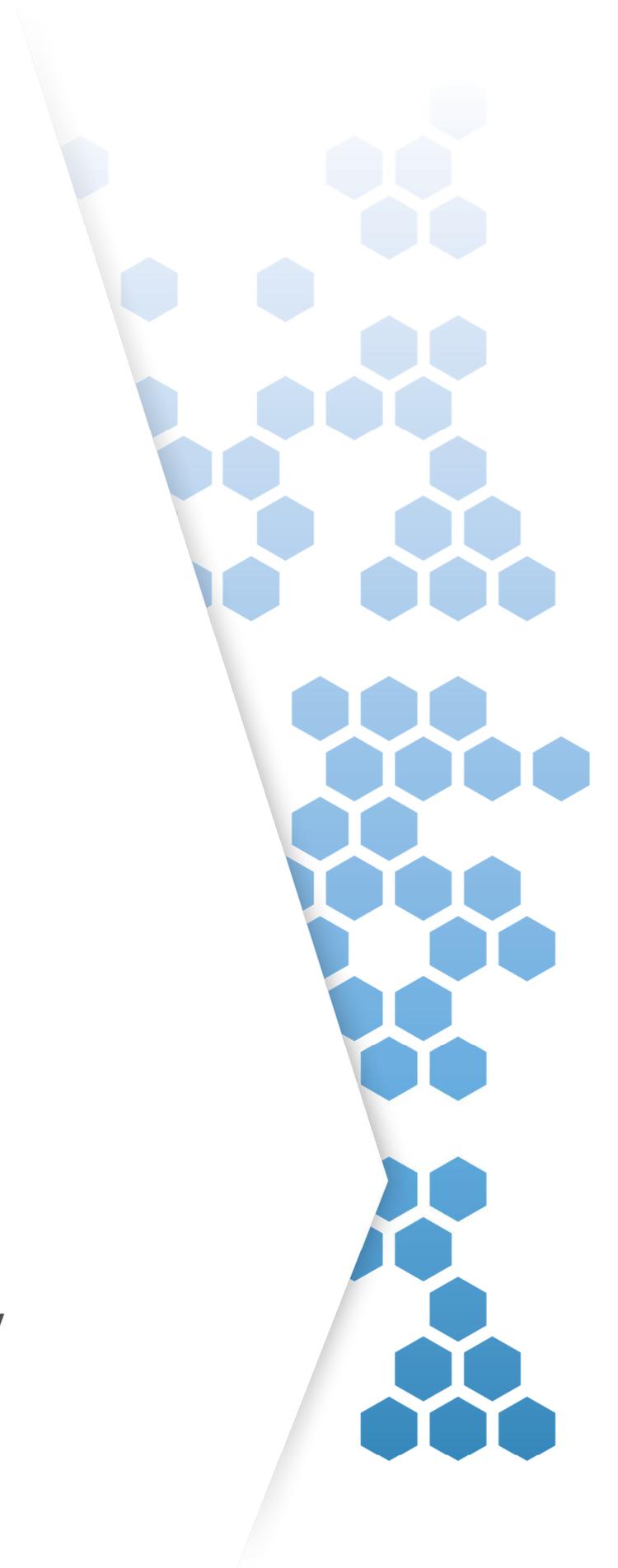


NSW Forest Report 2014–15

Implementation of NSW Forest
Agreements and Integrated Forestry
Operations Approvals



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Introduction

This is the sixteenth annual report on the implementation of the NSW Forest Agreements and integrated forestry operations approvals (IFOAs), prepared under Section 69H of the *Forestry Act 2012* and the NSW IFOAs.

This publication reports on compliance with ecologically sustainable forest management (ESFM) conditions, and achievement of important milestones and undertakings in NSW coastal forest regions (eastern NSW IFOAs). It also compiles information about timber harvesting, compliance, and the achievement of milestones and undertakings for the Riverina Red Gum, Brigalow–Nandewar, and South Western Cypress regions (western NSW IFOAs).

NSW Forest Agreements and IFOAs provide a strategic and operational framework to manage public forests in New South Wales, with the overall objective of achieving forest conservation and ESFM.

Implementation of the agreements and approvals is a cooperative undertaking between:

- NSW Environment Protection Authority (EPA)
- Office of Environment and Heritage (OEH), including the NSW National Parks and Wildlife Service (NPWS)
- Forestry Corporation of NSW (FCNSW) (formerly Forests NSW)
- Department of Primary Industries, including Fisheries.

What is reported

This report provides a snapshot of progress on the implementation of the NSW Forest Agreements and IFOAs for the period 1 July 2014 to 30 June 2015.

Chapter 1 provides a summary of results of monitoring important ESFM criteria and indicators for forestry areas in NSW coastal regions (and timber supply in coastal and western IFOA regions). The NSW ESFM indicators were assessed in 2010 by the then Department of Environment, Climate Change and Water and Forests NSW, following a comprehensive review conducted at the national level between 2005–2008. This document adopts the revised ESFM indicators, finalised in 2015 (awaiting publication).

Chapter 2 outlines compliance with IFOAs in all regions.

Chapter 3 and Appendices 1 to 4 provide information on progress of key milestones and undertakings contained within the Forest Agreements and IFOAs in all regions.

Links to other reporting

Other formats for assessing and reporting ESFM indicators have continued since the inception of the original ESFM criteria and indicators and Forest Agreements, and some other formats have been developed. For example, other data collection and reporting mechanisms include the NSW State of the Environment report, the Commonwealth State of the Forests report, the State of the Parks report and the Forests NSW Sustainability Supplement.

This annual report has been streamlined to link with, and not duplicate, other published reports, including:

- 2014–15 agency annual reports
- [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2015b) which checks progress based on a subset of the ESFM criteria and indicators

- [New South Wales State of the Environment \(SoE\) 2015](#) report (EPA 2015), which assesses the status and condition of major environmental resources in New South Wales, including native vegetation. The report describes responses to environmental pressures and supports robust policy making for management of the State's natural resources
- the five- and ten-year [Review of NSW Forest Agreements and IFOAs](#) (DECCW 2010), which assessed the implementation of the provisions of the agreements, and whether IFOAs were effective in achieving their purpose. The 2010 review identified milestones that would continue to be reported, and identified other milestones and undertakings that were complete or delivered through alternative mechanisms and did not need to be reported further. As a result of the review the EPA made comprehensive amendments to the coastal IFOAs, which commenced on 1 March 2013
- The Australian Government's State of the Forests reporting – comprehensive reporting against ESFM criteria and indicators at a national scale occurs at five-yearly intervals as part of the State of the Forests report. The most recent [State of the Forests Report 2013](#) (ABARES 2014) covers the period 2006–11 and has been cited in this report as 'SOFR 2013'.

Reviews of NSW Forest Agreements and State and Commonwealth Regional Forest Agreements

This report provides information for the review of NSW Forest Agreements and the combined 10- and 15-year review of Regional Forest Agreements (RFAs), which are currently being undertaken by relevant NSW Government agencies (led by the EPA) and the Australian Government. Information will be shared to help streamline reporting.

NSW Forest Agreement reviews are due every five years in accordance with the Forestry Act. The purpose of the review is to assess only:

- the implementation of the provisions of the NSW Forest Agreements
- whether the IFOAs are effective in achieving their purpose.

RFA reviews are also five-yearly. The purpose of each review is to provide an assessment of progress of the RFAs against the established milestones, and includes:

- the extent to which the commitments in the RFAs have been achieved
- the results of monitoring of sustainability indicators
- invited public comment on the performance of the RFA.

Which regions are reported

This report updates compliance, achievement of ESFM and achievement of milestones in the four eastern NSW forestry regions; and compliance, timber harvesting and achievement of milestones in the four eastern regions and the remaining three western IFOA regions.

