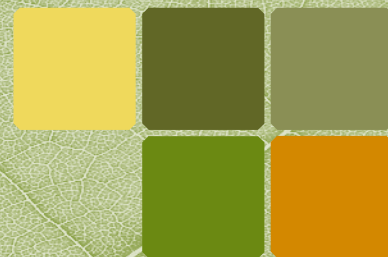


NSW Annual Report on Native Vegetation 2010



1. Overview

The forests, woodlands, grasslands and other vegetated landscapes of New South Wales (NSW) are important for a healthy environment and society. Native vegetation controls erosion, land degradation and discharge of salinity into rivers, and provides habitat for a wealth of unique flora and fauna. In addition, native vegetation in NSW stores a significant amount of carbon.

The NSW Government is committed to having the *Native Vegetation Act 2003* enable farmers to get on with the business of farming, while at the same time ensuring important remnant vegetation is protected. The regionally-based catchment management authorities (CMAs) provide land managers with advice and incentive funding to manage, conserve and protect native vegetation on their properties. Each CMA, in partnership with local governments and other agencies, works with local community groups, landholders, Aboriginal communities and industry to ensure that regional communities have a major voice in land management. The NSW Office of Environment and Heritage (OEH) collaborates with CMAs through the provision of expert advice and support.

The CMA and landholder can negotiate a Property Vegetation Plan (PVP), which involves exploring solutions that may result in clearing if environmental impacts are avoided or offset. The CMA may also deliver incentives.

The Private Native Forestry Code of Practice (PNF Code) sets minimum operating standards for harvesting in private native forests. This means that PNF operations now require a PNF PVP before any PNF activities can commence. OEH is responsible for developing and issuing these PNF PVPs.

OEH is responsible for implementing a credible compliance and enforcement framework for native vegetation to protect the environmental values of native vegetation and to ensure that landholders who comply with the law are not disadvantaged. OEH undertakes this role through stakeholder engagement, strategic investigations, appropriate enforcement actions and targeted compliance campaigns.

OEH is also responsible for monitoring and reporting on the status of native vegetation across the landscape, landholder actions to manage native vegetation, and compliance and enforcement actions. The *NSW Annual Report on Native Vegetation 2010* consolidates the reporting of these results. This report provides useful information for those interested in the conservation, management and restoration of native vegetation along with regulations relating to the clearing of native vegetation.

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- 2 Summary data
- 4 Native Vegetation Report Card
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- 10 Woody Vegetation Change Report 2009-2010
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2. Summary data

This document combines four reports related to native vegetation in NSW. The *Native Vegetation Report Card*, the *Private Native Forestry Report Card* and the *Woody Vegetation Change Report 2009–2010* provide a comprehensive picture of native vegetation in NSW. The *Compliance and Enforcement Report Card* provides the latest information on OEH's native vegetation compliance and enforcement activities. Together, these reports demonstrate that extensive areas of native vegetation are being actively managed and conserved, and that the commitment to bring broadscale native vegetation clearing to an end is being actively pursued.

The *Native Vegetation Report Card* demonstrates the significant achievements made in the conservation and rehabilitation of native vegetation under the *Native Vegetation Act 2003* (NV Act) in 2010.

Some 1,025,000 hectares of native vegetation were conserved or improved across the state in 2010 (see page 7). In contrast, only 3600 hectares were approved to be legally cleared where environmental values were maintained or improved through mechanisms such as the use of offsets.

The *Private Native Forestry Report Card* shows that 425 PNF PVPs were approved during 2010. These PVPs encapsulated 68,600 hectares of native forest that can be logged, as long as environmental outcomes are improved or maintained (as outlined in the PNF Code).

Woody vegetation (for the purpose of this report) is defined as woody communities with 20 per cent crown cover or more (e.g. woodlands, open forests and closed forests) which are taller than about 2 metres. It includes both native and exotic species. This definition aligns with the Montreal Protocols for woody vegetation. The report provides a comparison of satellite imagery collected over the periods of September 2008 to March 2009 and September 2009 to January 2010, supplying information on the total reduction in the area of woody vegetation in NSW.

The method used does not include all vegetation change because the ability to detect woody vegetation change is influenced by the 30-metre resolution of the Landsat imagery and the pattern of vegetation on the ground. These factors combine to reduce the ability to detect woody vegetation change in landscapes such as open woodlands with scattered trees, grasslands and highly modified areas. This report covers losses in woody vegetation due to clearing for agriculture, forestry and infrastructure activities. It also reports losses in woody vegetation resulting from bushfires. The report does not identify gains in woody vegetation due to planting and natural regrowth.

There was a total reduction in the area of woody vegetation in NSW of 117,500 hectares (0.15 per cent of the area of the state; see page 10). These major changes occurred as a result of forestry; cropping, pasture and thinning; fire scars; and rural and major infrastructure.

The clearing data from the *Native Vegetation Report Card* cannot be compared with the on-ground clearing extent identified in the *Woody Vegetation Change Report* for a number of reasons:

- Clearing identified in the *Native Vegetation Report Card* only records **native** vegetation approved for clearing, while the *Woody Vegetation Change Report* records on-ground clearing of both **exotic** and **native** vegetation identified during the period.
- While 3610 hectares were approved for clearing using the PVP process during 2010, the PVP process allows up to 15 years for the clearing to take place. Therefore the percentage of native vegetation cleared within the 21,200 hectares identified in the *Woody Vegetation Change Report* may not have been approved during 2010, but in a previous year.
- The *Woody Vegetation Change Report 2009–2010* identifies all clearing. However, the *Native Vegetation Report Card* does **not** report on activities exempt or excluded from the NV Act. These include clearing for the construction of a single dwelling, routine agricultural management activities, clearing authorised under other legislation (such as the *Rural Fires Act 1997* or the *Roads Act 1993*), or clearing on land excluded from the NV Act, such as urban areas or national parks.

The *Compliance and Enforcement Report Card* (in section 6 of this report) provides information on native vegetation compliance and enforcement activities of OEH.

Native vegetation clearing in NSW is undertaken for a number of reasons, including agriculture, forestry and infrastructure activities. Reports to OEH's Environment Line and information gathered by remote sensing (such as aerial photographs and satellite imagery) are analysed based on risk of harm to the environment and ongoing deliberate contravention to identify trends and patterns of clearing, as well as geographic areas or issues where compliance activities should be focused.

In 2010, 471 reports of clearing were received by the Environment Line. These underwent a risk assessment to determine the appropriate regulatory response. Following assessment of the clearing reports, many were identified as lawful activities such as routine agricultural management or clearing of regrowth.

When illegal clearing is identified, OEH selects the most appropriate regulatory response from a range of tools, such as prosecutions, penalty notices, stop work orders, remedial directions, notices to produce information, and warning and advisory letters.

