forest estate to national park and reserves.

To meet wood supply commitments, the native forest managed by Forests NSW on the north coast is being cut faster than it is growing back. This is especially the case for the blackbutt species. This does not mean that the forest will not regrow but there will be a reduction in yield in the future.

After the current agreements cease, Forests NSW plans to fill the shortfall on the north coast with plantation hardwood. However, we found it is currently sourcing significantly more from plantations than anticipated to meet its commitments, which may place this strategy at risk.

Forests NSW continue to look for new sources of hardwood timber to meet existing commitments including private property and leasehold land. As timber haulage distances increase and yields decrease, the overall cost of production will rise. These additional costs will have to be borne by both Forest NSW and the industry.

Given that native forest operations ran at loss of $14.4 million in 2007-08, this raises concerns about how much worse this financial burden may get.

Key audit findings

Chapter 1
What is the role of Forests NSW?

Forests NSW is a public trading enterprise within the NSW Department of Primary Industries. It manages 2.2 million hectares of native forest and 48,140 hectares of hardwood plantations. There are legally binding rules in place to help ensure harvesting practices protect wildlife habitat and sensitive flora, and limit erosion.

Forests NSW's key role is to sustainably manage state forests and maintain timber supply. In 2007-08 Forests NSW produced 872,000m^3 of sawlog and 612,000 tonnes of pulpwood from native forest and hardwood plantations.

The *National Forestry Policy 1992* established a framework for sustainable timber production. Between 1999 and 2001, three Regional Forest Agreements (RFAs) were signed between the Commonwealth and NSW Government for the coastal regions of NSW. These agreements outline the management of the State's native forests for 20 years and require five-yearly reviews of yield estimates.

Key changes in the industry over the last 10 years include :

- conversions of large areas of forest estate to national parks
- 20 year wood supply agreements with industry
- industry assistance packages to help customers develop their businesses or exit the industry
- increasing focus on value add products from lower quality timber and smaller logs.

Chapter 2
How much timber is available?

We found that Forests NSW has adequate estimates of how much timber is available from native forests. It uses an industry accepted process to develop estimates, but more could be done to improve reliability.

Forests NSW has developed and implemented inventory procedures to estimate yield of high quality large sawlogs from native forests. It has produced yield estimates for three of its four regions, with estimates for western region still to be finalised. Forests NSW advises that it also has yield estimates for high quality small sawlogs, low quality sawlogs and pulpwood however it has not made these estimates public for all regions and products.

In addition, reviews of yield estimates for the southern region, due in 2004 for Eden and 2006 for Tumut and the south coast, have not been completed. Yield estimates for hardwood plantations on the north coast also need to be reviewed to improve their reliability.

Forests NSW appears to use an adequate number of sample plots to estimate the number, species and size of trees in the forest. Recent internal audits indicate that plot measurements are reasonable. However it needs to do more to ensure all plots are regularly remeasured to capture changes in the forest. It also needs to review the parameters it uses to adjust harvest areas for unknowns such as threatened species.

Forests NSW does not routinely compare harvesting results to its yield estimates. It advises that this is because these cannot be used at an operational level given yield variability across harvest areas. However we consider these reviews necessary to test the validity of its estimates.

Chapter 3
Can commitments be met?

We found that Forests NSW should have sufficient timber to meet its wood supply commitments which are fixed for periods up to 2023 using both native and plantation hardwood. However, the cost and difficulty of harvesting and hauling this timber is likely to increase over time. This presents a significant challenge for Forests NSW to manage.

Forests NSW has comprehensive information on its wood supply commitments, and it regularly monitors performance against allocations.

Over the last five years, not all contractual commitments for sawlogs have been met, although the results vary by product and region. Forests NSW advise that the gap exists due to production lags and downturns in the industry, rather than insufficient timber resources. In some cases, demand has been met through the substitution of smaller logs instead of the premium large sawlogs which is allowable under a number of contracts.

Forests NSW identifies risks which may affect its ability to supply hardwood, both at a corporate and regional level.

It has strategies in place to address its key supply risks, but has had mixed success. It manages bushfires and salvages timber after major fires. However, it has not met its targets for sourcing timber from private properties.

Recommendations

To improve its knowledge of timber availability, we recommend that Forests NSW:

Recommendation 1

- by December 2010, upgrade its forestry management system for native forests to capture all harvesting results and other events which impact on yield (page 19)

Recommendation 2

- by September 2009, finalise its net area and strike rate modifier studies to improve the accuracy of its estimates (page 20)

Recommendation 3

- by June 2010, undertake and publicly report the results of:
  - a review of yield estimates for native forests in Southern Region including Eden, South Coast and Tumut
  - a review of yield estimates for hardwood plantations (page 24)

Recommendation 4

- by June 2010, publicly report the results of yield estimates for high quality large sawlogs, high quality small sawlogs, low quality logs and pulpwood for each region (page 24)

Recommendation 5

- compare harvest results against its yield estimates over five year periods as a means of testing the accuracy of estimates
- report the results annually starting June 2010 (page 25).

To address business risks, we recommend that Forests NSW:

Recommendation 6

- investigate the reasons for not meeting its private property targets for hardwood timber and develop better ways of addressing these (page 42)

Recommendation 7

- investigate the potential for developing commercial markets for forest waste (page 44)

Recommendation 8

- simplify and improve timber pricing by introducing a new pricing system by December 2009 that:
  - ensures log production costs are recovered
  - is transparent (page 43).

Recommendation 9

We recommend that the Minister responsible for native forest operations include yield review requirements that allow for non-compensable reduction in allocation, in all future wood supply agreements (page 38).

Response from Forests NSW

I appreciate the opportunity to respond to your Performance Audit Report "Sustaining Native Forest Operations".

I support your recommendations in principle and I believe their adoption will assist Forests NSW to continue to meet the NSW Government's timber supply commitments, monitor performance against those commitments and to better manage its future commitments to the timber industry.

As you acknowledge, Forests NSW is a Government Trading Enterprise with a commercial focus that requires it to make a profit. Forests NSW is also a part of the Department of Primary Industries and is bound by Government policies. It has particular responsibilities and accountabilities to the NSW Government and the community, being the steward of a highly prized and sustainable natural resource and public asset. The Government and the community rightly demand that the highest environmental standards are applied in native forest harvesting. Forests NSW must also provide for a range of non-commercial activities like fire hazard reduction, maintenance of access roads and trails, threatened species protection, pest animal and weed control and recreational use.

From a public finance perspective, one of the advantages of a commercial forest is that ongoing land management costs including the non commercial activities mentioned above are largely met from timber revenue, not public funds. In fact, without revenue from timber sales, managing our 2 million hectares of State forests would cost the NSW taxpayers many tens of millions of dollars.

Your Report notes the cash loss attributed to Native Forest Operations Branch (NFOB) in 2007/08. While I acknowledge that NFOB has run at a loss it should be noted that the 2007/08 financial year was affected by reduced demand for timber products supplied to the housing sector across Australia but more particularly in New South Wales. It should also be noted that Forests NSW is managed as a consolidated business, ie Plantation Forest Operations Branch (PFOB) results are consolidated with NFOB and the entity as a whole has been profitable. Accordingly, Forests NSW has the ability to fund its operations into the future.

However, I accept that Forests NSW must also be seen to be working as efficiently as possible. Accordingly my management team and I have been working over the last year to develop a program that aims to achieve a cash-neutral or better financial outcome for NFOB within three years. It would then be the intention to move to a cash positive position in subsequent years. The program will address the issues of operational efficiency, overhead cost reduction and timber pricing that better reflects its market value.

I would also acknowledge your observation that the changing availability of preferred species will present challenges for Forests NSW and its customers to manage in terms of cost relative to demand and price for finished products.

I note your suggestions for further refinement of standing timber and yield estimates and wood flow projections. The actual volume and mix of timber harvested is governed by factors that cannot be fully anticipated in the long term modelling. However, we have put in place systems to improve yield estimates at the regional level for the coastal regions and can now focus on improving sampling and yield reconciliation at the operational scale. I am committed to achieving a satisfactory level of accuracy for public reporting purposes in this regard.

I note also your observation that over recent years the volume of logs to be supplied under Wood Supply Agreements in aggregate has either not been delivered or ordered. This is not unusual and is also a feature of Forests NSW PFOB business. There are various factors contributing to this variance such as contractor capacity and availability, weather conditions, customer and market demand and species preferences. Your suggestion that Forests NSW more systematically monitor the contribution of these various factors will be more closely examined and I believe such a system could be a valuable addition to our information base.

As to the future, I believe that the timber supply requirements of industry for the term of the present agreements and beyond will be able to be met for the following reasons:

- *Projections on which the current wood supply agreements are based, as reflected in Forests NSW Ecologically Sustainable Forest Management (ESFM) plans, are holding up and yields continue to be at sustainable levels.*
- *Current harvesting levels of hardwood plantations are consistent with long term projections of yield and availability, despite annual harvesting rates varying up or down from the estimated levels shown in the ESFM Plans.*
- *Subject to favourable business case analyses, Forests NSW will aim to replant and regrow its plantations harvested during the current supply commitment period to meet future commitments.*
- *There has been a significant expansion of hardwood plantations on the north coast funded by private investment in recent years. These plantations are being grown for future sawlog production and will increasingly become available to supplement supplies from both public and private natural forests. These plantations were not envisaged at the time current commitments to industry were framed but will assist in making for a healthy and diverse timber industry into the future.*
- *In the last five years, using timber supplementation funds, Forests NSW has sourced almost 54,000 m^3 of sawlogs through Timber Purchase Agreements with private landholders. Forests NSW has recently commenced a transformation of the current Private Property Timber Unit into a separate Business Unit which will have as its focus acquiring 30,000 m^3 of sawlogs pa (as per the ESFM Plans) on a commercially viable basis.*

I note that your recommendations will need to be considered by Government and implementation will require a degree of Government support. Subject to that consideration and the resolution of some prerequisite actions partly outside Forests NSW control, I believe the timelines you have suggested for the implementation of the recommendations are achievable.

Thank you and your staff for making a positive contribution to improving the sustainability of native forest operations in NSW.

(signed)
Sean Hooper
Acting Chief Executive

for Nick Roberts
Chief Executive

Dated: 17 April 2009

1 What is the role of Forests NSW?

1.1 Why is timber important?

Timber is an important resource. It is a popular building material used in the construction of homes, furniture, and floorboards. The timber industry directly supports over 7,000 jobs in regional towns across NSW.

In NSW timber is harvested from native forests and plantations. Our native forests consist mainly of hardwood timber, particularly eucalypts. Plantations are generally native hardwood or introduced softwoods.

Timber is a renewable resource, meaning if managed properly, forests will regrow. The study, management and harvesting of trees is called silviculture. The aim of silviculture is to manage forests to ensure a sustainable supply of timber while maintaining forest ecosystems.