The forestry regions, mapped below, are:

- The Upper North East (UNE), Lower North East (LNE), Eden and Southern regions with corresponding Forest Agreements and IFOAs
- Brigalow–Nandewar region, including the area under a community conservation area (CCA) agreement
- Riverina Red Gum region
- South Western Cypress region.

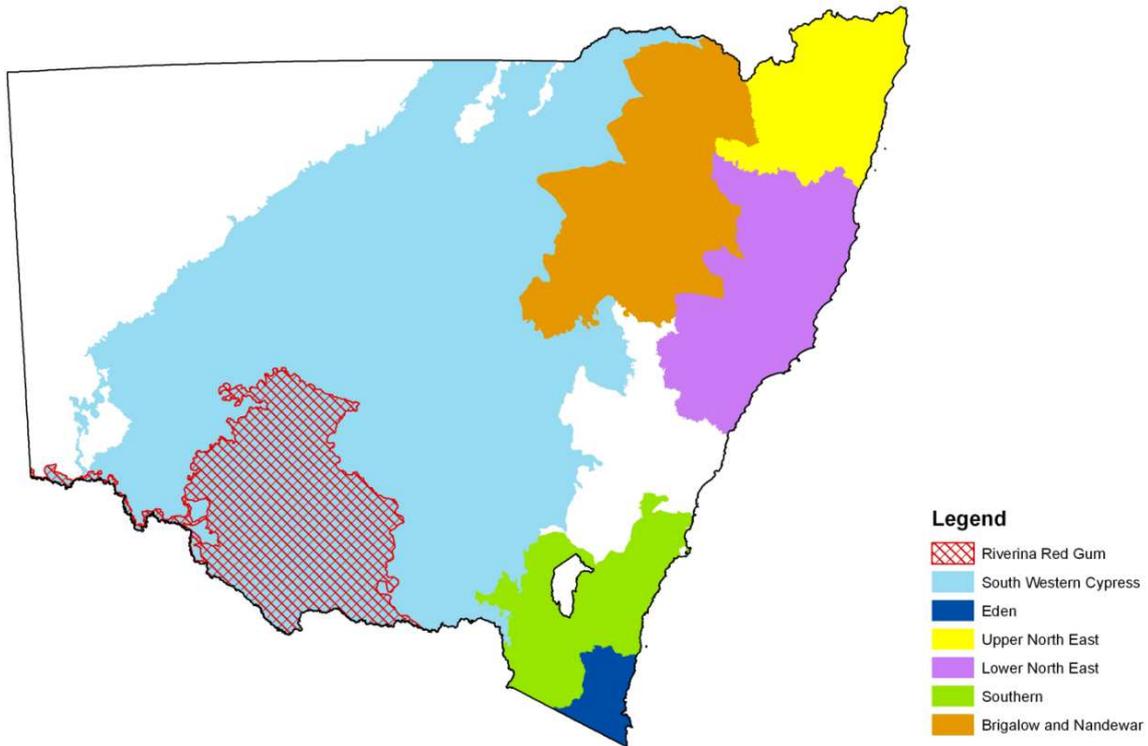


Figure 1: Integrated Forestry Operations Approval (IFOA) regions

Note: The four coastal regions have Forest Agreements and IFOAs in place. The three inland regions have IFOAs in place but not Forest Agreements. Also note that the Riverina Red Gum region overlaps with the South Western Cypress region but they have separate IFOAs in place for their operations.

Table 1: Forest Agreements and IFOAs operating in New South Wales

Forest Agreements and IFOAs for coastal regions

Forest Agreement/IFOA	Commenced	In place until
Eden region Forest Agreement	5 March 1999	4 March 2019
LNE region Forest Agreement	5 March 1999	4 March 2019
UNE region Forest Agreement	5 March 1999	4 March 2019
Southern region Forest Agreement	3 May 2002	3 May 2022
IFOA for the Eden region	1 January 2000	31 December 2018
IFOA for the LNE region	1 January 2000	31 December 2018
IFOA for the UNE region	1 January 2000	31 December 2018
IFOA for the Southern region	13 May 2002	31 December 2020

IFOAs established for western forest regions

Agreement/IFOA	Commenced	In place until
Brigalow and Nandewar Community Conservation Area Agreement	11 June 2009	10 June 2016
Brigalow–Nandewar IFOA	23 October 2010	31 December 2025
Riverina Red Gum IFOA	1 January 2011	31 December 2030
South Western Cypress IFOA	1 July 2011	31 December 2025

Remaking of the coastal IFOAs

The NSW Government is currently remaking the IFOAs for the Eden, Southern, Upper and Lower North East coastal regions into a single IFOA (the 'Coastal IFOA') that is efficient, effective and reflects modern best practice. The objective is to deliver a new IFOA with no erosion of environmental values and no change to current wood supply levels.

The IFOA for the Lower North East region was amended on 15 May 2015. The amendment provided for a limited trial of options for the remake of the Coastal IFOA in a small number of harvest areas on the mid north coast. The trial demonstrated certain options for protecting threatened species and habitats from timber harvesting operations, tested different harvesting intensities, and considered how the options deliver the objectives of the Coastal IFOA remake. Information obtained from the trial is being used to finalise the draft Coastal IFOA.

The western IFOAs are not part of the Coastal IFOA remake.

Contributing agencies

Agencies contributing to this report include:

- NSW Environment Protection Authority (EPA)
- Office of Environment and Heritage (OEH) including the NSW National Parks and Wildlife Service (NPWS), that manages, conserves and cares for more than seven million hectares of land in the national park estate
- Forestry Corporation of NSW (referred to in this report as Forestry Corporation, and as FCNSW in the Appendices)
- Department of Primary Industries (DPI), including Fisheries.

1. Report on achievement of ecologically sustainable forest management for coastal forest regions

Introduction

Monitoring of indicators

Monitoring of indicators is an integral component of ESFM. ESFM criteria and indicators were established in the NSW Forest Agreements (for coastal regions) to track changes in key social, economic and environmental values over time.

ESFM is defined in the NSW Forest Agreements as the guiding philosophy of forest conservation and management, and is based on the recognition that forests hold social, economic and environmental values in society. ESFM performance indicators reflect these key values.

The Forestry Act (69H) requires ESFM reporting annually on each Forest Agreement (in place only for coastal regions). This report provides compiled information on the achievement of ESFM criteria and indicators for coastal regions including mandatory timber harvesting volumes and wood products.

Comprehensive reporting against ESFM criteria and indicators at a national level occurs every five years as part of Australian Government [State of the Forests reporting](#).

Forest Agreements are not in place for the western regions but delivery of timber commitments under western IFOAs is summarised in this report. A range of other ESFM indicators may also be reported for western regions, especially as part of the Australian Government State of the Forests reporting.

What indicators have been adopted in this report?

This report adopts revised ESFM indicators (EPA 2017) updated following an interagency assessment in 2010. Each indicator sits under its relevant criteria and includes a rationale to explain the indicator's purpose in the broader context of measuring ESFM, and where appropriate, detail on the scale to be monitored.

The assessment of the 54 NSW indicators resulted in the consolidation of some indicators that were achieving the same target but had subtle wording differences across regions. Wording now aligns with the corresponding national Australian Montreal Implementation Group (MIG) indicator, with specific consideration of regional relevance. This provides a consistent set of baseline data between regions that is comparable and measurable over time. Aligning some of the indicators across regions also reduces the number of indicators from 54 to 36, while still collecting the same data in accordance with the requirements for ESFM.