During 2010, OEH commenced seven prosecutions under native vegetation legislation and secured six convictions. OEH also issued 25 penalty notices, 35 remedial directions, 111 other legal directions, and 240 formal warning and advisory letters throughout 2010 (see page 16).

The *Compliance and Enforcement Report Card* details activity that occurred in the 2010 calendar year, but may also include responses to clearing activity that occurred in previous years.

3. Native Vegetation Report Card

The *Native Vegetation Report Card* provides the latest information on the conservation, restoration, management and approvals for clearing native vegetation. Data from the 2006 to 2009 periods are also shown for comparison (Figures 3.1 and 3.2).

The native vegetation statistics have been gathered through a collaborative effort between NSW natural resource agencies such as OEH, CMAs, Department of Primary Industries (DPI), the Land & Property Management Authority (LPMA) and Forests NSW.

Figure 3.1 Cumulative area of native vegetation that has been conserved, restored, managed or approved for clearing between 2006 and 2010.

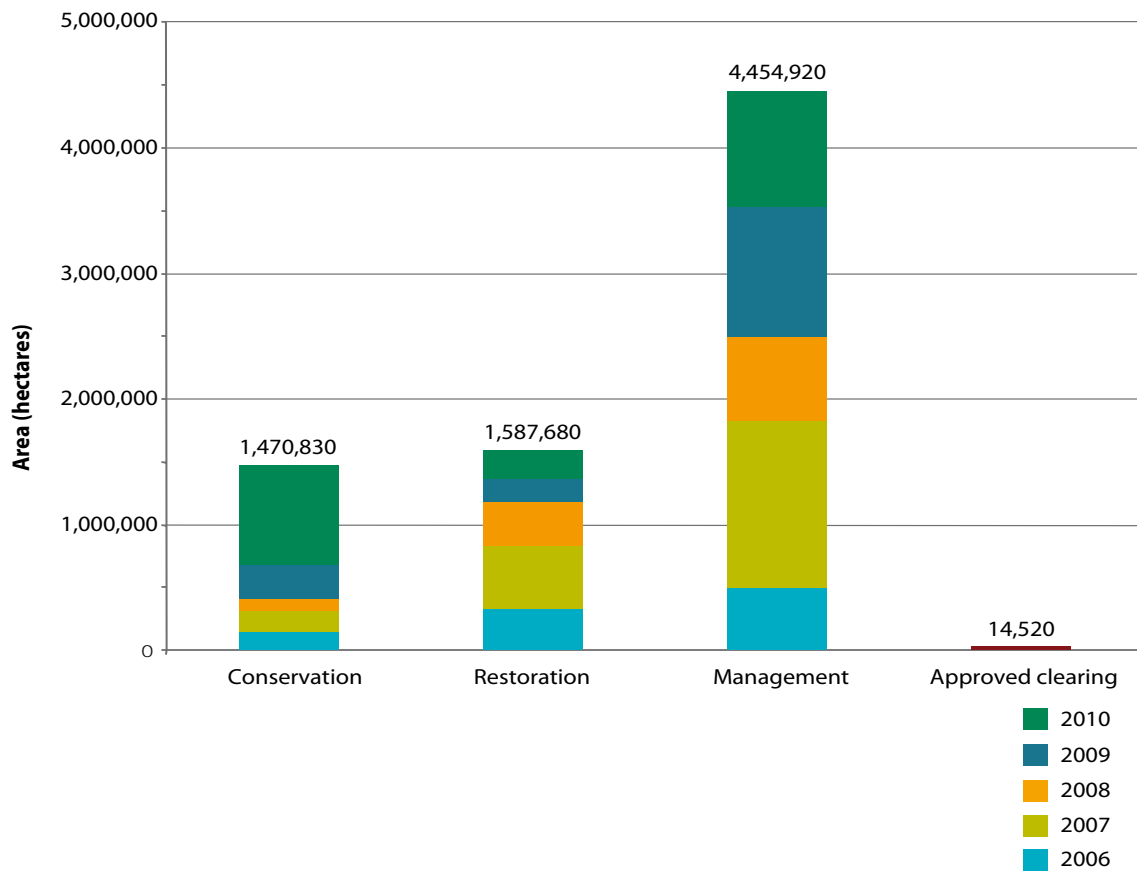


Table 3.1 Area of native vegetation that has been conserved, restored, managed or approved for clearing between 2006 and 2010.

New conservation areas	Area (hectares)				
	2006	2007	2008	2009	2010
Public reserve system – national park estate	52,160	164,780	36,830	45,360	228,120
Public reserve system – flora reserves	0	2,730	0	0	0
Private conservation areas – voluntary conservation agreements	6,790	850	1,560	29,810	78,840
Private conservation areas – s88 conservation covenants	5,110	7,390	51,650	193,190	420,390
Private conservation areas – NCT covenants	0	950	830	120	1,290
Private conservation areas – wildlife refuges	69,880	290	200	310	110
Private conservation areas – PVPs in perpetuity (includes conservation PVPs and some incentive PVPs)	Not available	1,230	2,010	6,480	63,390
Private conservation areas – biobanking agreements	-	-	-	0	80
Total	133,940	178,220	93,080	275,270	792,220

New restoration/revegetation of native vegetation	Area (hectares)				
	2006	2007	2008	2009	2010
Incentive PVPs not in perpetuity	33,790	135,240	83,440	126,370	143,050
PVP offsets	3,870	9,350	5,000	7,390	20,410
Native plantations	8,300	19,570	32,630	4,360	10,470
Revegetation through other incentives (non-PVP)	135,710	308,960	218,270	42,120	50,680
Retained as a condition of approval to clear – <i>Plantations and Reafforestation Act 1999</i> and <i>Native Vegetation Conservation Act 1997</i>	6,420	9,160	9,400	650	170
Wildlife refuges – habitat modified and restored	127,980	3,940	20	550*	7,970
Natural regeneration – excluding invasive native scrub	1,500	16,880	4,560	0	0
Total	317,570	503,100	353,320	181,440*	232,750

New management of native vegetation	Area (hectares)				
	2006	2007	2008	2009	2010
Invasive native scrub PVPs	148,150	790,370	390,980	544,070	565,380
Thinning to benchmark PVPs	590	510	410	910	350
Public forest estate	390	-14,400	-6,530	2,570	-106,460
Private native forestry on state protected land	17,140	12,580	0	0	0
Private native forestry PVPs	-	31,300	124,900	108,870	68,600
Improved rangeland management	286,730	119,870	109,080	312,750	231,430
Weed removal programs	29,210	402,900	42,550	70,100	169,620
Total	482,210	1,343,130	661,400	1,039,260	928,920

New clearing of native vegetation	Area (hectares)				
	2006	2007	2008	2009	2010
Clearing PVPs approved where environmental outcomes maintained or improved	370	2,630*	1,630	1,840	3,600
Clearing under <i>Native Vegetation Conservation Act 1997</i>	2,510	10	0	0	0
Clearing under <i>Plantations and Reafforestation Act 1999</i>	250	430	410	30	5
Clearing under local government RAMAs	-	0	1	0	3
Clearing for infrastructure RAMA buffers	-	<1	0	10*	0
Total	3,130	3,070*	2,040	1,880	3,610

Note: * denotes that this figure has been modified since the previous report card. The figures have been rounded up or down to the nearest 10 hectares. PVP = Property Vegetation Plan; RAMAs = Routine Agricultural Management Activities; NCT = Nature Conservation Trust

Category descriptions

Note: All data from OEH sources unless otherwise stated.