1.2 How are native forests harvested?

Harvesting laws and guidelines are in place

Harvesting native forests is a contentious issue since poor logging practices can damage forests. As a result there are legally binding rules to ensure harvesting practices protect wildlife habitat and sensitive flora, and limit erosion.

There are also restrictions on how a forest can be logged. The three key silviculture practices used are:

- thinning, which is the removal of smaller trees to improve the health and growth of the remaining forest
- Single Tree Selection (STS) which involves harvesting individual or small clusters of trees
- Australian Group Selection (AGS), that is the harvesting of a group of trees with an area no greater than 0.25 hectares (ie an area 50m by 50m) leaving a gap in the canopy.

Alternate coupe harvesting is used in the Eden area. This method of harvesting resembles a checkerboard arrangement across the forest. Each coupe harvested has an area of approximately 50 hectares.

Exhibit 1: Aerial photo of forest harvested by Australian Group Selection (AGS)

Source: Forests NSW

1.3 What is the role of Forests NSW?

Forests NSW manages 2.2 million hectares of native forest

Forests NSW is a public trading enterprise within the NSW Department of Primary Industries. It manages around 2.5 million hectares of public native forest and plantation for timber production. This includes:

- 2.2 million hectares of native forest
- 209,000 hectares of softwood plantations
- 48,140 hectares of hardwood plantations.

The *Forestry Act 1916* outlines the objectives of Forests NSW. These include:

- conserving and utilising the timber on land it manages to the best advantage of the State
- providing timber for domestic and commercial purposes
- promoting the use of timber
- preserving and improving the land it manages
- promoting recreation in state forests and conserving birds and animals in these areas.

Forests NSW's key role is the sustainable harvesting of sawlogs and pulpwood primarily from state forests. Sawlogs are logs that can be processed into sawn timber. Pulpwood is generally from thinnings and low quality timber which is chipped to produce particle board and paper products.

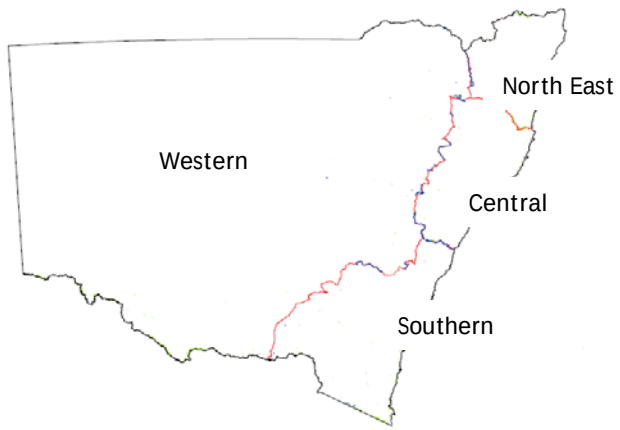
Just over a half of the native forest that Forests NSW manages is available for harvest. The remaining areas are set aside for environmental protection purposes or the terrain is too difficult for logging operations.

In 2007-08 Forests NSW, produced around 872,000m^3 of sawlog and around 612,000 tonnes of pulpwood from native forest and hardwood plantations.

Forests NSW is geographically split into four native forest regions. They are north east, central, southern and western.

There are four native forest regions

Exhibit 2: Forests NSW native forest regions



Source: Forests NSW

Southern region is divided into South Coast, Tumut and Eden subregions. Western region operations are focused around white cypress pine products in the east and river redgum forests in the Riverina.

North East and Central operate effectively as one region, referred to as the north coast, in terms of their wood production. Around two thirds of all sawlog is sourced from the north coast.

1.4 What regulates the timber industry?

State owned forests in Australia are controlled by various federal and state forestry agreements and approvals.

Regional Forest Agreements are in place

The *National Forestry Policy 1992* establishes a framework for sustainable timber production. Under this policy, between 1999 and 2001, three Regional Forest Agreements (RFA) were signed between the Commonwealth and NSW Government for the coastal regions of NSW.

RFAs set out the Governments' intentions for the future use and management of the State's native forests for 20 years and include five-yearly reviews of yield estimates.

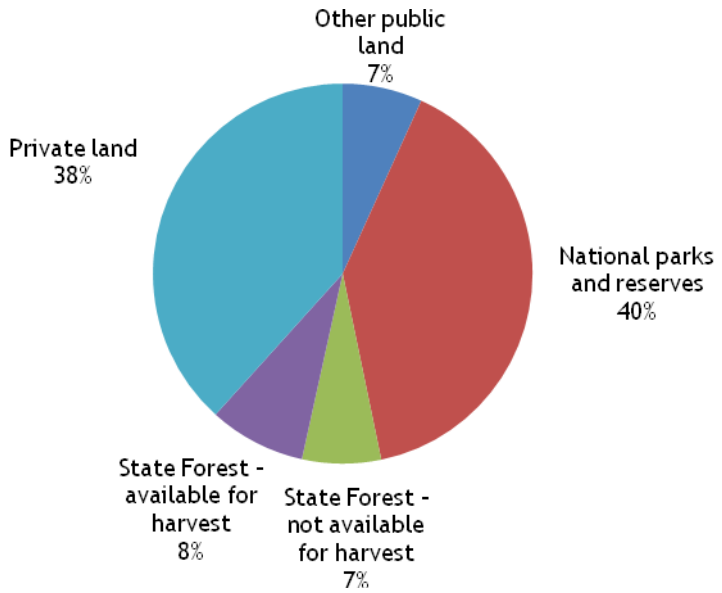
Under the NSW *Forestry and National Park Estate Act 1998,* the State Government has also established state forest agreements and integrated forestry operations approvals (IFOA). IFOAs integrate the regulatory requirements for a range of environmental laws including:

- environmental planning and assessment
- pollution control
- threatened species
- fisheries management.

Only a small proportion of the forest can be harvested

Forests NSW manages only a small proportion of all native forest areas in NSW. For example, it manages 15 per cent of forest in coastal and tableland areas. The rest is mainly on private land or reserved in national parks. Just over half the area of forest that Forests NSW manages is available for harvest.

Exhibit 3: Forests tenure in north coast and southern regions



Source: Forests NSW 2004

Notes: Includes North East, Central, and Southern Regions. Excludes plantations.

In recent years the area of native forest available for harvesting in NSW has decreased, mainly due to the conversion of state forest to national park. Between 1999-2000 and 2005-06 public native forest available for harvest decreased by 38 per cent.

There are 20 year wood supply agreements with industry

The timeline below outlines events in the industry since 1995. Key changes introduced by the State Government were 20 year wood supply agreements with industry, and an industry assistance package to help customers develop their businesses or exit the industry.

Exhibit 4: Key events in the recent history of the NSW timber industry	
1995	▪ The NSW Government commenced regional assessments of forest resources in coastal areas of NSW
1995	▪ Industry assistance package introduced in response to expected reduction of forests resources (ceased 2007)
1997	▪ Government converted 176,000 hectares of Forests NSW estate on the north coast and 72,000 hectares in Southern region to national park and reserves
1999-2001	▪ Three RFAs signed between the federal and state government for coastal areas of NSW
	▪ 20 year wood supply agreements signed with customers in these regions
2001	▪ Government converted 233,000 hectares of Forests NSW estate in Southern Region to national park and reserves
2003	▪ Government converted 107,000 hectares of Forests NSW estate on the north coast to national park and reserves (the icon decision)
2003-04	▪ Wood supply agreements for the north coast renegotiated and extended 5 years and a clause to review yield removed
2005	▪ Government converted 347,000 hectares of Forests NSW cypress pine estate in western region to national park (Brigalow decision)
2005-06	▪ 20 year wood supply agreements signed with cypress pine customers
2007	▪ Western regional assessment of forest resources commenced (ongoing)
2008	▪ Resource assessments of river redgum commenced as part of environmental impact process (ongoing)

Source: Forests NSW, Audit Office research

1.5 What is the focus of the audit?

Audit objective

This audit assessed whether Forests NSW manages the supply of hardwood to meet wood supply agreements and sustain native forests.

We wanted to find out whether Forests NSW:

- knows how much native forest and plantation hardwood is available for harvesting, presently and in the future
- has promised to sell more native forest and plantation hardwood than it can sustainably supply.

Audit scope

The audit covered native forests and hardwood plantations. It included all hardwood products supplied by Forests NSW, both sawlog and pulpwood. For the purpose of the audit we treated cypress pine as a hardwood.

The audit did not involve a detailed review of:

- softwood plantations and associated supply obligations
- contract processes
- governance arrangements within Forests NSW.

See Appendix 3 for further information on the lines of inquiry, scope, criteria and audit approach.

2 How much timber is available?

At a glance

The key question we wanted to answer was:

Does Forests NSW know how much native forest and plantation hardwood is available for harvesting, presently and in the future?

Our assessment:

We found that it has adequate estimates of how much timber is available from native forests. It uses an industry accepted process to develop estimates, but more could be done to improve reliability.

Forests NSW has developed and implemented inventory procedures to estimate yield of high quality large sawlogs from native forests. It has produced yield estimates for three of its four regions, with estimates for western region still to be finalised. Forests NSW advises that it also has yield estimates for high quality small sawlogs, low quality sawlogs and pulpwood however it has not made these estimates public for all regions and products.

In addition, reviews of yield estimates for the southern region due in 2004 for Eden and 2006 for Tumut and the south coast have not been completed. Yield estimates for hardwood plantations on the north coast also need to be reviewed to improve their reliability.

Forests NSW appears to use an adequate number of sample plots to estimate the number, species and size of trees in the forest. Recent internal audits indicate that plot measurements are reasonable. However it needs to do more to ensure all plots are regularly remeasured to capture changes in the forest. It also needs to review the parameters it uses to adjust harvest areas for unknowns such as threatened species.

Forests NSW does not routinely compare harvesting results to its yield estimates. It advises that this is because these cannot be used at an operational level given yield variability across harvest areas. However we consider these reviews necessary to test the validity of its estimates.

2.1 Does Forests NSW have data on existing native and plantation hardwood stocks?

Our assessment

We found that Forests NSW has adequate estimates of how much timber is available from native forests. It uses an industry accepted process to develop estimates, but more could be done to improve reliability.

Forests NSW has an inventory policy

Forests NSW has an inventory policy and framework which outlines its approach to calculating native forest resources. Its key inventory database is the Forest Resource Management and Evaluation System (FRAMES). Each region has its own version of FRAMES.

Better link between operational and strategic data needed

As a result, there is no single forestry management system that includes data on all regions for both native and plantation hardwood. In addition, harvesting results are not used to update FRAMES. This makes it difficult for Forests NSW to develop a clear picture of the impact of harvesting on the inventory and future yield. We also found some variation on timber volumes and the area available for harvest between data sources.

To address this, Forests NSW plans to better link its operational and strategic databases. This includes upgrading its geographic information system, on which inventory is based, to include event management such as major fires and harvesting. This will also improve reporting. However, this is a long term project with Forests NSW planning to focus initially on software upgrades.