ESFM criteria and indicators

Criterion 1: Conservation of biological diversity

Area information, such as remotely sensed forest cover, growth stage, and communities, is required for the interpretation of some of the indicators used in Criterion 1. Much of this modelled data may not have been updated during the reporting period. Where no data has been provided, refer to [State of the Forests Report 2013](#) (ABARES 2014) for the most recently available information. State of the Forests 2018 may update this information.

Indicator 1.1a Area of forest by forest type and tenure

This indicator reflects changes in the forest cover over time. Basing the data on tenure aims to provide a good indication of how different land management might influence changes to forest ecosystems and biodiversity.

No update for this criterion was available for this report.

Indicator 1.1b Area of forest by growth stage

This indicator monitors changes in forest growth stages to determine how ecological processes and species habitat is affected by forest structure. The age and size of trees is important in maintaining forest biodiversity.

No update for this criterion was available for this report.

Indicator 1.1c Area of forest in protected area categories

This indicator reports on the area and proportion of forests that have been protected through informal and formal processes in New South Wales, to reflect the importance of preserving ecosystems that are comprehensive, adequate and representative in order to maintain and protect biodiversity.

There are various mechanisms for protecting forests, including the Comprehensive, Adequate and Representative (CAR) reserve system, which is integral to Australia's National Forestry Agreements, and the International Union for Conservation of Nature (IUCN) categories, which have been adopted in [Australia's Strategy for the National Reserve System 2009–2030](#) (Australian Government 2009).

SOFR 2013 reports that 6.1 million hectares of public native forest in New South Wales is protected under CAR reserves. This represents 27% of the total forest area in the State. SOFR also reports that IUCN-protected area categories apply to 25% of NSW forest. See Table 2 for a summary of protection status up to 2011.

Since 2011, 237 hectares of former state forest land has been added to the NPWS reserve system. There were no new acquisitions within the forestry regions in 2014–15.

Table 2: Area of protected native forest on public land in New South Wales, by CAR reserve type

Forest area measure	Dedicated formal reserves	Informal CAR reserves	Values protected by prescription	Total forest protected
Forest area '000 hectares	5,601 ^a	393 ^b	125 ^c	6,119
Proportion of total forest ^b	25%	2%	1%	27%

CAR = comprehensive, adequate and representative

^a Forest in tenure type 'nature conservation reserve' (Indicator 1.1a) plus forest in special protection zones in tenure type 'multiple-use public forest'

^b Forest in the 'CAR informal reserves' category in tenure type 'multiple-use public forest' defined in SOFR 2013

^c Forest in the other informal protections or protected under IFOAs

Source: SOFR 2013 (ABARES 2014)

Indicator 1.1d Fragmentation of forest cover

This indicator provides information of the loss of forest cover and the spatial configuration of that loss. Fragmentation can impact forest dwelling species and gene pools due to

disruption to dispersal of species. Less fragmentation of forest is considered to be favourable to the conservation of biodiversity.

No update was available for the reporting period.

Indicator 1.2a Forest-dwelling species for which ecological information is available

This indicator reports on the amount of information available for forest-dwelling species and helps assess the capacity for making species management decisions and implementing effective conservation strategies.

No update was available for the reporting period.

Indicator 1.2b The status of forest-dwelling species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment

This indicator aims to identify the conservation status of listed forest-dwelling threatened species across the State. Changes to the listing of species may be used as a broad measure for demonstrating conservation risk for threatened species.

SOFR 2013 reports that Australia-wide, land-use change and forest loss caused by clearing for agriculture, grazing, urban and industrial development, has been the most significant threat for fauna species, followed by predation from introduced predators (e.g. fox, cat, rat and trout). Sustainably managed forestry operations are reported as being a relatively small threat to threatened forest fauna and flora, compared with other identified threats.

OEH maintains a comprehensive [threatened species profile search facility](#) to view and contribute sighting records and profiles of species, populations and communities. This search facility is for all species, not just forest-dwelling and is used and contributed to by Forestry Corporation.

Table 3 details the number of recorded threatened flora and fauna species for each NSW coastal forestry region, as at 30 June 2015.

Table 3: Number of recorded forest-dwelling threatened species by region*

	UNE	LNE	Eden	Southern
Endangered vertebrate fauna	47	40	15	24
Endangered invertebrate fauna	5	2	1	2
Endangered vascular plants	135	94	28	87
Vulnerable vertebrate fauna	113	116	52	67
Vulnerable invertebrate fauna	0	0	0	0
Vulnerable vascular plants	85	95	21	56
Total	385	347	117	236

* This table includes data from some areas with very little forest cover, e.g. Arawakal National Park. Source: Bionet – the Atlas of NSW Wildlife, www.bionet.nsw.gov.au.

Indicator 1.2c Representative species from a range of habitats monitored at scales relevant to regional forest management

This indicator provides information on population levels for representative species (both flora and fauna) across habitats.

Monitoring the populations of typical forest-dwelling species helps agencies develop better targeted strategies for managing forests. Monitoring programs are undertaken by a variety of government agencies, non-government organisations and research bodies. The

following case studies, provided by NPWS, illustrate different types of monitoring programs and the potential value the data provides.

Case study: Monitoring the impact of wild dog baiting on the spotted-tailed quoll

The spotted-tailed quoll (*Dasyurus maculatus*) is listed as a threatened species at both Commonwealth and State level because it is now uncommon across much of its existing range. As a marsupial carnivore with broad-ranging feeding habits it is potentially at risk from 1080 pesticide control programs for foxes and wild dogs, particularly those that use less conservative techniques such as aerial baiting.

Quoll latrine sites in parts of southern Kosciuszko National Park and Merriangaah Nature Reserve where aerial baiting occurs have been monitored since 2005. Quoll activity at these sites is compared to activity at a similar set of sites without aerial baiting. The reserves are part of the Southern forest agreement area.

The study found that the number of latrines at monitoring sites has varied from one year to another irrespective of baiting history, with no strong trends. This suggests that aerial baiting is not having any significant detrimental effects.



Figure 2: Spotted-tailed quoll, *Dasyurus maculatus*. Photo: K Stepnell/OEH

Case study: Managing fire-sensitive species in the Australian Alps

NPWS monitors a number of permanent sites to record the effects of fire on vascular plant species and communities in the Australian Alps national parks. There are 9 plots in the Australian Capital Territory, 10 in Victoria and 21 in New South Wales. Data gathered from the monitoring system enables more informed management decisions regarding the timing and effect of various fire regimes. This is particularly useful for managing the conservation of rare, threatened and fire-sensitive flora species and communities, and helps promote biodiversity.

Case study: Bandicoots on film in forests and heathlands

The southern brown bandicoot (*Isoodon obesulus*) is listed as an endangered species in New South Wales. Since 2013, infrared cameras have been used to monitor trends in southern brown populations in Ben Boyd National Park and Nadgee Nature Reserve in the far south-east corner of New South Wales. Camera monitoring can help establish the impact of environmental management strategies in these areas, particularly intensive fox control work and ecological burning.

In addition to the target species, the cameras record information about the status of other threatened fauna, including the long-nosed potoroo (*Potorous tridactylus*) and eastern pygmy-possum (*Cercartetus nanus*), as well as other species of interest for environmental management, such as the long-nosed bandicoot (*Perameles nasuta*).

Camera monitoring to-date has indicated that the southern brown bandicoot occurs in discrete patches of habitat, and has persisted in those patches irrespective of surrounding management activities. This is also the case for the long-nosed bandicoot, which is common and widespread, and the long-nosed potoroo, also relatively widespread. However, monitoring has not been in place for long enough to infer meaningful trends in patterns of occurrence of these species.