New conservation areas

- **Public reserve system – national park estate.** New national parks, nature reserves and state conservation areas, or additions to national parks, nature reserves and state conservation areas.
- **Public reserve system – flora reserves.** Data from Forests NSW.
- **Private conservation areas – conservation agreements.** Areas of new conservation agreements established under s.69A-KA of the *National Parks and Wildlife Act 1974*. These are binding on current and successive owners and are held in perpetuity.
- **Private conservation areas – s.88 conservation covenants.** Areas of new conservation agreements imposed during the conversion of leasehold land to freehold land in the Central and Eastern Division and managed by the LPMA under s.88B of the *Conveyancing Act 1919*.
- **Private conservation areas – Nature Conservation Trust (NCT) covenants.** Covenants that protect properties with high conservation values. Properties are either acquired by the NCT then sold with covenants in place, or covenants are negotiated with existing landholders.
- **Private conservation areas – wildlife refuges – habitat retained.** Areas of new wildlife refuges under the *National Parks and Wildlife Act 1974*. These areas are managed exclusively for conservation of wildlife habitat.
- **Private conservation areas – PVPs in perpetuity.** PVPs protecting areas of native vegetation in perpetuity, including Conservation PVPs and some Incentive PVPs.
- **Private conservation areas – BioBanking agreements.** The Biodiversity Banking and Offsets Scheme (BioBanking) protects and improves biodiversity and, after landowners have sold their biodiversity credits, provides annual management payments in perpetuity.

New restoration/revegetation of native vegetation

- **Incentive PVPs not in perpetuity.** Area of revegetation or restoration of native vegetation as set out in an incentive PVP.
- **PVP offsets.** Area of offsets negotiated in a PVP. Offsets are actions that a landholder agrees to in order to balance negative impacts of clearing.
- **Native plantations.** Plantable area includes plantations of native species only. Sourced from DPI.
- **Revegetation through other incentives.** Revegetation activities conducted by CMAs through funding sources other than PVPs. Sourced from CMAs.
- **Retained as a condition of approval to clear – Plantations and Reafforestation Act 1999 and Native Vegetation Conservation Act 1997.** Area of land retained as a condition of clearing consent, includes vegetation clearing approvals and plantation authorisations. Sourced from OEH and DPI.
- **Wildlife refuges – habitat modified and restored.** Areas integrating conservation into other land use activities, which also provides wildlife habitat, e.g. grazing on native unimproved grasslands/rangelands/woodlands under the *National Parks and Wildlife Act 1974*.
- **Natural regeneration – excluding invasive native species.** Sourced from CMAs.

New management of native vegetation

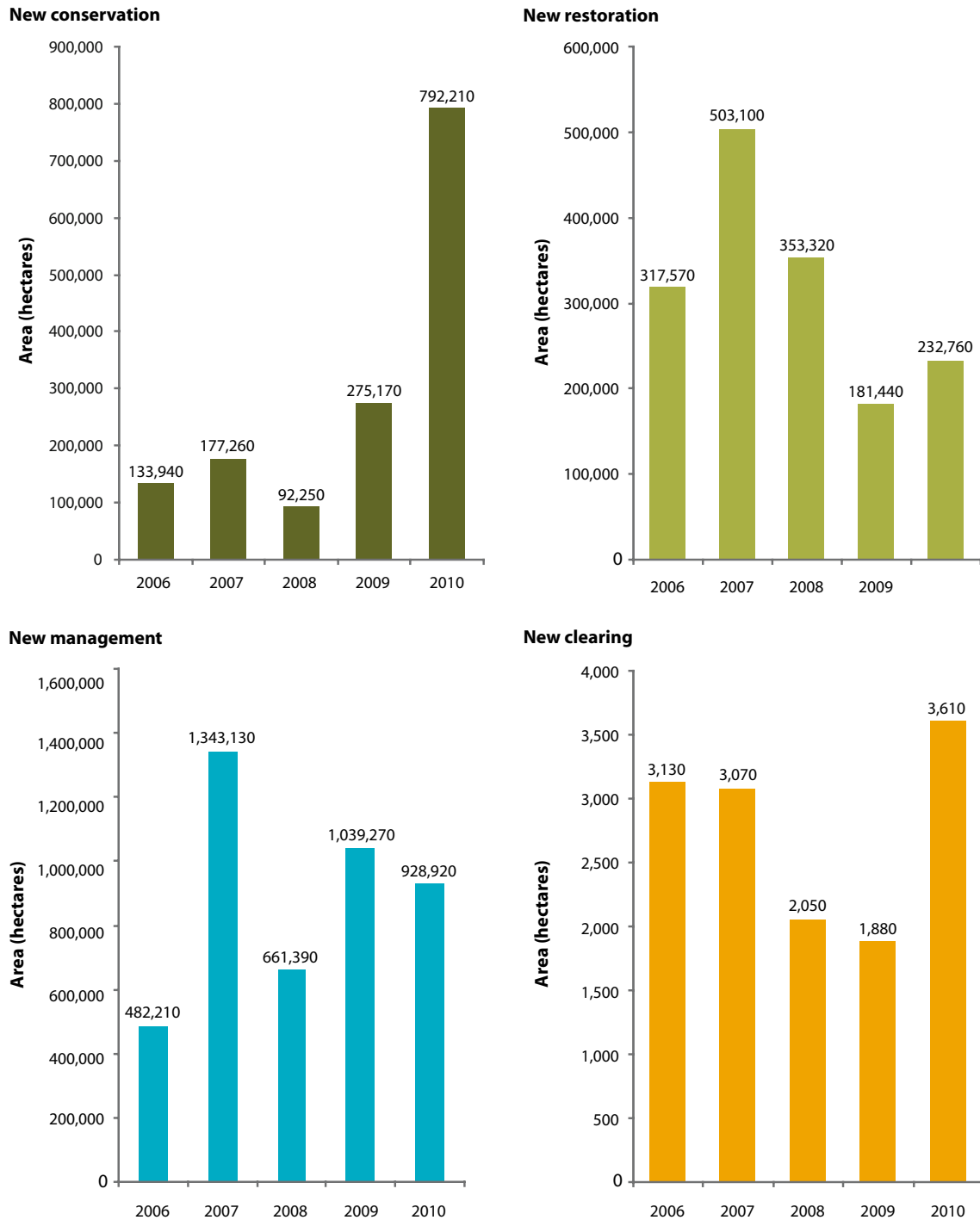
- **Invasive native scrub PVPs.** Area authorised under a PVP to manage invasive native scrub, the term used to describe native plant species that have spread rapidly within their natural range.
- **Thinning to benchmark PVPs.** Area of land to be cleared to improve the quality of the vegetation using thinning provisions of the Environmental Outcomes Assessment Methodology.
- **Public forest estate.** Area of new state forest, or the reduction of state forest through the conversion to national park estate. Data supplied by Forests NSW.
- **Private native forestry on state-protected land.** Areas of native forest on state-protected land approved for timber harvesting and silviculture that does not significantly degrade native forests.
- **Private native forestry PVPs.** Area under a PVP for timber harvesting and often silviculture within a native forest. The PNF Code of Practice commenced operation in August 2007.
- **Improved rangeland management.** Improvement of native vegetation through management and incentive projects involving the control of grazing pressure by feral goats and domestic stock through fencing or controlling access to water. Sourced from CMAs.
- **Weed removal programs.** Area of land to be cleared of exotic weeds for environmental improvement. Sourced from OEH and CMAs.