Recommendation

Forests NSW, by December 2010, upgrade its forestry management system for native forests to capture all harvesting results and other events which impact on yield.

Two key outputs from FRAMES are the area available for harvest (hectares) and volume of timber within the forest, also called standing volume (^{3}). To work out area available for harvest, Forests NSW excludes various forest areas from it total estate. These include:

- forest reserves and special protection areas
- areas which may contain old growth or rainforest
- slopes greater than 30 degrees and drainage lines
- areas known to contain threatened species.

It then corrects this estimate to remove unmapped exclusions using 'area modifiers' to estimate:

- unmapped drainage lines, steep slopes and buffer zones next to exclusion areas (net area modifier)
- areas with threatened flora and fauna and other wildlife habitat (Strike Rate Modifier)

See Appendix 2 for details on the area available for harvest for each region.

Forests NSW also samples the forest to work out how much timber is in the forest and its rate of growth. There are two types of sample plots; strategic inventory or permanent growth plots.

Exhibit 6: Measuring tree diameters

Source: Forests NSW

To improve the reliability of its yield estimates we expected Forests NSW would:

- review the modifiers used to correct for unknowns such as threatened species and unmapped slopes
- have sufficient sample plots
- regularly remeasure its plots
- audit plot measurements
- update FRAMES.

No recent modifier studies implemented

We found that in 2006-07 Forests NSW had reviewed the coastal and redgum defect modifiers it uses to account for internal defects in native forests trees such as hollows, rot, scars, and branches. Forests reports that the results have yet to be implemented.

However, it has not reviewed the two key modifiers it uses to work out the area available for harvest, that is the net area and strike rate modifiers. This is despite its 2004 timber yield review of the North Coast which stated that these should be reviewed. Forests NSW reports that these studies are underway.

Recommendation

We recommend that by September 2009 Forests NSW finalise its net area and strike rate modifier studies to improve the accuracy of its estimates.

Number of inventory plots appears adequate

We found that there appears to be an adequate number of inventory plots. Inventory plots are 0.1 hectare in area and average one in every 250 hectares of forest that is available for harvest. This is consistent with a recommendation from the FRAMES Technical Committee in 1996 of a sampling intensity of one plot per 300 hectares.

In addition, Forests NSW reports that this sampling intensity results in reasonable estimates of standing volume, with all regions within 20 per cent of actual volumes.

Plot intensity varies between regions reflecting the different terrain and species:

- southern region - 1 in 200 hectares
- north coast - 1 in 250 hectares
- river red gum in Western region – 1 in 150 hectares
- cypress pine in Western region – 1 in 500 hectares
- Eden even aged forest – 1 in 12 hectares.

Growth plots are 0.4 hectares in area and average one in every 1,000 hectares. The information obtained from measurements of trees in these plots is used in models to simulate the growth of the forest.

Two thirds of inventory plots have been remeasured

We found Forests NSW has remeasured two thirds of its inventory plots and 80 per cent of its growth plots in accordance with its guidelines. The results for inventory plots may be skewed by Eden data which has significantly more plots than other regions.

Exhibit 7: Remeasuring strategic inventory and permanent growth plots (PGP)					
Region	**Regional area**	**Total inventory plots**	**Proportion remeasured last 10 yrs(%)**	**Total PGP**	**Proportion remeasured or new plots in last 5 yrs (%)**
Southern	Eden	12,743	62	72	57
	South Coast	513	53	139	100
	Tumut	196	100	no data provided	no data provided
North Coast	North East Central	1932	78	266	80
Western	Cypress	466	100	38	0
	Redgum	541	100	101	100
Total		**16,391**	**66%**	**616**	**79%**

Source: Forests NSW
Notes: Forests NSW advises Eden has more plots because it was the first region to trial inventory plots and intended to use these for detailed harvest planning.

Forests NSW advised that they have asked Central and North East regions to remeasure their older plots. It has not remeasured cypress plots since it lost estate as part of the Brigalow decision, but reports it intends to review these growth plots in future.

Plot measurement appears fairly accurate

Another way to ensure resource inventory is reliable is to check how well plots are measured. Forests NSW aims to check five per cent of inventory plots it measures each year to improve the accuracy of plot measurement.

We reviewed the results of these internal audits undertaken since mid 2006. Of the 37 plots only one failed. This indicates that the accuracy of plot measurements is reasonable.

Forests NSW does not check growth plots in the field, but compares measurements with previous results to ensure consistency. Forests NSW advised that any inconsistencies are sent back to regions for follow-up.

FRAMES has regularly been updated

Forests NSW has progressively updated FRAMES with more recent sample plot data and wood yield models. The inventory process was also reviewed as part of a valuation study in 2008 which found a number of opportunities to improve inventory.

Forests NSW also uses new technology to improve its resource inventory. For example, it uses Global Positioning Systems to map the estate, establish and locate sample plots and mark boundaries for harvest areas. LIDAR (Light Detection and Ranging) equipment, which provides more detailed topography and tree numbers, has also been piloted in Western region and on the North Coast.

New technology is improving inventory

Exhibit 8: Use if LIDAR
LIDAR (Light Detection and Ranging) system rapidly transmits pulses of light that reflect off the terrain and other landscape features. Captured data is used to generate a very dense network of height measurements on a map. The benefits of LIDAR include: ▪ more accurate measurement of tree numbers and heights ▪ better mapping of terrain such as steep slopes and drainage lines ▪ can view forests structure in 3D ▪ can be used day and night.

Source: Forests NSW

In addition to its native forest resources, Forests NSW has 48,140 hectares of hardwood plantations which it uses to supplement sawlog supplies. This includes 48,100 hectares on the north coast and 40 hectares in southern region.

Sampling for plantations is more intensive

Forests NSW advises that the inventory process for plantations is similar to that used for native forests. In 2003 and 2004 the whole pre-1994 forests estate of 20,700 hectares was remeasured with 365, 0.1 hectare plots established. Since 1999, 9264 inventory plots were established in the 27,400 hectares of post-1994 plantations.

There are 135 growth plots in hardwood plantations. Forests NSW has remeasured all of these in the last five years.

Forests NSW estimates the volume of timber

Forests NSW uses FRAMES to estimate the standing volume of timber in native forests and hardwood plantations.

Exhibit 9: Estimated standing volume of sawlog products

Region	HQ Large Sawlogs (m^3)	HQ Small Sawlogs (m^3)	Low Quality Sawlogs (m^3)	Pulpwood (m^3)
Central	3,494,399	1,676,681	5,076,334	4,096,295
NE	4,325,338	1,943,563	4,528,869	5,062,171
SC	2,177,043	820,082	1,946,709	5,812,560
Tumbarumba	3,383,221	649,519	1,309,777	1,995,996
Eden	201,196	16,744		527,789
Riverina	2,229,498	814,841	1,039,238	9,326,284
HWD Plantations	577,882	1,389,667	233,311	964,972
Western Non-CRA	1,041,979			
Western CRA	2,215,525			
Total	**19,646,081**	**7,311,097**	**14,134,239**	**27,786,068**

Source: Forests NSW 2008

2.2 Does Forests NSW estimate the yield it can expect from native forests and hardwood plantations?

Our assessment

Forests NSW estimates the timber yield from its native forest and hardwood plantations but most of these estimates need reviewing.

Forests NSW has processes in place for calculating sustainable yield. This is the volume of timber that can be harvested from forests each year without diminishing the resource. It applies various models and constraints to inventory data to project growth of the forests to determine future resources and yield. These include silviculture practices, haulage distances, and how often an area is harvested.

Forests NSW has developed recent yield estimates for high quality large logs for which it has fixed long term supply commitments. Forests NSW advise that it also has yield estimates high quality small sawlogs, low quality sawlogs and pulpwood however it has not made these estimates public for all regions and products.

RFAs require yield estimates to be reviewed after five years to give assurance that current and projected yields are sustainable. Forests NSW has only reviewed yield estimates for the North Coast which it completed following the Government's transfer of part of the estate to national park. The review of yield estimates for southern region is well overdue. Forests NSW are currently reviewing yields for Cypress Pine and River Redgum in Western region as part of regional resource assessments.

Exhibit 10: Annual yield for high quality large sawlogs

Region	Regional area	Yield (m^3)	Last reviewed	RFA review due date
North Coast	Upper / lower north east	220,000 (1-5 yrs) 200,000 (6-20 yrs)	2004	2006 (Reviewed in 2004 instead)
Southern	Eden	23,000	1999	2004
	South Coast	42,070	2001	2006
	Tumut	48,000	2001	2006
Western	Cypress	60,320	Interim yield, currently being assessed	na
	Redgum	23,450	Historical cut only, yield currently being assessed	na
Total	From 2004	**416,840** (1-5 yrs) **396,840** (6-20 yrs)		

Source: Forests NSW ESFM Plans

Notes: There is no Regional Forest Agreement for Western Region

North Coast yield not sustainable long term

Yield modelling for South Coast and Tumut indicates that the current yield can be maintained over the long term. For the North Coast, where more than two thirds of all sawlog volume is obtained, yield modelling assumes a high level of cut for 20 years in order to meet wood supply commitments agreed by the Government.

This means there will be less timber available in the long term. In order to meet future sawlog commitments there will need to be increased reliance on hardwood plantations and smaller logs.

Reliability of plantation estimates unknown

Forests NSW have advised that plantation yield estimates are somewhat speculative due to variations in the growth potential of different sites and species mixes.

In order to further test the reliability of estimates we compared the results of the last two yield reviews for the north coast for native forests and hardwood plantations. We found that wood supply forecasts undertaken in 2000 differ significantly around the fourth five-year period (ie 2020).

Exhibit 11: Total sawlog availability for the north coast

Five year periods (from 2004)	2000 review (m^3/year)	2004 review (m^3/year)	% change
1	516,663	567,100	10%
2	578,413	506,500	-12%
3	524,996	583,900	11%
4	355,614	792,600	123%
5	394,804	741,700	88%
6	461,948	521,800	13%
7	472,834	360,400	-24%
8	446,256	476,900	7%

Source: Wood Supply Forecasts underlying NE NSW for RFA 2000, NC ESFM Plans 2005

Note: There is one year difference in alignment between the two datasets.

The estimated volumes are generally higher in the 2004 review despite Forests NSW losing 107,000 hectares of estate in 2003 on the north coast. These discrepancies make us question the reliability of yield estimates in the medium-term, especially for hardwood plantations.

Recommendations

We recommend that by June 2010 Forests NSW undertake and publicly report the results of:

- a review of yield estimates for native forests in Southern Region including Eden, South Coast and Tumut
- a review of yield estimates for hardwood plantations.

We recommend that by June 2010 Forests NSW publicly report the results of yield estimates for high quality large sawlogs, high quality small sawlogs, low quality sawlogs and pulpwood for each region.