FCNSW has a number of long-term monitoring programs in place (See Table 4). In addition, during this period FCNSW undertook almost 2000 pre-harvest surveys, resulting in 3122 threatened species sightings, including 57 threatened fauna species. In response to these sightings FCNSW modified its harvesting practices to address additional species' habitat requirements, for example through establishing exclusion zones and retaining habitat trees.

Indicator 1.3b¹ Native forest and plantations of indigenous timber species that have genetic resource conservation mechanisms in place

This indicator identifies any formally recognised genetic resource conservation mechanisms in place at the State level as a means for managing and conserving timber species' genetic resources.

No data was available for this indicator for the reporting period.

¹ Indicator 1.3a is no longer included in the EFSM criteria and is therefore no longer reported against; however, original numbering has been maintained for consistency over time.

Table 4: Forestry Corporation targeted monitoring programs for vulnerable, endangered and critically endangered species

Monitoring program	Location	Details	Commenced
Hastings River mouse (<i>Pseudomys oralis</i>)	Marengo, Styx River and Doyles River State Forests	1,150 traps in 23 locations	April 2015
Aquatic macro-invertebrates	Northern NSW	Ongoing monitoring at 6 sites	May 2015
Biodiversity monitoring of birds, microbats, other mammals, reptiles and frogs	Brigalow–Nandewar	Sound recorders	2013
Smoky mouse (<i>Pseudomys fumeus</i>)	Eden	Remote cameras and pitfall trapping	2008
Giant burrowing frog (<i>Helioporus australicus</i>)	Eden	Tadpole surveys and call recorders	2008
Southern brown bandicoot (<i>Isoodon obesulus</i>)	Eden	Remote cameras at 40 sites	2007
<i>Acacia ruppia</i> , <i>Boronia umbellata</i> , <i>Parsonsia dorrigoensis</i> , <i>Niemeyeria whitei</i> , <i>Tasmannai pururascens</i> , <i>Hibbertia marginata</i> , <i>Grevillea quadricauda</i> , <i>Eucalyptus glaucina</i> , <i>Angophora robur</i> , <i>Macozamia johnsonii</i>	North coast	Flora species monitoring	2006
Northern corroboree frog (<i>Pseudophryne pengilleyi</i>)	Tumut area	Monitored via call response	2005
Golden-tipped bat (<i>Kerivoula papuensis</i>)	Narooma	Radio tracking	2004
Large-footed myotis (<i>Myotis macropus</i>)	Kerewong and Kippara State Forests	Annual banding	2001
Yellow-bellied glider (<i>Petaurus australis</i>)	Tumut (or Bago Plateau)	Spotlighting and call playback at 123 sites	1995
Burning study	Eden	Monitoring flora and fauna response to burning	1986

Criterion 2: Maintenance of productive capacity of forest ecosystems

Indicator 2.1a Native forest available for wood production, area harvested, and growing stock of merchantable and non-merchantable tree species

This indicator is a broad measure of the productive capacity of NSW forests to meet resource demands in a sustainable manner by determining the size and nature of a region's native forest available for harvesting.

Land available in State forests

Forestry Corporation uses a land classification system called Forest Management Zoning (FMZ). The FMZ system is detailed in [Managing our forests sustainably: Forest Management Zoning in NSW State Forests](#) (SFNSW 1999). FMZ maps are appended to Forestry Corporation ESFM plans². Dedicated Formal reserves are classified FMZ 1, while informal reserves are classified as FMZ 1, 2 or 3A. Modified harvesting is permitted in FMZ 3B areas, while FMZ 4 areas are native forest areas available for timber production. Based on the estimate of harvestable area across FNCSW managed estate, 29% of FMZ 4 is excluded from harvesting³. Zones 5, 6, 7 and 8 correlate with hardwood plantation estates, softwood plantation estates, non-forestry use zones (e.g. infrastructure, such as powerlines and transmission towers), and land for further assessment, respectively. The total number of hectares of each FMZ category across all NSW IFOA regions was provided in the 2013–14 report (EPA 2014). Table 5 shows the area of state forest in each IFOA region.

Table 5: Forestry Corporation of NSW defined forest area under the Australian Forestry Standard within the IFOA areas and additional areas

State forests	Softwood plantation division (hectares)	Hardwood forest division (hectares)	Total (hectares)
Upper North East	24,138	417,335	441,473
Lower North East	15,075	481,123	496,198
Southern	152,495	268,431	420,926
Eden	42,674	164,362	207,036
Riverina Red Gum	0	36,775	36,775
South Western Cypress	0	148,814	148,814
Brigalow–Nandewar	1,600	275,599	277,199
Total for IFOA areas	235,982	1,792,439	2,028,421
Goulburn subregion	44,671	0	44,671
Total state forests area	280,653	1,792,439	2,073,092

² ESFM plans can be found at: www.forestrycorporation.com.au/management/sustainable-forest-management/esfm.

³ The estimate for harvestable areas is calculated by excluding all identified non-harvestable areas held on the corporate geo-database. For coastal regions, a further percentage is then removed from the harvestable area based on a factor derived from implementation of harvest plans under current license conditions.

Management of private native forestry in New South Wales

Private native forestry (PNF) is the management of native forest on privately owned land, or Crown land that is not Crown-timber land within the meaning of the Forestry Act, for the purpose of obtaining forest products on a sustainable basis. There is an estimated 8.5 million hectares of native forests on private land across New South Wales, of which around half a million hectares is currently allowed to be logged under approval. Approximately 5 million hectares is potentially suitable for PNF operations although most of this is not used for this purpose.

The EPA regulates private native forestry under the *Native Vegetation Act 2003* and the [PNF Code of Practice](#). The PNF Code is designed to ensure that forest operations improve or maintain environmental outcomes and encourage sustainable management of native forests on private land. Approval through a PNF property vegetation plan (PVP) is required to carry out forestry operations on private land. This is a legally binding agreement between a landholder and the EPA which is valid for up to 15 years, giving landowners the security they need to make long-term forest management decisions.

Case study: Engaging with the timber industry in Brigalow

Over the course of a week in September 2014, the EPA met with five sawmillers, four logging contractors and three landowners holding PNF PVPs around Gunnedah, Barradine and Tamworth to discuss the EPA's regulatory work and how PNF Code of Practice requirements encourage ecologically sustainable forestry management.

The EPA also conducted four compliance monitoring inspections in those areas in the same week, and found that all operations were generally compliant. No further action was taken.

The EPA regularly engages with different people across the forestry industry spectrum, including land managers, consultants, logging contractors, mill operators and industry groups. This enables the EPA to stay in touch with the industry, and identify emerging issues and risks. Proactive use of regulatory tools, such as stakeholder engagement and education, helps prevent impacts on the environment and enhances ecologically sustainable forest management.

EPA compliance priorities for regulating native forestry on private land include protection of hollow-bearing and recruitment trees, identification and protection of koalas, and application of best practice standards for road crossings, track drainage and stream protection. For more information about the EPA's compliance strategy for private native forestry visit the EPA webpage [PNF Compliance Strategy and priorities](#).



Figure 3: Hollow-bearing trees, which provide nesting space and shelter for native birds and animals, are a priority for the EPA’s regulation of native forestry on private land. Photo: M Todd/OEH

Private native forestry approvals

Forestry operations within approved areas may occur on a cyclical basis at any time during the term of the approval. Only a small percentage of the total approved area will have active forestry operations occurring in the reporting period.

Between 1 August 2007 and 30 June 2015, 3145 PVPs have been approved for PNF, covering over half a million hectares of private forest. In 2014–15, 27,956 hectares were approved under 222 new PNF PVPs. All rainforest, old-growth forest, wetlands, heathlands and many other environmentally important ecosystems within this area are required to be protected in accordance with the PNF Code.