New clearing of native vegetation

- **Clearing PVPs approved where environmental outcomes maintained or improved, includes isolated paddock trees.** Area of land where clearing approved under a PVP will 'improve or maintain' environmental outcomes. The impact of clearing is measured against four environmental values: water quality, soils, salinity and biodiversity (including threatened species).
- **Clearing under Native Vegetation Conservation Act 1997.** Area approved for clearing under the *Native Vegetation Conservation Act 1997*.
- **Clearing under Plantations and Reafforestation Act 1999.** Area of land approved for clearing under the *Plantations and Reafforestation Act 1999*. Sourced from DPI.
- **Clearing under local government Routine Agricultural Management Activities.** Area of land permitted for clearing under the *Native Vegetation Act 2003* for essential local government infrastructure.

Figure 3.2 Area of native vegetation that has been conserved, restored, managed or approved for clearing between 2006 and 2010.

Note: The graphs have **different scales**. For a detailed breakdown of the figures contributing to the cumulative data, refer to Table 3.1.



4. Private Native Forestry Report Card

An estimated 8.5 million hectares of native forests exist on private land across NSW. Approximately 5 million hectares are suitable for PNF operations.

Prior to 2007, only 20 per cent of PNF operations required consent under the *Native Vegetation Conservation Act 1997*, while the remaining 80 per cent were exempt.

In 2007, the Native Vegetation Regulation 2005 (NV Reg) was amended, subjecting all PNF operations to assessment under the NV Act. This amendment means that PNF operations now require a PNF property vegetation plan (PNF PVP) before any PNF activities can commence. Minimum operating standards are set by the PNF Code of Practice (PNF Code).

PNF PVPs are voluntary agreements for up to 15 years between a landholder or a group of landholders and OEHL on behalf of the Minister.

The PNF Code sets the conditions needed to ensure environmental outcomes are improved or maintained. It takes a landscape approach for the protection of threatened species and includes specific conditions where some individual threatened species are not fully protected by the landscape approach.

Since the amendment of the NV Reg on 1 August 2007, and until 31 December 2010, there have been 2979 enquiries regarding PNF, 1520 PVPs approved, and a further 123 draft PVPs awaiting the landowner's signature. During 2010, there were 425 PVPs approved.

Taking account of PNF PVPs which have expired between 1 August 2007 and 31 December 2010, a total of 333,669 hectares of private forest have been approved under a PNF PVP for forestry operations. Of these, 68,595 hectares were approved during 2010.

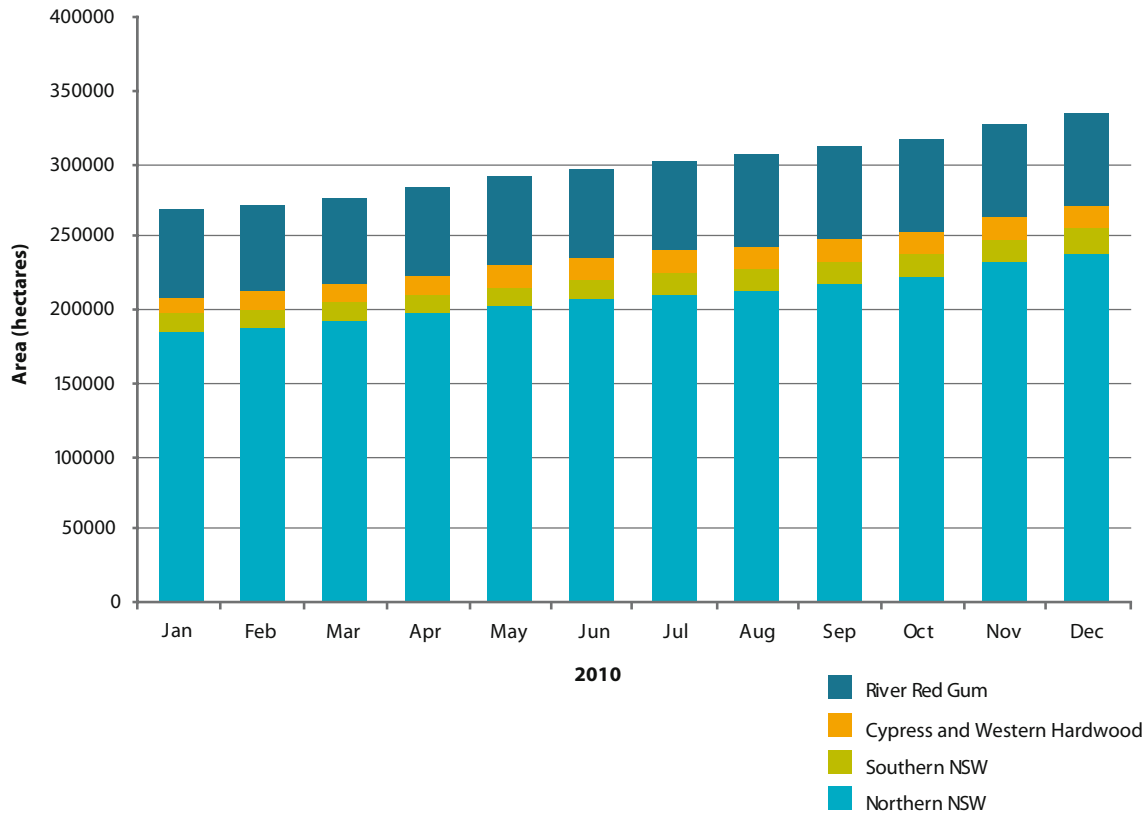
All rainforest, old growth forest, wetlands, heathlands and many other environmentally important areas have been protected within these PVPs.