2.3 Does Forests NSW compare harvesting results against its yield estimates?

Our assessment

Forests NSW does not routinely compare harvesting results to its yield estimates. It advises that this is because these cannot be used at an operational level given yield variability across harvest areas. However, we consider these reviews necessary to test its estimates.

One way to check the reliability of yield estimates is to compare them to the actual timber volumes harvested from the forest. The Regional Forest Agreements require monitoring of actual versus predicted volumes on an annual basis.

No routine checking of harvest against estimates

We found that Forests NSW does not routinely check its harvest results against yield estimates. Forests NSW advises this is because the yield from individual harvest areas, know as compartments, within a region can vary significantly making it difficult to compare estimates with actual volumes. However, we consider these reviews necessary to test its estimates.

Two reconciliation studies completed

Forests NSW completed two studies comparing harvest results with yield estimates for the north coast between 1999 and 2001. The longest study, covering a two and a half year period, showed that actual yield was 87 per cent of predicted.

The Forests Products Commission of Western Australia plan to monitor actual yield against strategic estimates over a five year period.

Exhibit 12: Strategic timber yield versus actual timber yield
The Forests Products Commission of Western Australia has developed a forests management plan which outlines key performance indicators for various values such as biological diversity, ecosystem health, socioeconomic benefits and productive capacity. The plan includes 12 indicators for productive capacity including plans to monitor actual yield against strategic estimates over a five year period.

Source: WA FPC Forests Management Plan 2004-2013

Recommendation

We recommend that Forests NSW:

- compare harvest results to yield estimates over five year periods as a means of testing the accuracy of estimates
- report the results annually commencing June 2010.

3 Can commitments be met?

At a glance

The key question we wanted to answer was:

Has Forests NSW promised to sell more native forest and plantation hardwood than it can sustainably supply?

Our assessment:

We found that Forests NSW should have sufficient timber to meet its wood supply commitments which are fixed for periods up to 2023 using both native and plantation hardwood. However, the cost and difficulty of harvesting and hauling this timber is likely to increase over time. This presents a significant challenge for Forests NSW to manage.

Forests NSW has comprehensive information on its wood supply commitments, and it regularly monitors performance against allocations.

Over the last five years, not all contractual commitments for sawlogs have been met, although the results vary by product and region. Forests NSW advise that the gap exists due to production lags and downturns in the industry, rather than insufficient timber resources. In some cases, demand has been met through the substitution of smaller logs instead of the premium large sawlogs which is allowable under a number of contracts.

Forests NSW identifies risks which may affect its ability to supply hardwood, both at a corporate and regional level.

It has strategies in place to address its key supply risks, but has had mixed success. It manages bushfires and salvages timber after major fires. However, it has not met its targets for sourcing timber from private property.

3.1 Does Forests NSW have data on its wood supply commitments?

Our assessment

Forests NSW has comprehensive information on its wood supply commitments, and it regularly monitors performance against allocations.

Data on wood supply commitments is available

Relevant head office and regional staff can access information on wood supply commitments, including copies of wood supply agreements, via a shared directory in Forests NSW intranet. Data is available statewide, by region and individual customer.

There are six key types of wood supply agreements for the north coast. They vary in terms of the contract period, timber quality, and timber volume.

There are six types of wood supply agreements for the north coast

Exhibit 13: Types of wood supply agreements	
Type A	Fixed volumes for 20 years generally for high quality large logs, although a proportion can be substituted with high quality small logs. Contracts expire 2023.
Type B	75 per cent of volume is fixed for the first 10 years, with share of production for the remaining 25 per cent. This means the available wood is shared between customers. Mainly high quality small sawlog, poles, piles and girders. Resource review to occur at year 10 and 15. Contracts expire 2023.
Type C	Volume is based on share of production. Mainly used for low quality logs (also called salvage logs). Contracts expire 2023.
Type D	Same specifications as C agreements except contracts expire in 2015.
Annual	Timber allocation based on share of production and are renewed each year. Can be sawlog or pulpwood.
Pulp	Pulp agreements vary from fixed term contracts to annual allocations.

Source: Forests NSW (NC ESFM Plan, WSAs)

Wood supply agreements on the south coast generally contain commitments for more than one product and expire in 2020.

Under a wood supply agreement, Forests NSW can vary the volume of timber supplied to a customer by up to ten per cent. However, the cumulative value of the over or under supply cannot be greater than ten per cent of the annual commitment.

There are around 300 wood supply agreements in total. Regions monitor the wood supplied to each customer against their allocations, including monthly and annual targets. The Commercial Services unit also centrally monitors wood supplied to customers for high quality large logs.

Almost 1 million m^3 **of sawlog commitments**

In 2007-08, Forests NSW sawlog commitments totalled 942,216m^3 and pulp commitments were 521,450m^3.

Exhibit 14: Annual wood supply commitments by region (2007-08)						
	HQ Large (m^3)	HQ Small (m^3)	LQ (m^3)	Other (m^3)	Total (m^3)	Pulp (T)
North Coast	209,500	63,772	330,544	28,850	632,666	165,000
South Coast	46,000	4,650	32,000	Nil	82,700	63,050
Tumut	33,008	6,240	20,062	Nil	59,310	20,000
Eden	22,080	1,920	23,000	Nil	47,000	273,400
Western	90,590		28,000	2,000	120,590	Nil
Total	401,178	76,582	433,606	30,850	942,216	521,450

Source: Forests NSW

Notes: Other means poles and piles for the north coast, and ironbark for western region. Around a third of poles and piles supplied meet the specifications of a high quality large sawlog.

Girders and veneer logs are included in the high quality large sawlogs

Western region commitments for cypress are 59,590m^3 and are based on one log grade. Western region does not have long term commitments for redgum.

The north coast supplies the majority of timber in NSW, with more than two thirds (67 per cent) of the State's total sawlog supply commitments. The south coast, particularly Eden, is committed to supply more than two thirds (68 per cent) of the State's pulpwood production.

About 50 per cent of total sawlog commitments are fixed

Although Forests NSW is committed to providing these volumes, in practice it has some flexibility if the timber is not available. For example, Forests NSW must supply a fixed timber volume of around 464,000m^3 or about 50 per cent of total sawlog, most of which is high quality sawlog. The balance is based on share of available supply.

Large high quality sawlog commitments are fixed although Forests NSW are allowed to substitute a proportion of high quality large for high quality small logs under some agreements.

3.2 Are commitments being met?

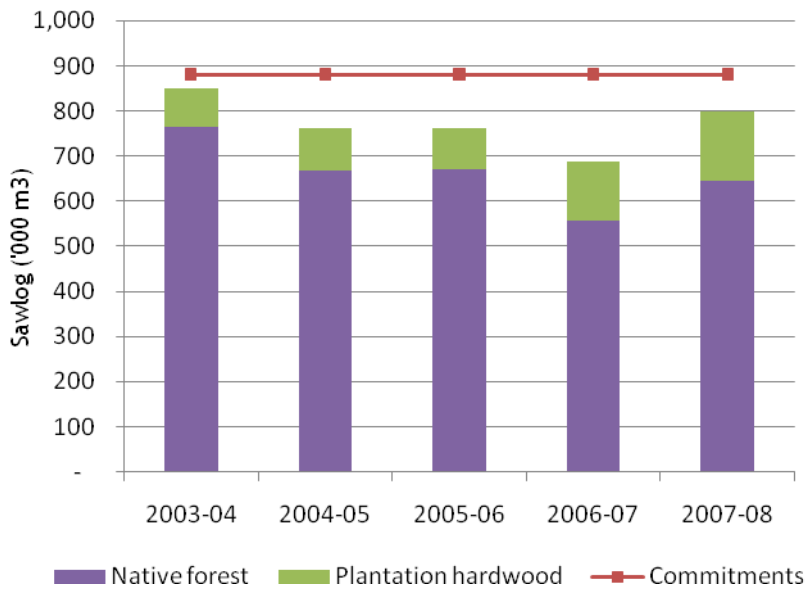
Our assessment

Over the last five years, not all contractual commitments for sawlogs have been met, although the results vary by product and region. Forests NSW advise that the gap exists due to production lags and downturns in the industry, rather than insufficient timber resources. In some cases, demand has been met through the substitution of smaller logs instead of the premium large sawlogs which is allowable under a number of contracts.

Overall sawlog commitments have not been meet

We have compared past harvesting results with annual commitments to see how Forests NSW has performed over the last five financial years. Overall, the contractual commitments for sawlogs have not been met. These include high quality large, high quality small, low quality logs, veneer logs, and girders.

Exhibit 15: Harvesting results for total sawlog



Source: Forests NSW

Notes: Post-2005 commitments used for cypress. Excludes redgum as there are no long term commitments for this timber

Forests NSW advises that the gap exists due to production lags and downturns in the industry, rather than an inability to supply. In some cases, demand has been met through the substitution of smaller logs instead of the premium large sawlogs which is allowable under the contracts.

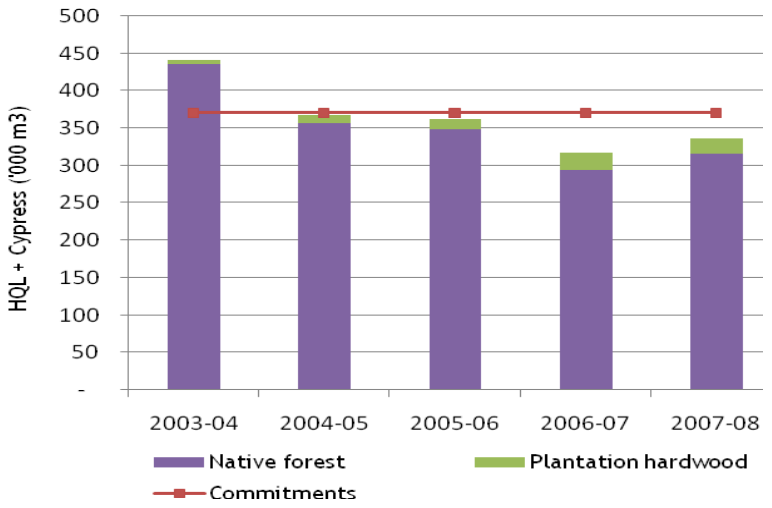
Around 153,000m^3 or 18 per cent of all hardwood sawlog harvested by Forests NSW was sourced from plantations in 2007-08, up from ten per cent in 2003-04. This is 70 per cent more than its current annual target of 89,700m^3.

Some product commitments have been met

Harvesting results by product, including pulpwood, are mixed with commitments being met for some products but not others. For example, in 2007-08 commitments for high quality small logs on the north coast and for pulpwood in southern region were met, but were not met for high quality large and low quality logs in any region.