Table 6: Area of PNF property vegetation plans approved July 2012–June 2015

Area of PNF PVPs (ha)			
Forest region	2012–2013	2013–2014	2014–2015
Northern	43,200	35,190	24,671
Southern	4,243	494	577
Riverina Red Gum	10,047	1,694	871
Cypress and Western Hardwood	3,698	3,521	1,837
Totals	61,188	40,899	27,956

Sources: EPA Forestry Section database; [NSW Report on Native Vegetation 2013–14](#) (OEH 2014).

Table 7: Total property vegetation plans approved July 2012–June 2015

Code	2012–13	2013–14	2014–15
Northern	285	248	202
Southern	28	6	7
River Red Gum	26	16	11
Cypress and Western Hardwood	9	11	2
Totals	348	281	222

Source: EPA Forestry Section database.

Additional private native forestry trends are reported in the OEH [NSW Report on Native Vegetation](#) (OEH 2014).

Department of Primary Industries – reporting on plantations

Plantations approved under the *Plantations and Reafforestation Act 1999* in coastal IFOA areas since 2001 are listed in Table 8. Figures for timber volumes and other products supplied from these plantations are not routinely collected.

In addition to the coastal areas, 617 hectares of new plantations were authorised in the Murrumbidgee Catchment Management Authority (CMA) region. No new plantations were authorised in the NSW central west.

Table 8: Area of plantations approved under the Plantations and Reafforestation Act (includes state forests and private plantations)

Year	Area (ha)		
	North Coast	Hunter	South Coast
2001–02	919	134	1,038
2002–03	3,425	118	322
2003–04	2,915	200	1,523
2004–05	8,060	2,233	4,397
2005–06	123,457	1,664	2,033
2006–07	14,038	438	1,826
2007–08	14,567	2,506	584
2008–09	10,283	2,434	809
2009–10	1,833	538	36
2010–11	1,098	193	173
2011–12	1,998	1	18
2012–13	3,364	0	2,266
2013–14	55	73	0
2014–15	69	13	21

Indicator 2.1b Age class and growing stock of plantations

This indicator is a broad measure of the contribution NSW plantations make towards meeting timber resource demands using the area, age class and growing stock of native and exotic species plantation forests.

Indicator 2.1.b also aims to ensure the total growing stock of merchantable and non-merchantable tree species on native forest land available for timber production is maintained or increased.

Forestry Corporation uses a model forest resource and management evaluation system (FRAMES) coupled with field measurements to estimate and predict the long-term availability of timber and plan harvesting operations.

The volume of timber supplied from western NSW was down after the closure of the Gunnedah Mill in September 2014 and the wood supply agreement holder taking significantly less than their annual allocation. Forestry Corporation and the customer have since agreed to terminate the wood supply agreement.

Because the areas of forest growth stage categories do not change significantly over short periods, growth stages are not reported annually in the current report. Growth stage is monitored in productive coastal forests through regeneration surveys, ensuring mature forest areas successfully transition to regrowth in areas subject to harvesting. Refer to SOFR 2013 (ABARES 2014) for additional growth stage information.

During 2014–15 the NSW Government's decision to buy back 50,000 cubic metres of timber allocation from Boral on the north coast was implemented. Industry concerns will be considered by the NSW Government in 2015–16 through the Natural Resources Commission.

Indicator 2.1c Annual removal of wood products compared to the volume determined to be sustainable for native forests, and the future yields for plantations

This indicator measures the actual harvest levels for native forest timber products against sustainable yield projections. The indicator also measures the yield forecasts for plantations. Managing forest resources in a sustainable manner is an integral part of NSW forest policy and the [National Forest Policy Statement](#) (1995).

Compliance with environmental forestry certifications

Forestry Corporation produces timber which is certified sustainable under the internationally recognised Australian Standard® (Sustainable Forest Management) (otherwise known as the Australian Forestry Standard or AFS). The current standard is AS 4708:2013. The Corporation also complies with the international standard for environmental management systems (ISO 14001:2004).

To maintain AFS certification, Forestry Corporation needs to demonstrate that it addresses internationally recognised economic, social, environmental and cultural criteria and requirements. Forestry Corporation was externally audited in October 2014, as part of the nine-monthly surveillance program, to check compliance with the Australian Forestry Standard (at that time the second edition – AS4708:2007) and the environmental management systems standard (ISO 14001:2004).

As with the previous assessment, this audit was structured to provide an independent assessment of the two operational divisions, Hardwood Forests Division and Softwood Plantations Division, as well as centrally managed corporate governance processes. The Hardwood Forests Division component of the audit focused on forest management in the northern coastal hardwoods Forest Management Units (Maitland, Dungog and Casino) including management of joint venture hardwood plantations and planning processes for forest operations on private property. The Softwood Plantations Division component

focused on pinus radiata plantations in the northern softwoods region (specifically Armidale State Forest and the state forests around Walcha).

While the audit identified opportunities for improvement, it did not identify non-compliance with either standard.

The AFS also includes a ‘chain of custody’ standard to track forest and wood products through their supply chain.

Reporting on timber supply in coastal IFOA areas

The IFOAs specify the types, volumes and quantities of native forest timber products that Forestry Corporation is permitted to harvest. Actual versus specified volumes (or tonnage) harvested are reported here.

The IFOAs permit annual variations to the specified volumes to accommodate changes in environmental and economic circumstances.

Figure 4 depicts actual volumes and quantities harvested in each IFOA region as a percentage of the volumes and quantities specified in IFOAs. The UNE, LNE and Southern lines are based on extraction of high-quality large sawlogs and large veneer logs. For consistency with earlier reports, these exclude poles, piles and girders (which are also specified in the IFOAs).

In the **UNE region**, 49,975 cubic metres of high-quality large sawlogs and large veneer logs were harvested from native and hardwood plantation forests during 2014–15. This represents 45.8% of the permitted annual volume (109,000 cubic metres) and is a decrease from the amount harvested in the previous year (54,716 cubic metres). Forestry Corporation also supplied 12,574 cubic metres of poles, piles and girders.

An amendment to the IFOA for the **LNE region**, which commenced May 2015, provided for a limited trial to investigate options for protecting threatened species and habitats from timber harvesting operations and tested the impact of different harvesting intensities. Information obtained from the trial is being used to finalise the draft Coastal IFOA.

The amendment for the LNE region did not alter the permitted quota volumes. High-quality large sawlogs and large veneer logs harvested from this region during 2014–15 totalled 90,242 cubic metres, representing 56.4% of the permitted annual volume (160,000 cubic metres). This is a decrease from the amount harvested in the previous year (104,344 cubic metres). Forestry Corporation also supplied 19,812 cubic metres of poles, piles and girders.

High-quality large-log volumes harvested in the **Eden region** in 2014–15 totalled 19,967 cubic metres, representing 86.8% of the permitted annual volume (23,000 cubic metres). This is a decrease from the amount harvested in the previous year (21,387 cubic metres). No piles, poles or girders were extracted in the Eden region.

In 2014–15, 270,532 tonnes of pulp-grade timber were harvested in the Eden region, representing 78.4% of the permitted annual volume (345,000 tonnes). This was an increase from the previous year (260,857 tonnes). Percentages of pulp-grade timber sold from the Eden region since 1999–2000 are shown in Figure 5.

High-quality large logs harvested in the **Southern region** totalled 51,771 cubic metres. This represents 53.6% of the annual permitted volume, (96,500 cubic metres; comprising 48,500 cubic metres from the South Coast subregion and 48,000 cubic metres from the Tumut subregion). The quantities of high-quality large logs reported by subregion, are:

- South Coast subregion: 42,504 cubic metres (88% of permitted volume) plus 197 cubic metres of poles, piles and girders. This was an increase from the previous year (36,487 cubic metres)
- Tumut subregion: 9267 cubic metres (19% of permitted volume) This was an increase from the previous year (5240 cubic metres).