Table 4.1 Area of PNF PVPs approved between August 2007 and December 2010.

Forest type	Area of PNF PVP (ha)			
	Aug 2007 to Dec 2008	2009	2010	Total
Northern NSW	90,967	91,560	55,024	237,551
Southern NSW	6,220	5,855	5,085	17,160
River Red Gum	53,131	5,500	3,673	62,304
Cypress and Western Hardwood	5,899	5,942	4,813	16,654
Totals	156,217	108,857	68,595	333,669

These figures take account of the area of PNF PVPs which have expired.

Figure 4.1 Cumulative areas of private native forestry



Due diligence

OEH is committed to ensuring its procedures are accurate, robust and consistent with best practice. In 2010, OEH commissioned two independent reports on its PNF activities.

The first was an evaluation of the PNF training program. The report found the training has been exceptionally well received by participants. The report also made recommendations for enhancement to the training program through improved marketing strategies and development of self-paced learning options.

The second report was a quality assurance review of the assessments of old growth forest and rainforest. This report was designed to ensure existing protocols and procedures protect rainforest and old growth forest and to make improvements where necessary. The review found that the assessment of rainforest was accurate and the assessment of old growth forest highly variable.

The review report made four recommendations on how OEH could improve its processes:

Recommendation 1: Use 3D-capable digital imagery captured within the last 5 years with one of the new range of digital sensors, and interpreted on-screen in a 3D environment. Acquire new imagery where such imagery is not already available.

Recommendation 2: Aerial photo interpreters undertake field work for old-growth and rainforest assessment, particularly where altering CRAFTI (comprehensive regional assessment aerial photo interpretation project data) old-growth status is likely, and in mixed-aged forests where disturbance is older than 10 years.

Recommendation 3: Undertake annual old growth and rainforest field assessment calibration exercises with OEH staff, to ensure transect measurement is being carried out consistently.

Recommendation 4: Initiate a peer-review process of old growth and rainforest assessment for sample of PVPs (e.g. 10 per cent).

In response to the quality assessment, OEH will be implementing all recommendations, specifically with regard to improving the technologies and techniques used in assessments.

5. NSW Woody Vegetation Change Report 2009–2010

This report is the fifth to be provided on the annualised change in woody vegetation in NSW since the implementation of the *Native Vegetation Act 2003*. A comparison of satellite imagery collected over the periods of September 2008 to March 2009 and September 2009 to January 2010 provides information on the total reduction in the area of woody vegetation in NSW. These new figures and the previously reported annualised woody vegetation change rates for periods between 1988 and 2009 (published in the 2008–2009 report) are included in the report for comparison.

This report covers losses in woody vegetation due to clearing for agriculture, forestry and infrastructure activities. It also reports losses in woody vegetation resulting from bushfires. The report does not identify gains in woody vegetation due to planting and natural regrowth. Woody vegetation for the purpose of this report is defined as woody communities with 20 per cent crown cover or more (e.g. woodlands, open and closed forests), which are taller than about 2 metres. It includes native and exotic species. This definition aligns with the Montreal Protocols for woody vegetation.

The total net reduction in the area of woody vegetation in NSW over the period 2009 to 2010 was 117,500 hectares or 0.15 per cent of the area of NSW. Figure 5.1 shows the proportion of clearing by land use category and fire. The measured woody vegetation change rates for all periods are shown in Table 5.1 and Figure 5.2.