High quality large commitments not met

Exhibit 16: Harvesting results for high quality large sawlog



Source: Forests NSW

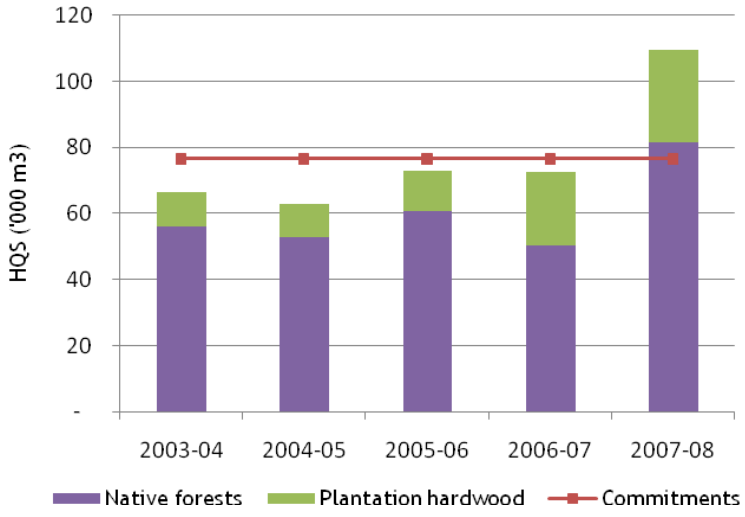
Notes: Post-2005 commitments used for cypress. Includes veneer and girders. Redgum is excluded as there are no long term commitments

Currently six per cent of high quality large sawlog harvested by Forests NSW is from plantations, up from one per cent in 2003-04.

Forests NSW is allowed to substitute a proportion of high quality large for high quality small logs under some agreements.

High quality small commitments met on north coast in 2007-08

Exhibit 17: Harvesting results for high quality small sawlog



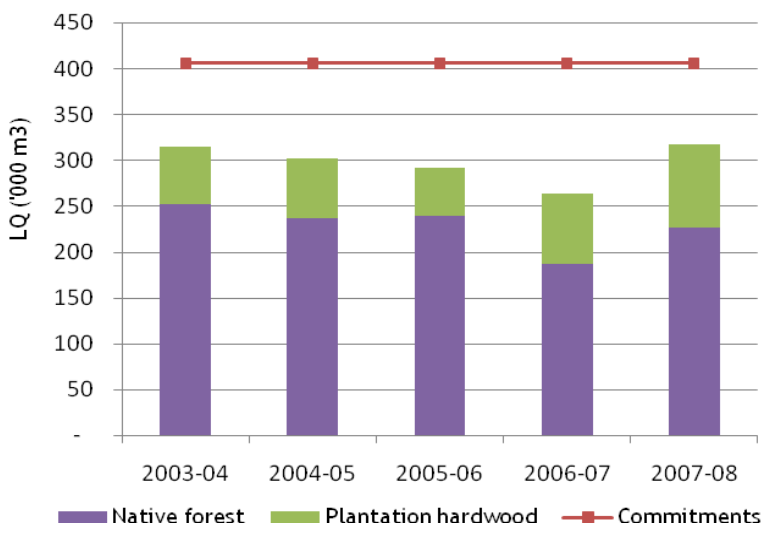
Source: Forests NSW

Notes: Redgum is excluded as there are no long term commitments

Currently 25 per cent of high quality small sawlog harvested by Forests NSW is from plantations, up from 16 per cent in 2003.

Low quality commitments not met

Exhibit 18: Harvesting results for low quality sawlog

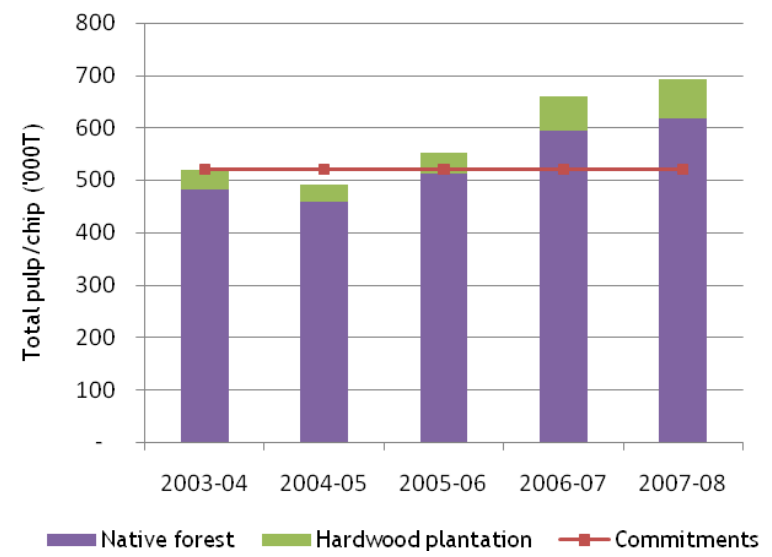


Source: Forests NSW
Notes: Redgum is excluded as there are no long term commitments

Currently 23 per cent of low quality sawlog harvested by Forests NSW is from plantations, up from 17 per cent in 2003-04.

Pulpwood commitments have been met

Exhibit 19: Harvesting results for pulp



Source: Forests NSW
Notes: Excludes redgum firewood

Currently 11 per cent of pulpwood harvested by Forests NSW is from plantations, up from seven per cent in 2003-04. Forests NSW advise that pulpwood is sourced from thinning operations and the defective sections of trees from sawlog production. More will be generated in some years depending on Forests NSW activities and the amount of regrowth.

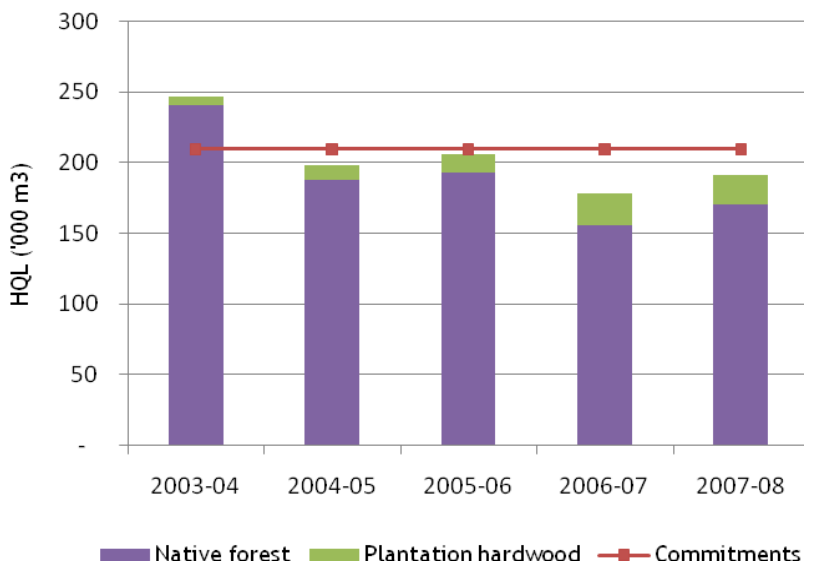
We have also examined data on the harvesting results, annual commitments and yield estimates where possible, to see how each region has performed.

Regional performance varies

Again the results vary with contractual commitments being met in some regions but not others. For example, in 2007-08 South Coast and Eden sub-regions met commitments for large high quality logs. However, North Coast, Tumut or Western Regions did not achieve the same result. For trends over time see Exhibits 20-24.

North coast high quality large commitments not met

Exhibit 20: Harvesting results for North Coast large high quality logs



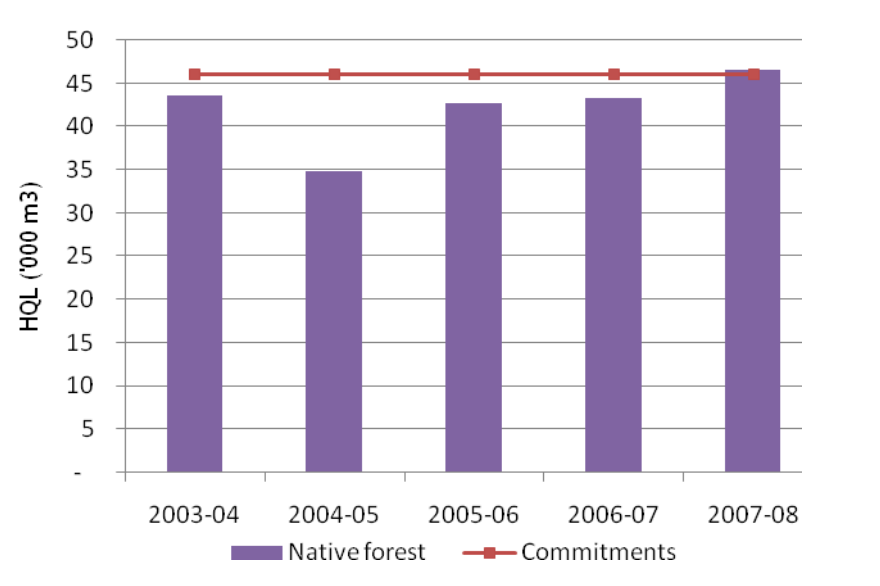
Source: Forests NSW

Notes: Includes veneer sawlogs and girders. Only the north coast has significant areas of hardwood plantation.

Currently 11 per cent of high quality sawlog harvested in the north coast is from plantations, up from three per cent in 2003-04.

South Coast high quality large commitments met in 2007-08

Exhibit 21: Harvesting results for South Coast large high quality logs

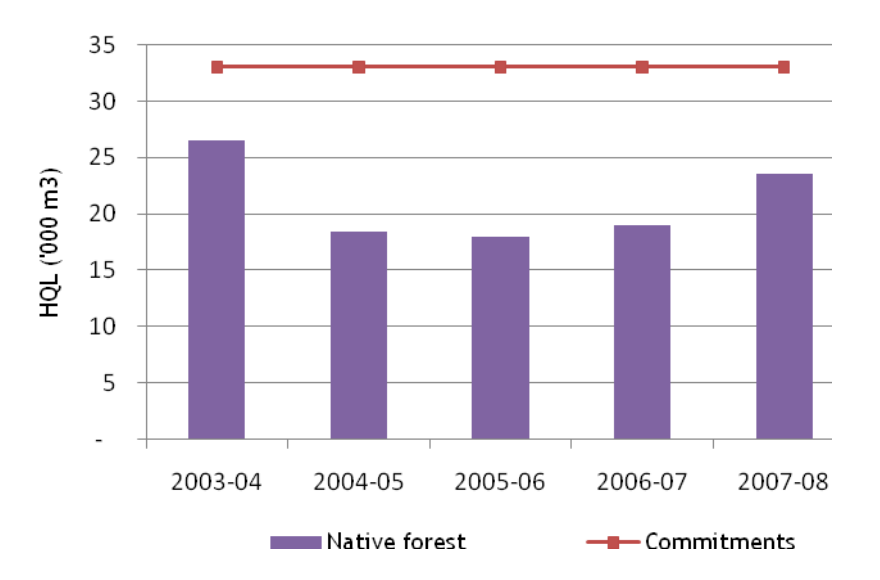


Source: Forests NSW

Notes: Does not include veneer sawlogs or girders.