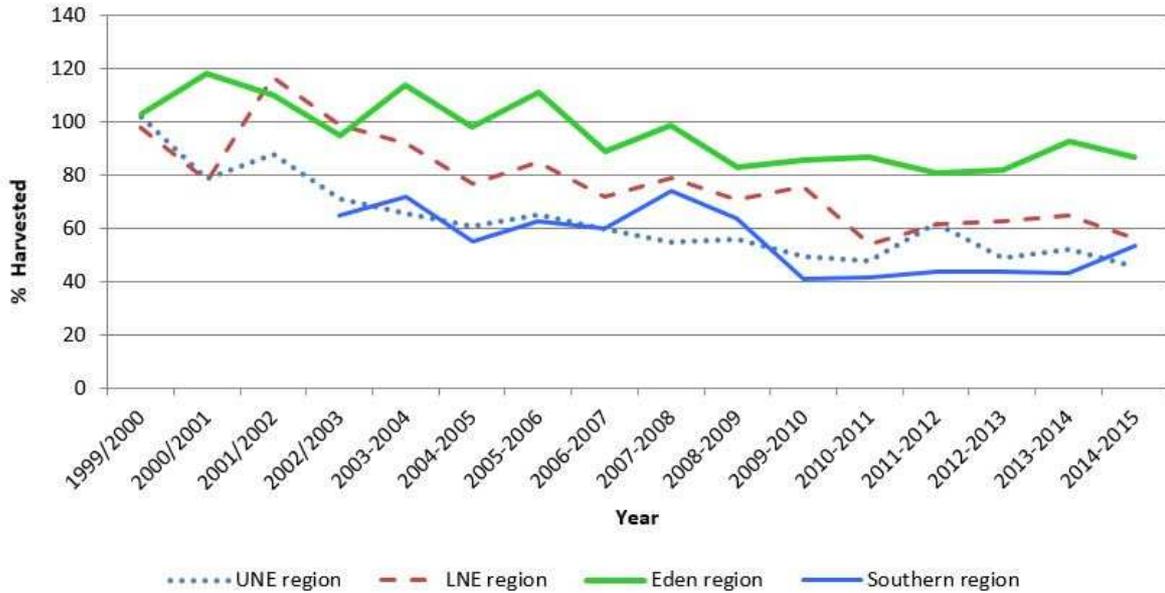


Figure 4: Log volumes harvested as a percentage of volumes specified in IFOAs – all coastal regions

Source: Forestry Corporation data

Notes:

All quota sawlogs harvested from native forest.

Timber harvesting in Southern region under the terms of NSW Forest Agreements and IFOA began in 2002. South Coast subregion and Tumut subregion figures have been combined. Separately, the percentages of permitted volumes are 88% in the South Coast subregion and 19% in Tumut subregion.

Volumes and quantities not specified in the Forest Agreements and IFOAs

There are no volume limits set in the coastal approvals for certain timber products that are produced as a by-product of harvesting operations in hardwood plantations and native forests. These products include low-quality sawlogs, firewood, and landscape timbers. Nor do the Coastal IFOAs cover operations conducted in softwood plantations.

In 2014–15, around 350,000 cubic metres of non-specified logs were harvested from Forestry Corporation native forests and hardwood plantations across all coastal Forest Agreement and IFOA regions. Additionally, around 55,000 tonnes of non-specified pulp-grade timber was produced across all coastal regions (see Table 9 for further detail).

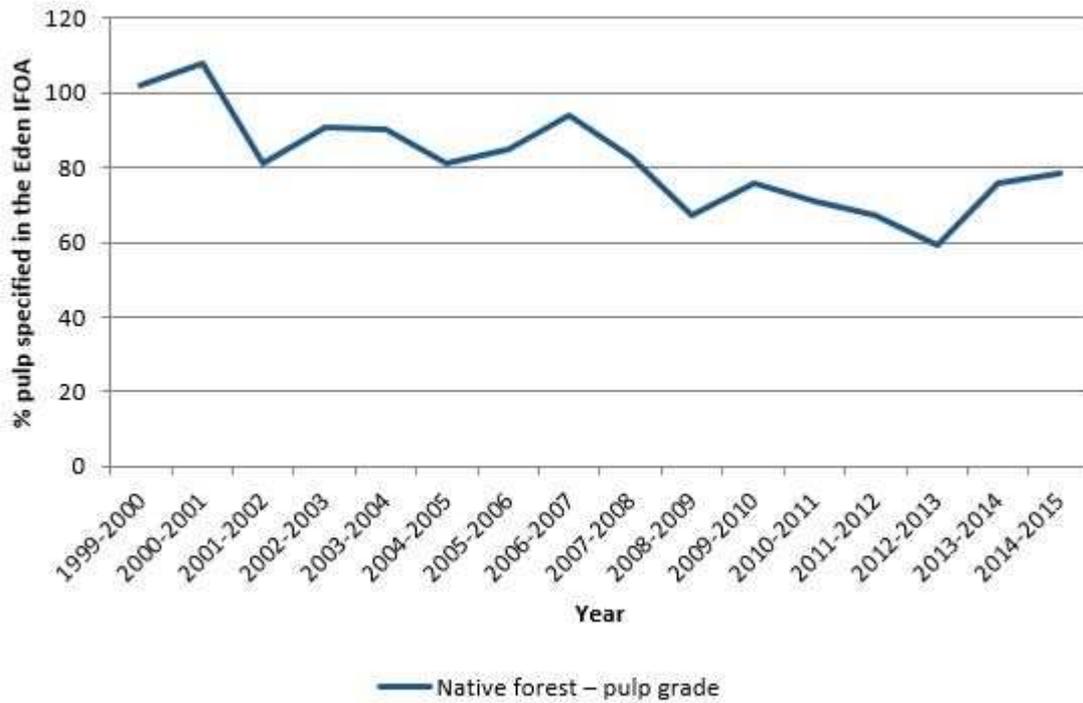


Figure 5: Pulp grade timber harvested as a percentage of volume specified in the IFOA – Eden region only

Source: Forestry Corporation data

Table 9: Quantities of native forest and hardwood plantation timber products – coastal regions (2014–15)

Log type	Unit	Southern region		Eden region		LNE region		UNE region	
		South Coast subregion	Tumut subregion	Native forest	Hardwood plantation	Native forest	Hardwood plantation	Native forest	Hardwood plantation
Large veneer*	m ³	288	0	0	n/a	2,001	245	3,069	475
High-quality large sawlogs*	m ³	42,216	9,267	19,967	n/a	86,035	1,961	44,420	2,011
Small veneer	m ³	0	0	0	n/a	423	2	450	2
High-quality small sawlogs	m ³	6,865	12	1,856	n/a	20,507	518	24,098	1,297
Low-quality sawlogs	m ³	17,800	10,798	1,668	n/a	105,670	11,135	55,773	20,900
Large poles/piles and girders**	m ³	197	0	0	n/a	7,068	356	5,825	591
Small poles/piles and girders	m ³	623	0	0	n/a	11,969	419	5,722	436
Fencing/landscape/sleepers (sawn)	m ³	16,025	267	1,067	n/a	10,131	0	1,845	0
Sub total	m³	84,014	20,343	24,558	n/a	243,803	14,636	141,202	25,712
Pulp-grade and chipwood***	t	36,458	0	270,532	n/a	17,900	138	53	0

Notes:

* Veneer and high-quality large sawlogs harvested from Forestry Corporation native forests and hardwood plantations comprise quota log volumes. The IFOAs specify quantities of these products.