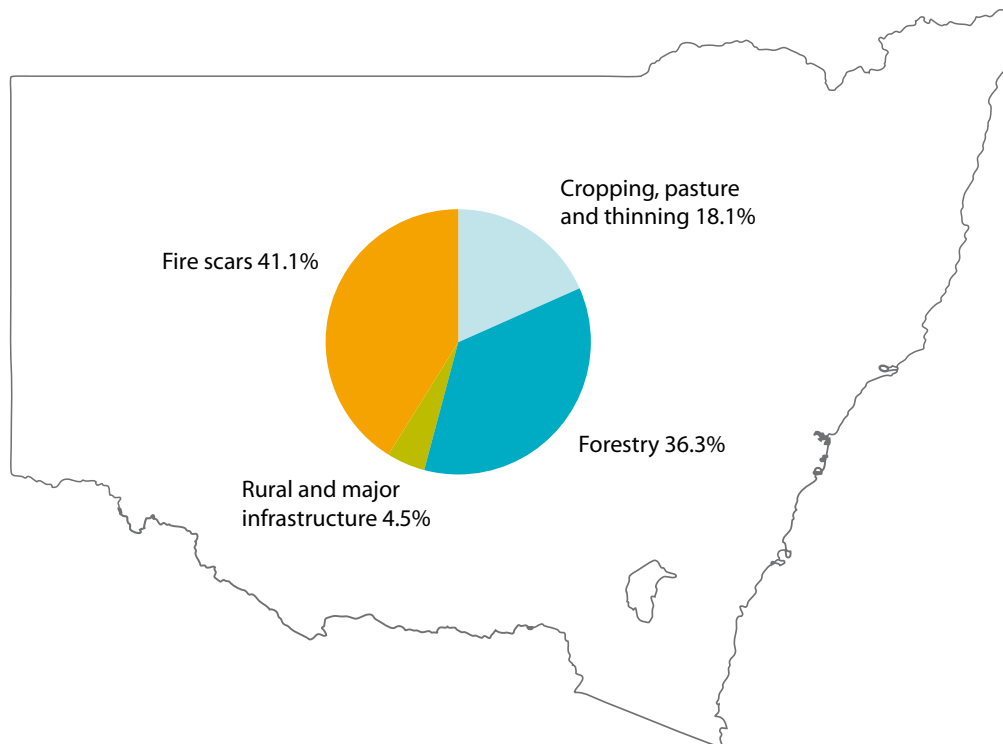


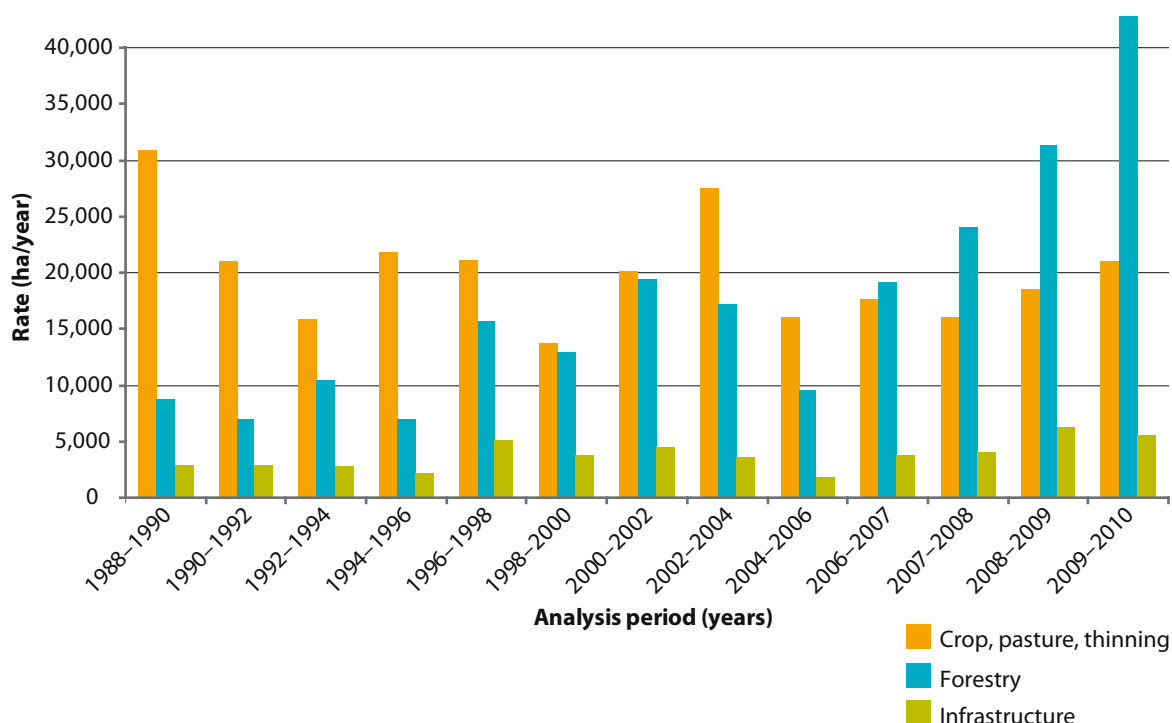
Figure 5.1 Relative proportion of woody vegetation clearing 2009–2010 by land use category and fire.

Table 5.1 Rate of woody vegetation change annualised by land use category and fire over the period 1988–2010 (ha/year)

	1988–1990	1990–1992	1992–1994	1994–1996	1996–1998	1998–2000	2000–2002	2002–2004	2004–2006	2006–2007	2007–2008	2008–2009	2009–2010
Crop, pasture, thinning	30,900	21,000	15,800	21,800	21,200	13,700	20,100	27,500	16,100	17,700	16,100	18,500	21,200
Forestry	8,800	7,000	10,400	6,900	15,700	13,000	19,400	17,200	9,600	19,200	24,000	31,300	42,700
Infrastructure	2,900	2,900	2,700	2,200	5,100	3,800	4,500	3,500	1,900	3,800	4,000	6,200	5,300
Fire	1,300	6,500	4,900	6,200	7,600	19,700	33,600	102,800	3,700	20,240	4,200	8,200	48,300

Note: The periods of analysis for the figures in Table 5.1 and Figure 5.2 cover either a 1- or 2-year timeframe. The figures shown are annualised rates to enable relative 'annual' comparisons to be made between all periods. Rates are rounded to the nearest 100 ha.

Figure 5.2 Annual loss of woody vegetation 1988–2010 by land use categories.



Note: The information shown in Figure 5.2 reflects the predominant land use changes as a result of human activity. Changes due to fire have not been included in the graph as the fire affected vegetation usually regrows quickly and the very large size of the fire scars can dominate the graph to a degree which makes it difficult to display the land use changes in a meaningful way.

Patterns of change

Changes in woody vegetation continue to occur across NSW, with the major changes in the following categories.

Cropping, pasture and thinning

This class includes areas where the woody canopy cover has changed as a result of clearing for cropping, pasture or thinning.

- The rate of clearing across the state increased in the 2009–2010 period by 14.6 per cent compared to the 2008–2009 period. The 2009–2010 rate of clearing is 800 ha more than the time weighted average rate for the periods covering 1988–2010.

Forestry

This class includes areas where the woody canopy has been removed due to forest harvesting activities. This includes private native forestry, harvesting within State Forests and harvesting within plantations.

- The forestry activity was widespread over the eastern third of the state.
- The rate of forestry harvesting shows a statistically significant increasing trend over the 1988–2010 time period.

It should be noted that forest re-establishment usually occurs in the areas subjected to forest harvesting.

Rural and major infrastructure

This class includes all activities where the woody canopy has been changed due to rural infrastructure including fence lines and firebreaks, as well as major infrastructure such as powerlines, water pipelines, highways, roads and major works. This class includes mine extensions and related mining activities.

- Major changes due to rural and major infrastructure were 14.5 per cent less than in the 2008–2009 period.

Fire scars

This class includes areas where the woody canopy cover has changed due to fire-related effects. However, this class does not capture all historic fire scars, only those that had substantial leaf reduction at the time of image acquisition. In most cases the reduction in woody vegetation cover in areas identified as fire scars is temporary and does not result in a permanent reduction in woody vegetation cover.

- The rate of woody vegetation decrease due to fire has increased to more than five times the rate for the 2008–2009 period. The rate for the 2009–10 period is the third largest rate reported over the 1988–2009 period. These fires occurred in most areas of the state.

Methodology

The *Woody Vegetation Change Report 2009–2010* is the result of applying satellite imagery analysis techniques to NSW data to calculate woody vegetation change across NSW. The methodology was developed over many years by the Queensland Department of Environment and Resource Management as a scientific approach to report change in woody vegetation and is known as the *Statewide Landcover and Trees Study* (SLATS; www.derm.qld.gov.au/slats).

The methodology used provides data on woody vegetation change in the landscape for vegetation with greater than 20 per cent canopy cover. However, it does not include all woody vegetation change. The ability to detect woody vegetation change is influenced by both the 30-m resolution of the Landsat imagery, and the pattern of vegetation on the ground. These factors combine to reduce the ability to detect woody vegetation change in landscapes such as open woodlands with scattered trees, grasslands, and highly modified areas.

High resolution SPOT5 imagery was acquired for 2008–09 and 2009–10. This imagery was used in the validation of the Landsat 2009–2010 woody change process and is also being analysed to provide information on woody vegetation with less than 20 per cent canopy cover.

The current methodology only measures decrease in woody vegetation cover. It is recognised that there are areas where the woody vegetation cover is increasing, in particular within forestry areas. The increase in woody vegetation cover is more difficult to quantify over a short time frame such as the 12-month annualised period covered by this report. Consequently additional imagery has been acquired by OEH to create a longer time series of Landsat imagery spanning the period 1988–2010, which will be analysed to map and report in the future on areas of increasing woody vegetation cover.

6. Compliance and Enforcement Report Card

OEH is responsible for promoting, monitoring and enforcing compliance with the NV Act – the key piece of legislation protecting native vegetation in NSW. The legislation provides vegetation management requirements which integrate the principles of ecologically sustainable development with vegetation conservation goals.