Tumut high quality large commitments not met

Exhibit 22: Harvesting results for Tumut large high quality logs

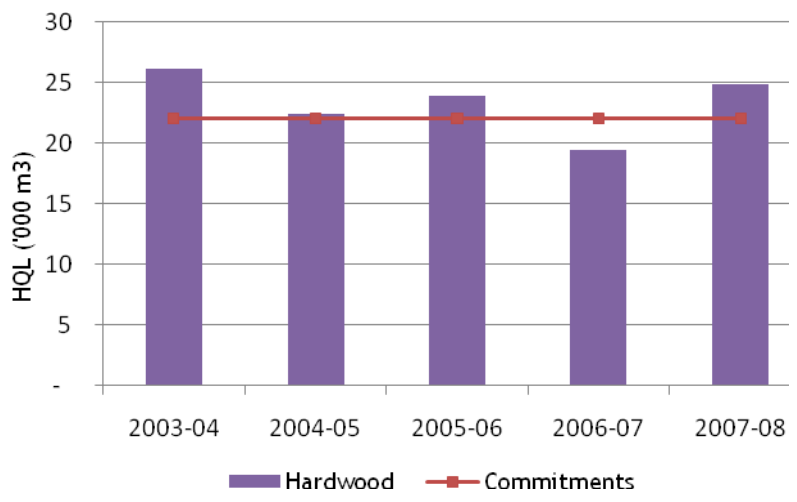


Source: Forests NSW

Notes: Does not include veneer sawlogs or girders.

Eden high quality large commitments met in 2007-08

Exhibit 23: Harvesting results for Eden large high quality logs

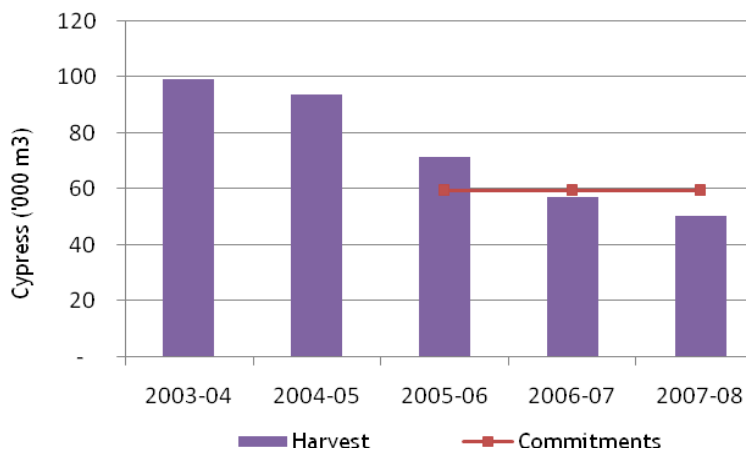


Source: Forests NSW

Notes: Does include veneer sawlogs or girders.

Cypress pine commitments not met in 2007-08

Exhibit 24: Harvesting results for Western cypress pine sawlog



Source: Forests NSW

Regional performance for other products also varies

Our analysis of performance against wood supply agreements for other sawlog products shows that in 2007-08 contractual commitments for high quality small logs were met on the North Coast and the South Coast area, but not in other areas. Contractual commitments were not met in any region for low quality logs, although these are based on share of production. However, all Southern Region areas (South Coast, Tumut, and Eden) met contractual commitments for pulpwood. For data on trends over time see Appendix 1.

Some mills take less than their allocation

Forests NSW reported that mills sometimes do not take their full allocation. This is a particular issue in western region with cypress pine and also in the Tumut area. For example, in 2007-08 six mills in western region took less timber than allocated, ranging from 12 to 85 per cent. Mill owners advised Forests NSW that the reasons for the shortfall included:

- illness and workplace injury reducing production
- installation of new equipment delaying production
- poor trading conditions
- businesses starting-up or exiting from the industry.

Harvest and haulage prices are increasing

Over the last five years, harvest and haulage prices for all north coast products increased 45 and 36 per cent respectively. Central Region advised that harvesting is becoming more difficult as they are moving into more remote areas with lower yield per hectare and steeper terrain.

Regional staff believe that the last five years of wood supply agreements for the north coast (i.e. 2018-2023) will be the most difficult, with Forests NSW increasingly accessing timber further away from sawmills.

In 1999, we stated the period of greatest financial and operational risk was within the first eight years of the wood supply agreements. The agreements at that time had a clause allowing a reassessment of timber yield after eight years and a reduction in volume with no compensation being payable to sawmills.

Agreements no longer allow yield reviews

There is no clause in current wood supply agreements for high quality large sawlog on the north coast that allows for a non-compensable reduction in commitment following a review of available timber resources. This clause was removed when the Government renegotiated wood supply agreements in 2003 following the 'icon' decision. Resource reviews were a key risk management tool for Forests NSW which is no longer available under wood supply agreements for large logs.

Some agreements are species specific

In addition, some wood supply agreements include species specific commitments. This is acceptable in forests where there is a dominant species such cypress, redgum and alpine ash, but can be a problem in mixed species forests such as those on the north coast.

In fact, the North Coast region has been unable to meet its species commitment since 2004 for blackbutt, although this is based on 'best endeavours'. This commitment accounts for about 36 per cent of all high quality sawlog allocations on the north coast.

Regional staff report that the Blackbutt commitment forces them to harvest coastal timber when they would prefer to balance commitments between the less accessible tableland timber and other species. This is in order to sustain the resource on the coast and buffer the impact of cost increases as it accesses more tablelands timber. This issue could have been addressed if the review clause remained in the north coast wood supply agreements.

Recommendation

We recommend that the Minister responsible for native forest operations include yield review requirements that allow for non-compensable reduction in allocation, in all future wood supply agreements.

Overall, if these performance trends continue it will put business operations at risk in a number of areas. This includes reduced revenue for government as Forests NSW will be producing less timber and increasing costs of supply both from state forests and other sources. Forests NSW needs to manage these risks.

3.3 Does Forests NSW identify wood supply risks?

Our assessment

Forests NSW identifies risks which may affect its ability to supply hardwood, both at a corporate and regional level.

Forests NSW has processes in place to identify risks which may affect its ability to supply hardwood and meet its commitments.

Key supply risks are identified and assessed

It maintains a corporate risk register which outlines key business risks including potential supply issues. Its adverse impacts register also captures environmental risks associated with activities such as road works and harvesting. Forests NSW assesses the likelihood and potential impact of these risks should they occur.

Most supply risks, including strategies to mitigate these risks, are identified in corporate planning documents. Key supply risks include:

- bushfire
- changing regulatory requirements
- lack of harvest and haulage contractors
- changes to forest policy leading to loss of estate
- wet weather making it difficult to access harvest area
- political pressure to stop logging in forests close to residential areas
- accessing timber in more difficult terrain such as steep slopes.

Regional staff advised that they routinely manage risks to supply. For example, regions include more compartments on harvest plans to give them options during extended periods of wet weather.

Loss of estate is the greatest supply risk

Forests NSW advised that the greatest risk to supply was loss of estate through government policy decisions. Since 1999, the area of native forest available to Forests NSW was reduced by 38 per cent, mainly through the transfer of estate to national parks.

Exhibit 25: Impact of national park conversions

Any loss of estate will reduce yield. This happened in the North Coast and Western regions where wood supply agreements had to be renegotiated by Government.

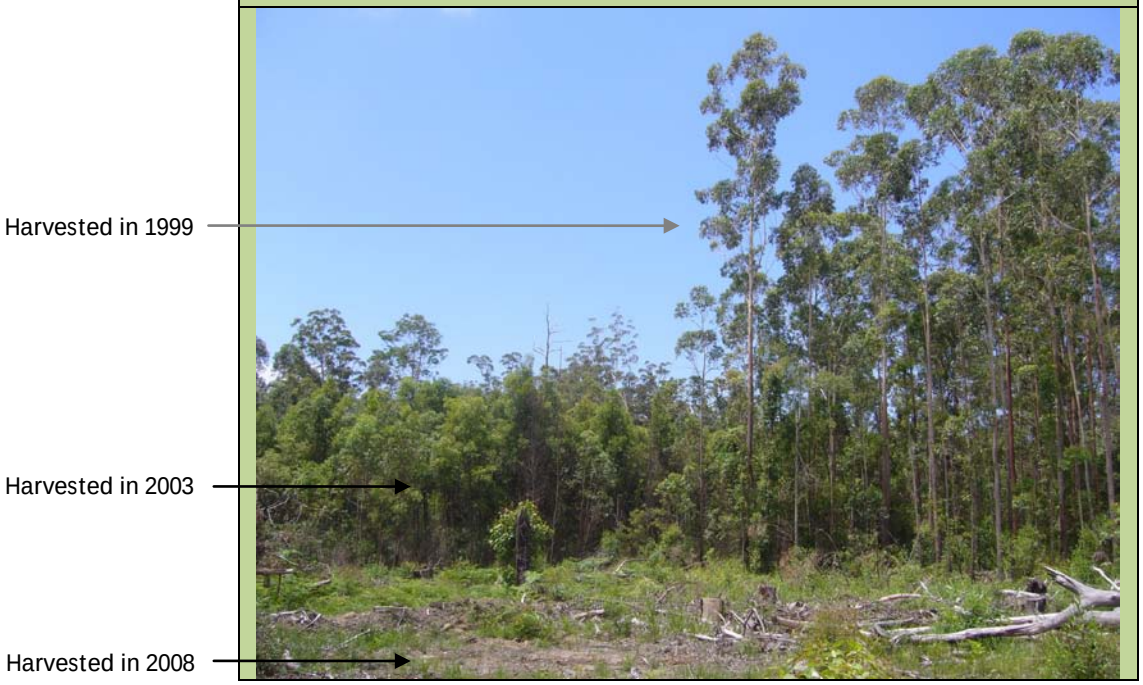
In the case of Western Region which lost 347,000 hectares or 56 per cent of its cypress estate between Dubbo and the Queensland border to national parks and reserves, commitments were reduced from 71,260 to 57,000m^3 per annum.

However, the annual sustainable yield from this area was estimated to be 40,000m^3. While the Government reduced some of the gap through compensation for mills to exit the industry; Forests NSW were able to source additional timber from private and leasehold land.

Source: Forests NSW, NC ESFM Plans, audit fieldwork

Pressure from interest groups to stop harvesting is common, particularly in areas where new housing estates border state forests. Although forests do regrow over time, people are unwilling to have their surroundings changed through logging.

Exhibit 26: Regrowth of forest following Australian Group Selection



Source: Audit Office fieldwork

Changing regulations such as those protecting flora and fauna will reduce the area available for harvest particularly if foresters locate any threatened species prior to harvesting operations.

3.4 Does Forests NSW manage supply risks to ensure business is sustainable?

Our assessment

Forests NSW has strategies in place to address its key supply risks, but has had mixed success. It manages bushfires and salvages timber after major fires. However, it has not met its targets for sourcing timber from private property.