** Poles, piles and girders that meet quota specifications have been reported separately in this report. For comparison with previous reports, Figure 4 (percentage of quantities specified in IFOAs) does not include poles, piles and girders; however, the IFOAs do specify these quantities.

*** In Eden, pulp-grade timber figures form part of the quota requirements under the Eden Forest Agreement and IFOA. Pulp timber in other regions is reported as non-quota.

Source: Forestry Corporation data. Note that amounts reported are derived from an operational database and a small number of minor reconciliations may have been undertaken since the end of the reported period.

Timber volumes harvested in western IFOA regions

Riverina Red Gum region

The Riverina Red Gum IFOA identifies average yearly allocations and sets 20-year limits for high quality large logs and residue logs, but does not set maximum annual limits. The IFOA sets maximum allocations of early thinning. Figure 6 compares the volume of sawlogs and quantity of early thinning obtained from the Riverina Red Gum region in 2014–15 with previous reporting periods.

During 2014–15, 5194 cubic metres of high-quality large sawlogs (including large veneer logs) were harvested from native forests in this region. The IFOA does not restrict harvesting above the average volume as long as the 20-year limit of 90,253 cubic metres is not exceeded over the life of the IFOA (an annual average volume of 4413 cubic metres). The volumes of high-quality large sawlogs extracted in 2014–15 were slightly above the average allowance.

A total of 7453 cubic metres of low-quality sawlogs were obtained in this region in the reporting period. No upper limit is specified in the Riverina Red Gum IFOA. Low-quality sawlogs can be a by-product of high-quality large sawlog operations or early thinning operations.

26,263 tonnes of residue were harvested from operations associated with the production of high-quality sawlogs during this period. A further 12,405 tonnes of residue-grade log were harvested from Western Lands lease areas. The Riverina Red Gum IFOA Amendment 4, which commenced 1 July 2014, allowed residue operations from Western Lands lease areas to continue at the existing annual volume rates until 31 December 2015.

In addition to residue associated with high-quality large logs, the IFOA permits early thinning operations in Riverina state forests to produce red gum residue. Under an amendment commencing 1 July 2013, an average of 35,370 tonnes may be produced each year, up to a maximum of 212,220 tonnes in total by 30 June 2019. A total of 29,213 tonnes of residue-grade logs were harvested during the reporting period.

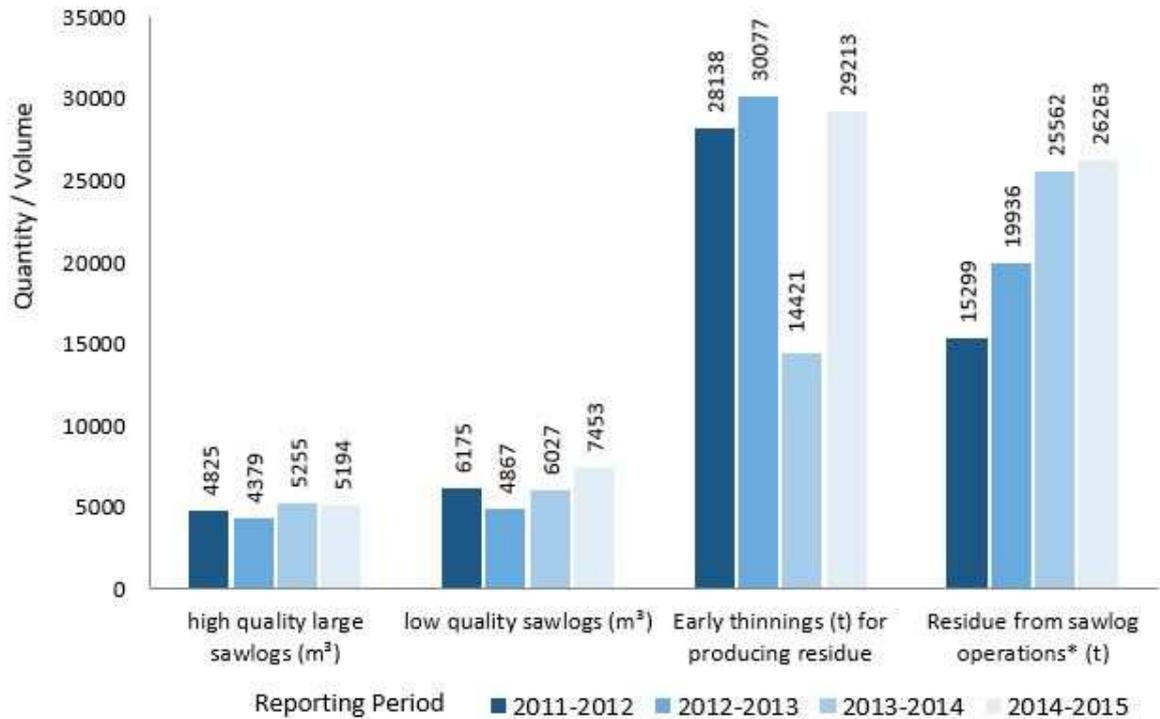


Figure 6: Volume (m³) of high-quality large sawlogs and low-quality sawlogs, and quantity of early thinning (t) obtained from the Riverina Red Gum IFOA region over 2014–15 and previous years

Notes: Figures do not include the additional 12,405 tonnes of residue-grade log harvested from Western Lands lease areas during 2014–15. The chart reports the years since the IFOA commenced.

Brigalow–Nandewar region

The Brigalow–Nandewar IFOA identifies average yearly allocations and specifies maximum annual limits for white cypress logs, western ironbark logs, and firewood. The IFOA also specifies maximum annual limits for small quantities of other logs and products. The IFOA allows the harvesting of vegetation products other than timber that are of economic value, such as broombush.

Figure 7 compares the volumes of cypress sawlogs and ironbark sawlogs, and quantity of firewood and fencing obtained from the Brigalow and Nandewar region in 2014–15 with previous years.

In 2014–15, 21,209 cubic metres of cypress logs were harvested in the region, representing 51.7% of the annual average permitted volume (41,000 cubic metres). A total of 1121 cubic metres of ironbark sawlog and fencing timber were harvested, representing 54% of the specified annual limit (2050 cubic metres), and 3225 tonnes of firewood were harvested, representing 32.9% of the average yearly allocation (9800 tonnes).