Native vegetation clearing in NSW is undertaken for a number of reasons including agriculture, forestry and infrastructure. To ensure the protection of native vegetation, OEH has an active program for monitoring land clearing that includes reports from the public, local councils and other government bodies. In 2010, Environment Line received 471 reports of clearing which underwent a risk assessment to determine the appropriate regulatory response. Following assessment of the clearing reports, many were identified as lawful activities such as routine agricultural management or clearing of regrowth.

OEH works with state government agencies, local government, industry sectors and land management groups to provide information to assist the community to understand the native vegetation management framework and how to comply with the law. While achieving voluntary compliance is preferable, the organisation has a regulatory obligation to monitor, investigate and respond to issues of non-compliance with the Act and take enforcement action where serious breaches are detected.

OEH's response to non-compliance escalates in accordance with the risk the clearing poses to the environment and to conservation. The organisation employs a suite of tools to address illegal clearing including prosecutions, penalty notices, Stop Work Orders, Remedial Directions, Notices to Produce Information, and warning and advisory letters.

Promoting and achieving voluntary compliance is a key part of OEH's compliance and enforcement strategy and achieving better outcomes for native vegetation. OEH engages with a broad range of stakeholders and undertakes research to identify issues and barriers preventing voluntary compliance. By understanding the factors affecting compliance in the regulated community, OEH can target resources to raise environmental awareness and encourage changes in attitude that will result in long-term improvements to the environment.

Developing partnerships with other agencies such as local government is an effective means of obtaining knowledge and sharing resources including information about local vegetation clearing activities and images from aerial surveys. Such partnerships contribute to a greater understanding of community or industry based compliance issues.

Establishing compliance priorities and risk management

An essential component of OEH's Native Vegetation Compliance and Enforcement Strategy is establishing priorities for compliance and enforcement campaigns. Priorities are based on identifying risks, problems or patterns of non-compliance that represent the greatest environmental risk. Campaigns target problem areas and utilise a range of tools to raise awareness and improve compliance.

OEH gathers information on vegetation change from various sources including reports of clearing made to Environment Line, from other agencies and satellite monitoring. SLATS uses satellite imagery taken over consecutive years to identify changes in woody vegetation cover. Additional information obtained from spatial databases and digital imagery is used to determine the likelihood of clearing occurring for legitimate reasons.

A risk management strategy is then applied to assess the environmental and regulatory risks associated with cases of unexplained vegetation change.

Using a risk-based problem-solving approach, OEH determines the most appropriate response in order to bring about compliance with the legislation. Proactive responses can include local, regional and state wide campaigns to address issues of concern. When investigations identify illegal clearing, OEH determines the most appropriate regulatory response.

In 2010, OEH conducted the following campaigns to promote and enforce compliance.

Working together to identify compliance issues

OEH satellite imagery of the entire state is being used to identify locations where vegetation change appears to have occurred. Patterns and trends in vegetation change identified through satellite monitoring are used to inform compliance and enforcement priorities. In 2010, unexplained vegetation change in the North Coast region showed a marked increase from the previous year. The extent of native vegetation continues to decline due to ongoing pressure from coastal urban development and agricultural activities, including forestry. The scale of clearing varies but often involves incremental activities in areas of high conservation value.

Analysis of reports received by OEH's Environment Line confirmed a high number of reports of vegetation clearing in the north coast region, and that many reports had come from local councils.

There are some instances where development involving clearing of native vegetation requires approval from both a CMA under the NV Act and from the local council under the *Environmental Planning and Assessment Act 1979*. For this reason CMAs, local councils and OEH need to develop complementary processes, including the sharing of natural resource information and coordination of their respective roles in natural resource management.

From September to November 2010, OEH and Northern Rivers CMA met with 11 local councils from Tweed in the North to Kempsey in the South, in order to develop more effective partnerships to deliver better outcomes for native vegetation.

The information sessions provided over 100 council staff with a valuable insight into how OEH implements a risk management approach to establish compliance and enforcement priorities and how operational activities are undertaken. Engaging with councils provided important information for OEH and CMAs on local vegetation clearing issues, which will be used to inform future targeted education and awareness raising campaigns. By improving communication networks between agencies opportunities, can be identified for sharing resources to raise environmental awareness and increase community compliance with natural resource legislation.

Promoting compliance

Satellite data is used by a variety of government and non-government organisations including NSW State Government agencies (including the LPMA, DPI, NSW Rural Fire Service) to support their activities such as assessing fire hazards and monitoring agricultural activity, e.g. cropping.

In 2010, OEH conducted a campaign to raise community understanding of native vegetation management requirements and how satellite monitoring detects vegetation change. Satellite imagery was analysed and a selection of properties chosen where low-risk unexplained vegetation change had been detected. While land can be lawfully cleared for a number of reasons including bush fire management and farm infrastructure, the focus of vegetation change was land cleared for agricultural purposes.

The campaign provided 130 landholders with information about their legislative obligations in protecting native vegetation along with high resolution satellite images of their properties. The first image showed the property before clearing had occurred, and the second image showed the property afterwards. The letter informed landholders of the options available to allow sustainable vegetation management, such as property vegetation plans or routine agricultural management activities and incentive funding available, to restore and protect native vegetation on their properties.



2007-08 satellite image –
showing property before clearing



2008-09 satellite image –
showing property after clearing

Source: Includes material © CNES 2007 & 2009, Distribution SPOT Image S.A., France, all rights reserved

Targeted enforcement

Satellite monitoring showed an increasing amount of unexplained vegetation change across the Warrumbungle Shire in north-west NSW between 2008 and 2009. The increasing average size of clearing on individual properties and the growing trend of clearing in the local government area warranted a significant compliance response. A campaign was delivered to raise landholder's awareness of their obligations under the *Native Vegetation Act 2003* in order to increase compliance. Where significant breaches were identified, OEH responded with appropriate enforcement actions. OEH focused on properties where the clearing posed the highest environmental risk.

In late 2010, area officers conducted on ground field inspections on 17 properties in the Warrumbungles to investigate if compliance breaches had occurred. During the inspections, OEH officers provided information to landholders on how to comply with the Act when clearing invasive native species. Where breaches were identified, the significance of the breach was assessed before determining the most appropriate enforcement response, to deter further breaches and remediate any environmental harm caused by illegal clearing. The campaign resulted in a range of responses including warning and advisory letters, penalty notices and remedial directions, and on-going investigations for more serious environmental breaches.

One of the key messages delivered to landholders during the campaign was the use of satellite monitoring to detect vegetation clearing.

Compliance and enforcement activities

Where clearing is identified, OEH has a choice of statutory and non-statutory tools to promote, enforce and respond to non-compliance. Warning and advisory letters are used to promote compliance by providing information about the Act and OEH's satellite monitoring program. To ensure OEH is fully informed of the circumstances related to a clearing event, statutory notices to produce information are issued during the course of an investigation.