Forests NSW has a number of key strategies in place to reduce supply risks. These include:

- bushfire management
- hardwood plantations
- timber sourced from private property or leasehold
- some flexibility within wood supply agreements to vary timber volumes.

Processes are in place to reduce risk of fire

Forests NSW has a Fire Management Unit responsible for overseeing fire management activities on its estate. It maintains a network of fire trails throughout the estate and ensures regional staff include trained fire fighters. It also oversees fire surveillance during fire season and is responsible for maintaining and procuring fire fighting equipment. It also undertakes fuel reduction activities such as prescribed burning and grazing.

Forests NSW is represented on local Bush Fire Management Committees. These are cross-agency forums responsible for developing risk management plans to prevent, detect and suppress bushfires. Forests NSW also advises that it has technology which identifies the location of lightning strikes and analyses trends, providing early warning of fires and highlighting areas for future surveillance.

Timber is salvaged where possible

Despite these efforts, major fires still occur. After such an event, Forests NSW can salvage timber if harvesting occurs before trees start to dry out or rot. Following a large bushfire in western region in late 2006 affecting 17,000 hectares of cypress pine forest, Forests NSW successfully salvaged timber supplying it to mills as part of their annual allocation.

No plans to expand hardwood plantations

Plantations are another means of managing supply risk. Forests NSW currently has 48,100 hectares of hardwood plantations on the north coast, and 40 hectares on the south coast. Forests NSW Plantation Strategy 2007 states that it has no plans to expand hardwood plantations.

Exhibit 27: New Blackbutt plantation

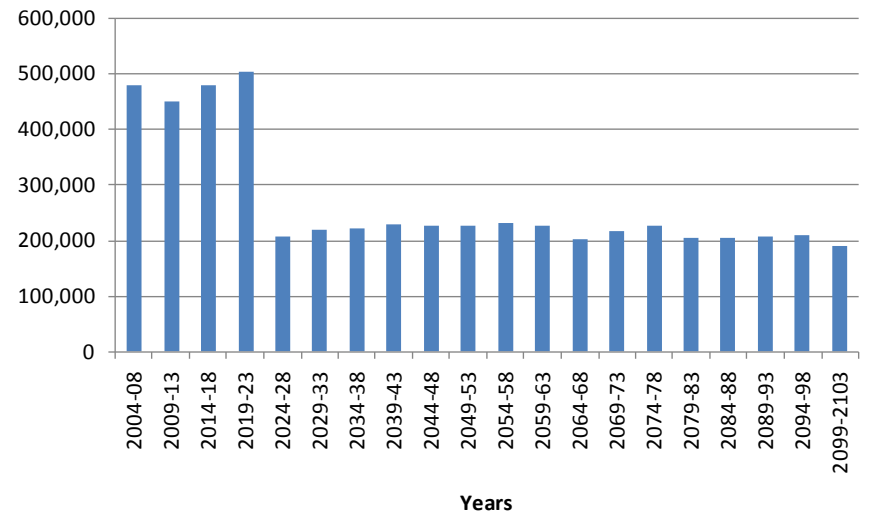
Source: Forests NSW, Audit fieldwork

Plantation yield has been exceeded

As discussed in section 3.2 Forests NSW currently supplies 139,501m^3 or 17 per cent of its total sawlog volumes from plantations. This is 56 per cent more than its current annual plantation sawlog estimate. This could mean that Forests NSW has more plantation sawlog available than it anticipated, or it is taking more than planned to meet its commitments.

If the latter is the case, this could affect future production as no new plantations are being planned and they will form an increasing proportion of future supply. This is because current yield from native forests in the north coast is not sustainable in the long term; that is, beyond the term of the current contracts.

Exhibit 28: Native forest sawlog yield on north coast (m^3/year)



Source: Forests NSW ESFM plans for north coast

Forests NSW planned to establish an additional 10,000 hectares of plantation on purchased private property or through joint ventures however it advises it was not able to achieve this due to the increasing cost of land.

Private property targets have not been met

Forests NSW has been unable to meet its private property timber target of up to 30,000m^3 per annum for the north coast. Similarly, the south coast has not met its target of 1,000m^3 per year.

Over the last five financial years, total sawlog volume of 34,787m^3 was provided by this means to north coast customers, averaging around 7,000m^3 per annum or just over one per cent of total commitments.

Recommendation

It is recommended that Forests NSW investigate the reasons for not meeting its private property targets for hardwood timber and develop better ways of addressing these.

Western Region reports it has sourced around nine per cent of its cypress sawlogs from leasehold land in the last three years to help meet wood supply commitments.

Contracts allow commitments to be varied

Wood supply agreements allow some flexibility for Forests NSW to vary volumes. For example it can:

- supply ten percent more or less than a customer's annual allocation (called over or undercuts)
- use force majeure clause for unforseen events such as large bushfires
- make mills forfeit allocations if they do not want the timber.

Regional offices use under and overcuts to manage wood supply to customers throughout the year. This means customers may get less than their allocation some months, but more than their allocation at other times.

Some contracts with species commitments also have best endeavours clauses. This means Forests NSW has to do its best to obtain the timber. Although this reduces the risk of compensation, best endeavours has prevented Forests NSW from balancing commitments between the less accessible tableland timber and other species in order to sustain the resource on the coast as discussed in section 3.2.

Forests NSW can buy back allocations

Forests NSW can also buy back allocations or compensate customers in situations where they are unable to supply the required allocation. It has not provided data on the total volume and value of allocations bought back and compensation payments made since the wood supply agreements were signed.

However, Forests NSW have advised that:

- in 2006 and 2007 it bought back wood supply allocations from two customers totalling 13,403m^3
- it compensated a customer $550,000 for 34,000m^3 of high quality large sawlog they were unable to supply during 2004-2006.

The pricing mechanism is complex

Forests NSW recently reviewed its pricing for native forest and hardwood plantation logs with a view to making pricing more simple, flexible, and to improve profitability. The review reported that the pricing mechanism used by Forests NSW is highly complex, does not ensure log production costs are recovered and lacks transparency.

As a government trading enterprise, Forests NSW states that its first priority is the financial viability of the organisation. Native forest operations operated at a loss of $14.4m for 2007-08. We are unable to conclude if this is the result of inefficient operations, or because prices do not reflect the true cost of meeting wood supply commitments or a mixture of both.

Recommendation

We recommend that Forests NSW simplify and improve timber pricing by introducing a new pricing system by December 2009 that:

- ensures log production costs are recovered
- is transparent.

Forests NSW has other commercial activities

Forests NSW is involved in a number of other commercial activities. These include the supply of fencing material, firewood, plant seeds and gravel as well as permitting bee keeping and grazing.

Staff reported that one of the key opportunities in the future is the use of forest residue. At the moment, timber left over from harvesting is burnt on site to reduce fire risk and enhance regeneration. A number of overseas jurisdictions use forest residue to generate electricity, and some States within Australian are considering similar projects.

Burning wood waste sourced from native forests to generate electricity is currently illegal in NSW. However sawmills can generate electricity from mill residues and a number are considering setting up generators to produce electricity for their local community.

Recommendation We recommend that Forests NSW investigate the potential for developing commercial markets for forest waste.

Appendices

Appendix 1: Harvest results by region and product (m^3/year)

Product type	Commitments per year	2003-04	2004-05	2005-06	2006-07	2007-08
North Coast						
HQ Large +V&G	209,500	246,513	197,928	206,077	178,351	191,086
HQ Small	63,772	58,548	54,280	62,079	61,086	100,661
LQ	330,544	244,448	233,659	226,988	217,936	268,884
Poles and piles	28,850	26,949	28,248	33,425	35,817	35,697
Pulp/chip	165,000	131,240	120,295	116,390	133,431	161,281
Total sawlog	632,666	576,458	514,115	528,569	493,190	596,328
South Coast						
HQ Large	46,000	43,571	34,927	42,699	43,314	46,563
HQ Small	4,650	4,621	4,461	6,427	7,928	6,237
LQ	32,000	37,711	36,449	38,788	28,653	27,658
Pulp	63,050	59,055	45,894	91,583	124,992	105,172
Total sawlog	82,650	85,904	75,836	87,915	79,895	80,458
Tumut						
HQ Large	33,008	26,450	18,442	17,974	18,958	23,561
HQ Small	6,240	2,205	2,798	2,772	2,172	1,815
LQ	20,062	14,081	19,587	13,784	9,697	14,790
Pulp	20,000	19,236	18,155	17,864	25,708	30,059
Total sawlog	59,310	42,735	40,828	34,529	30,827	40,166
Eden						
HQ Large +V&G	22,080	26,131	22,434	23,936	19,417	24,871
HQ Small	1,920	1,257	1,232	1,681	1,275	688
LQ	23,000	18,465	12,007	12,299	7,178	5,842
Pulp/chip	273,400	309,088	277,952	294,519	314,400	315,839
Total sawlog	47,000	45,853	35,673	37,916	27,870	31,401
Western						
Cypress	59,590	99,388	93,973	71,408	57,066	50,581
Redgum HQ/LQ	59,000	51,429	55,947	67,380	52,370	71,881
Redgum firewd (m^3)	55,000	15,130	29,576	9,840	14,138	15,939
Ironbark	2,000	1,844	3,248	1,874	1,313	1,473
Redgum firewd (T)	Not avail	Not avail	Not avail	19,361	41,867	58,939
Total sawlog	120,590	152,661	153,168	140,662	110,749	123,935
Totals						
All sawlog	942,216	903,611	819,620	829,591	742,531	872,288
All pulp	521,450	518,619	462,296	520,356	598,531	612,351

Source: Forests NSW 2009
V is veneer sawlogs, G is girders

Appendix 2: Area available for harvest

Working out area available for harvest
1. Total native forest estate (2.2 million hectares) 2. Remove known (mapped) exclusions including: ▪ forest reserves and special protection areas ▪ areas which may contain old growth or rainforest ▪ slopes greater than 30 degrees and drainage lines ▪ areas with threatened species. 3. Remove unmapped exclusions using 'area modifiers' to estimate: ▪ unmapped drainage lines, steep slopes, and buffer zones next to exclusion areas (Net Area Modifier) ▪ areas with threatened flora or fauna and other wildlife habitat (Strike Rate Modifier).

Source: Forests NSW

Note: There is no net area modifier for cypress forests in Western region as the terrain is relatively flat therefore exclusions are more easily mapped.

The following table shows the total area of State Forest in each region and the estimated area that is actually available for harvest.

Region	Subregion	Total area (ha)	Area available for harvest (ha)
North Coast	North East / Central	843,460	314,036
Southern	Eden	157,122	124,071
	South Coast	200,502	102,220
	Tumut	95,492	47,635
Western	Western	485,086	329,730
	Riverina	410,000	311,600*
Totals		**2,191,662**	**1,229,292**

Source: Forests NSW

*Note: Interim only – currently being reviewed as part of an Environmental Impact Statement.

Total area excludes plantations.

Appendix 3: About the audit

Audit Objective

This audit addressed whether Forests NSW manages the supply of hardwood to meet wood supply agreements and sustain our native forests.

Lines of Inquiry

In reaching our opinion against the audit objective, we sought to answer the following questions:

- does Forests NSW know how much native forest and plantation hardwood is available for harvesting, presently and in the future?
- has Forests NSW promised to sell more native forest and plantation hardwood than it can sustainably supply?

Audit Criteria

In answering the lines of inquiry, we used the following audit criteria (the 'what should be') to judge performance. We based these standards on our research of current thinking and guidance on better practice. They have been discussed, and wherever possible, agreed with those we are auditing.

For line of inquiry 1, we assessed the extent to which Forests NSW:

- has reasonable and reliable data on existing native and plantation hardwood stocks.
- has reasonable and reliable estimates of future native and plantation hardwood stocks which it used to inform wood supply agreements.
- compares harvesting results to its original estimates of hardwood stocks (ie available harvest).

For line of inquiry 2, we assessed the extent to which Forests NSW:

- has accurate and complete information on current and future obligations for hardwood supply
- identifies risks which may affect its ability to supply hardwood.
- manages these risks to ensure its business is sustainable.
- is able to meet its commitments to supply hardwood timber.

Audit scope

For the purpose of this audit 'native forest' included all hardwood timber species and cypress pine. We included all hardwood products supplied by Forests NSW (sawlog and pulp). We examined yield estimates and wood supply commitments for the life of the wood supply agreements (generally up to 20 years).

Where available, we reviewed performance against wood supply commitments for the last five years.

The audit did not involve a detailed review of:

- softwood plantations and associated supply obligations
- contract processes
- governance arrangements within Forests NSW.

However we commented on these issues if they affected our findings or conclusions.

Audit approach

We acquired subject matter expertise by:

- interviewing staff in Forests NSW responsible for:
  - developing and implementing strategies to manage native forest operations and hardwood plantations
  - developing and implementing strategies to identify and manage risks to hardwood supply
  - collecting, collating and analysing data on native forest and hardwood resources
  - collecting, collating and analysing data on hardwood production, pricing and supply commitments
  - developing and managing wood supply agreements
- interviewing relevant stakeholders from industry association and environmental groups
- reviewing operational and planning documents on native forest operations
- analysing data on hardwood resources, production, pricing and supply commitments.

We also researched how other jurisdictions manage their native forest operations, and identify best practice examples and issues that may impact on performance. Interstate and overseas jurisdictions we intend to examine at this stage include:

- all Australian States and Territories
- New Zealand
- Canada.

We visited four native forest regions. They include:

- North East – Coffs Harbour
- South Coast – Bateman's Bay
- Central - Wauchope
- Western - Dubbo.

We also visited four saw mills to get their views on native forest operations, including their relationship with Forests NSW. And we visited VicForests and Forestry Tasmania to find out more about native forests operations in these States.

Audit selection

We use a strategic approach to selecting performance audits which balances our performance audit program to reflect issues of interest to Parliament and the community. Details of our approach to selecting topics and our forward program are available on our website.

Audit methodology

Our performance audit methodology is designed to satisfy Australian Audit Standards AUS 806 and 808 on performance auditing, and to reflect current thinking on performance auditing practices. Audits commencing on or after 1 January 2009 comply with Standard on Assurance Engagements ASAE 3500 *Performance Engagements.* We produce our audits under a quality management system certified to International Standard ISO 9001. Our processes have also been designed to comply with the auditing requirements specified in the *Public Finance and Audit Act 1983*.

Acknowledgements We gratefully acknowledge the co-operation and assistance provided by Forests NSW. In particular we wish to thank our liaison officers Ross Dickson and Dave Cromarty, and staff who participated in interviews, and provided material relevant to the audit. We would also like to thank saw mill operators, industry representatives and forest alliance representatives who participated in interviews.

Audit team This performance audit was carried out by Tiffany Blackett and Neil Avery. Jane Tebbatt provided direction and quality assurance.

Audit cost Including staff costs, printing costs and overheads, the estimated cost of the audit is $462,549.

Performance Audits by the Audit Office of New South Wales

Performance Auditing

What are performance audits?

Performance audits determine whether an agency is carrying out its activities effectively, and doing so economically and efficiently and in compliance with all relevant laws.

Performance audits may review a government program, all or part of a government agency or consider particular issues which affect the whole public sector.

Where appropriate, performance audits make recommendations for improvements.

If you wish to find out what performance audits are currently in progress, visit our website at www.audit.nsw.gov.au.

Why do we conduct performance audits?

Performance audits provide independent assurance to Parliament and the public that government funds are being spent efficiently and effectively, and in accordance with the law.

Performance audits seek to improve the efficiency and effectiveness of government agencies so that the community receives value for money from government services.

Performance audits also assist the accountability process by holding managers to account for agency performance.

What are the phases in performance auditing?

Performance audits have three key phases: planning, fieldwork and report writing.

During the planning phase, the audit team will develop audit criteria and define the audit field work.

At the completion of field work we will meet with agency management to discuss all significant matters arising out of the audit. Following this, we will prepare a draft performance audit report.

We meet with agency management to check that facts presented in the report are accurate and that recommendations are practical and appropriate. Following this, a formal draft report is provided to the CEO for comment. The relevant Minister is also provided with a copy of the final report. The final report, which is tabled in Parliament, includes any comment made by the CEO on the conclusion and the recommendations of the audit.

Depending on the scope, performance audits can take several months to complete.

Copies of our performance audit reports can be obtained from our website or by contacting our Office.

How do we measure an agency's performance?

During the planning phase, the team develops the audit criteria. These are standards of performance against which the agency or program is assessed. Criteria may be based on best practice, government targets, benchmarks, or published guidelines.

Do we check to see if recommendations have been implemented?

Every few years we conduct a follow-up audit. These follow-up audits look at the extent to which action has been taken to address issues or recommendations agreed to in an earlier performance audit.

The Public Accounts Committee (PAC) may also conduct reviews or hold inquiries into matters raised in performance audit reports. Agencies are also requested to report actions taken against each recommendation in their annual report.

Who audits the auditors?

Our performance audits are subject to internal and external quality reviews against relevant Australian and international standards. This includes ongoing independent certification of our ISO 9001 quality management system.

The PAC is also responsible for overseeing the activities of the Audit Office and conducts a review of our operations every three years.

Who pays for performance audits?

No fee is charged for performance audits. Our performance audit services are funded by the NSW Parliament and from internal sources.

Further information

Further information can be obtained from our website www.audit.nsw.gov.au or by contacting us on 9275 7277.

Performance Audit Reports

No	Agency or Issues Examined	Title of Performance Audit Report or Publication	Date Tabled in Parliament or Published
185	Forests NSW	*Sustaining Native Forest Operations*	April 2009
184	NSW Police Force	*Managing Injured Police*	10 December 2008
183	Department of Education and Training	*Improving Literacy and Numeracy in NSW Public Schools*	22 October 2008
182	Department of Health	*Delivering Health Care out of Hospitals*	24 September 2008
181	Department of Environment and Climate Change	*Recycling and Reuse of Waste in the NSW Public Sector*	11 June 2008
180	Follow-up of 2003 Performance Audit	*Protecting Our Rivers*	21 May 2008
179	NSW Office of Liquor, Gaming and Racing; NSW Police Force	*Working with Hotels and Clubs to reduce alcohol-related crime*	23 April 2008
178	Greyhound and Harness Racing Regulatory Authority	*Managing the Amalgamation of the Greyhound and Harness Racing Regulatory Authority*	3 April 2008
177	Office of the Director of Public Prosecutions	*Efficiency of the Office of the Director of Public Prosecutions*	26 March 2008
176*	Better Practice Guide	*Implementing Successful Amalgamations*	5 March 2008
175	Department of Commerce Department of Primary Industries	*Managing Departmental Amalgamations*	5 March 2008
174	Department of Education and Training	*Ageing workforce – Teachers*	13 February 2008
173	NSW Police Force	*Police Rostering*	5 December 2007
172	Department of Primary Industries	*Improving Efficiency of Irrigation Water Use on Farms*	21 November 2007
171	Department of Premier and Cabinet Department of Commerce	*Government Advertising*	29 August 2007
170	RailCorp	*Signal Failures on the Metropolitan Rail Network*	15 August 2007
169	NSW Police Force	*Dealing with Household Burglaries*	27 June 2007
168	Ministry of Transport	*Connecting with Public Transport*	6 June 2007
167	Follow-up of 2001 Performance Audit: Ambulance Service of New South Wales	*Readiness to Respond*	6 June 2007
166	Follow-up of Performance Audit Department of Education and Training	*Using Computers in Schools for Teaching and Learning*	9 May 2007
165	Homelessness	*Responding to Homelessness*	2 May 2007
164	Department of Juvenile Justice NSW Police Force	*Addressing the Needs of Young Offenders*	28 March 2007

No	Agency or Issues Examined	Title of Performance Audit Report or Publication	Date Tabled in Parliament or Published
163	Legal Aid Commission of NSW	*Distributing Legal Aid in New South Wales*	13 December 2006
162	NSW Health	*Attracting, Retaining and Managing Nurses in Hospitals*	12 December 2006
161	Follow-up of 2003 Performance Audit	*The Police Assistance Line*	6 December 2006
160	NSW Health	*Helping Older People Access a Residential Aged Care Facility*	5 December 2006
159	NSW Health	*Major Infectious Disease Outbreaks: Readiness to Respond*	22 November 2006
158	Department of Education and Training	*Educating Primary School Students with Disabilities*	6 September 2006
157	Roads and Traffic Authority	*Condition of State Roads*	16 August 2006
156*	Fraud Control	*Fraud Control Improvement Kit: Meeting Your Fraud Control Obligations*	20 July 2006
155	Follow-up of 2002 Performance Audit	*Regulating the Clearing of Native Vegetation*	19 July 2006
154	Follow-up of 2002 Performance Audit	*Managing Sick Leave in NSW Police and the Department of Corrective Services*	June 2006
153	Performance Information	*Agency Use of Performance Information to Manage Services*	21 June 2006
152	Roads and Traffic Authority	*The Cross City Tunnel Project*	31 May 2006
151	Department of Corrective Services	*Prisoner Rehabilitation*	24 May 2006
150	Follow-up of 2000 Performance Audit	*Fare Evasion on Public Transport*	26 April 2006
149	Agency Collaboration	*Agencies Working Together to Improve Services*	22 March 2006
148	Department of Education and Training	*The New Schools Privately Financed Project*	8 March 2006
147	Premier's Department	*Relocating Agencies to Regional Areas*	14 December 2005
146	Bus Transitways	*Liverpool to Parramatta Bus Transitway*	5 December 2005
145	Follow-up of 2002 Performance Audit	*Purchasing Hospital Supplies*	23 November 2005

* Better Practice Guides

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