Enforcement actions are necessary to penalise those who chose not to comply the legislation and act as a deterrent to would be offenders. In 2010, OEH responded to various offences under the legislation with 25 penalty notices carrying fines of between \$1100 and \$5500, and 35 orders to remediate land. Significant breaches resulted in the commencement of seven prosecutions, and six convictions.

Table 6.1 Compliance and enforcement actions

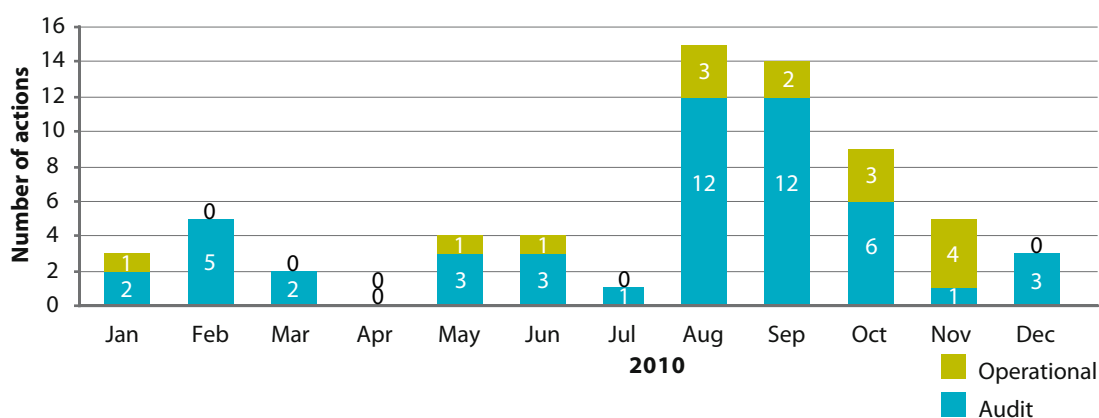
	2008	2009	2010
Legal directions			
Stop work orders served	2	0	0
Remedial directions served	4	26	35
Notices to produce information served	51	28	111
Advisory and warning letters			
Numbers sent	103	192	240
Prosecutions *			
Commenced	10	11	7
Convictions	4	8	6
Penalty notices			
Numbers issued	8	22	25

* Prosecutions completed in 2010 were not all commenced in 2010.

PNF compliance and enforcement activities

OEH has a PNF monitoring and compliance strategy. It is implemented through operational inspections, audits and investigations and supported by education, training and extension activities. During 2010, OEH undertook 15 operational inspections and 50 audits of PNF operations and commenced six new compliance investigations. The main non-compliance issues identified in audits were inadequate road and snig track drainage, and poor drainage feature crossings. Approximately 13 per cent of PNF PVPs have been monitored for compliance with the PNF Code of Practice. During 2010, eleven warning letters, five advisory letters, five corrective action requests, two caution letters and two penalty infringement notices were issued. Unauthorised logging operations reported to OEH were investigated.

Figure 6.1 PNF operational inspections and audits in 2010.



PNF education campaigns

The PNF training program aims to train landholders and logging contractors how to comply with the PNF Code, by focusing on the protection of biodiversity and cultural values, improving forest management and harvesting techniques, soil and water protection, and occupational health and safety standards. Its overarching goal is to facilitate a shift towards sustainable private native forestry in NSW.

The program consists of accredited 'Sustainable PNF' and 'PNF Operations Planning' courses delivered by TAFE, and of the PNF Awareness Field Days delivered by DPI. The program also includes preparation and publication of a suite of PNF information materials which are available on the OEH website.

During 2010, 18 PNF Awareness Field Days, 28 Sustainable PNF training sessions and 10 PNF Operations Planning sessions were delivered across NSW.

7. Data sources, limitations and exclusions

Native Vegetation Report Card

Data sources

All data are from OEH sources unless otherwise stated. Forests NSW provided data on 3 March 2011, DPI provided information on plantations on 16 February 2011, and information was collected from the public reserve system on 2 February 2011, private conservation areas (voluntary conservation agreements and wildlife refuges) on 9 February 2011 and BioBanking on 10 January 2011. PNF PVPs data was provided on 24 February 2011. The LPMA provided information on conservation covenants on 11 January 2011. Data was taken from the *Native Vegetation Conservation Act 1997* application databases 'VegNet2' on 15 February 2011 and the application database PADACS (PVPs, Agreements, Data and Customer Service) on 28 March 2011. CMAs provided data from 19 January to 23 March 2011, and NCT provided information on 18 April 2011.

Data limitations and exclusions

The statistics do not include clearing carried out under exemptions or alleged illegal clearing. The statistics only include OEH, DPI, CMA, LPMA and Forests NSW data. They do not include data from other agencies or external organisations.

Woody Vegetation Change Report

Data sources

The Landsat 5 TM and Landsat 7 EM+ imagery used in this analysis were acquired from the United States Geological Survey (USGS) for the periods of September 2008 to March 2009 and September 2009 to January 2010. The Landsat imagery downloaded from the USGS is different to the imagery used in the past which was purchased from Geoscience Australia. The USGS imagery is supplied, rectified and resampled at 30 m instead of 25 m. To ensure consistency, this analysis was solely based on USGS sourced Landsat imagery covering the period of 2000–2010.

Data limitations and exclusions

The 44 Landsat TM scenes covering NSW were analysed using the SLATS automated processing methods. Following this, the woody vegetation data from the automated process was visually edited to ensure a high level of accuracy and consistency. This interpretation of the change analysis was done by regionally based interpreters with local expertise. During the validation stage, the majority of interpretation was cross checked with higher resolution SPOT5 imagery acquired during the 2009–2010 period. Digital aerial photography was also used in the editing process in some parts of NSW.

Analysis and interpretation of the woody vegetation change output has enabled it to be classified according to land use (agriculture, forestry, and infrastructure) and fire. It does not allow a relationship to be determined between the change in vegetation extent and the conservation/approved clearing activities of CMAs and other agencies.

A small percentage (approximately 1.4 per cent) of the total NSW area was not interpreted in the 2009–2010 period due to cloud cover in the 2009 imagery.

GIS analysis techniques were used to convert the areas of vegetation change identified during the image analysis and interpretation phase to rates of change in hectares per year. This step compensates for the range of different image acquisition dates used in the analysis by extrapolating rates for time periods and interpolating rates where time periods are greater than one year. It assists the comparison of 2009–2010 rates with previous change periods.

Published by: Office of Environment and Heritage
59–61 Goulburn Street, Sydney PO Box A290, Sydney South, NSW 1232

Ph: (02) 9995 5000 (switchboard).
Ph: 131 555 (environment information and publications requests).
Ph: (02) 1300 361 967 (national parks, climate change and energy efficiency
information and publications requests).

Fax: (02) 9995 5999. TTY: (02) 9211 4723.
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

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