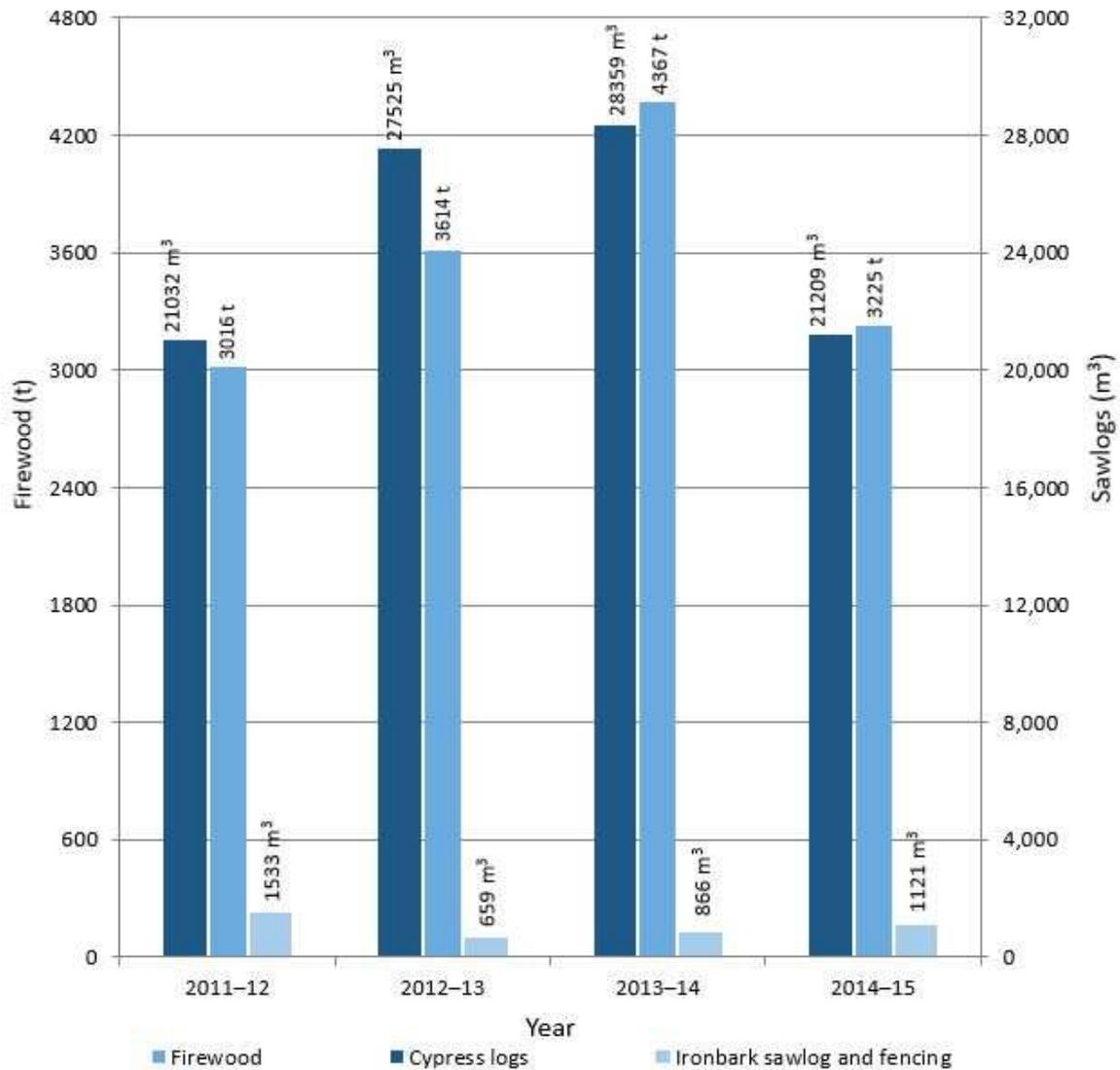


Figure 7: Volumes (m³) of cypress sawlogs and ironbark sawlogs, and quantity of firewood and fencing (t) obtained from the Brigalow–Nandewar region over 2014–15 and previous years

South Western Cypress region

The South Western Cypress IFOA identifies average yearly allocations and specifies maximum annual limits for white cypress logs. The IFOA also specifies maximum annual limits for timber products other than logs and residue (such as craft wood and vine posts).

Figure 8 compares the volumes and quantities of timber, residue and other products obtained from the South Western Cypress region in 2014–15 with previous years.

The allowable volume of cypress logs from south of the Mitchell Highway is no more than 328,895 cubic metres for the 14.5-year period that commenced 1 July 2011, which averages out to a maximum 31,346 cubic metres of logs in any one financial year.

During 2014–15, 23,427 cubic metres of cypress logs were harvested from **south** of the Mitchell Highway, representing 75% of the permitted annual volume (31,346 cubic metres). No areas were harvested **north** of the Mitchell Highway.

No sawlog harvesting was undertaken on NSW **Western Lands leases** during the period.

Logging operations to produce residue timber from white cypress or bull oak trees may be carried out in accordance with clause 32G of the IFOA. A total of 8613 tonnes of residue

timber from early thinning were harvested. The IFOA does not specify an annual cap. No timber products other than logs and residue were produced.

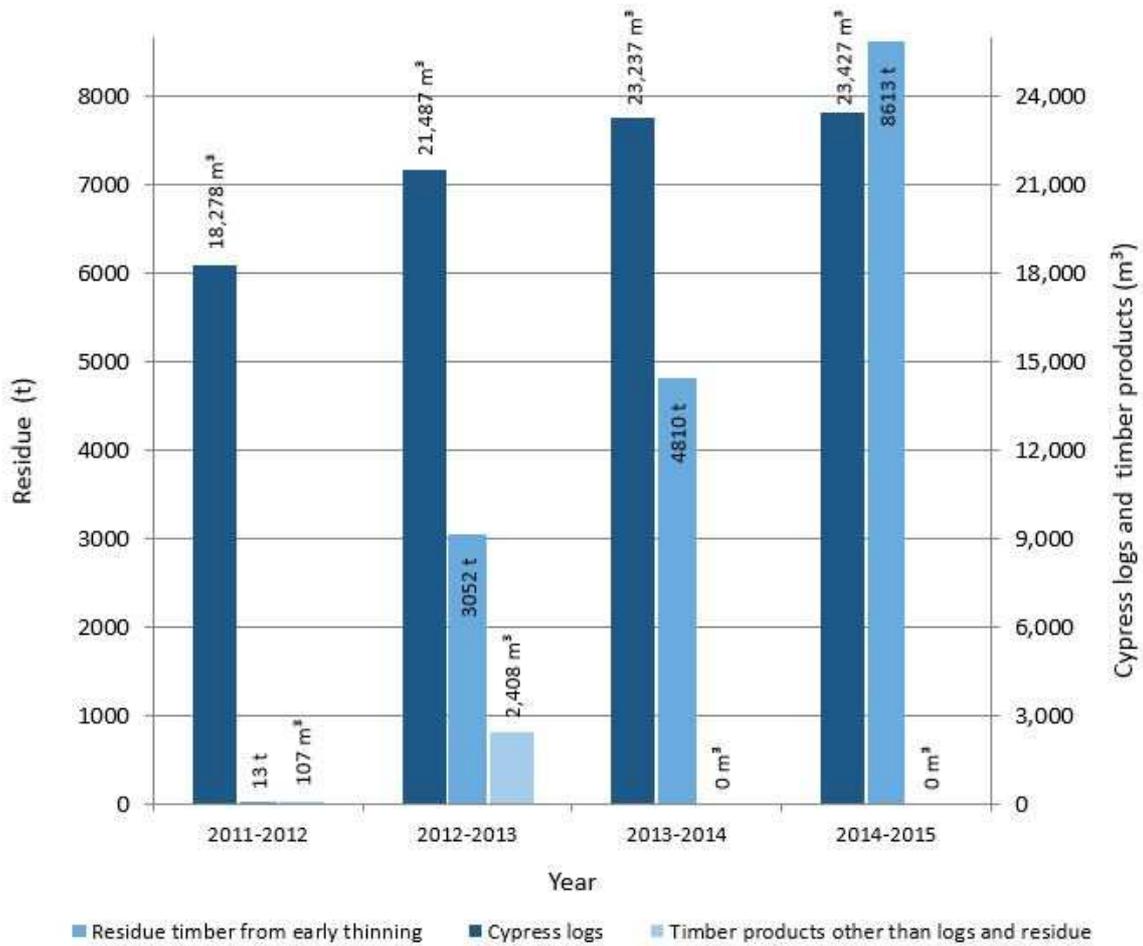


Figure 8: Volume (m³) of cypress sawlogs, timber products other than logs and residue (m³), and residue timber from early thinning (t) obtained from the South Western Cypress region over 2014–15 and the previous years

Note that the quantities of timber products and residue in 2011–12 were small and may not register on the chart.

A summary of timber products obtained from state forests and Western Lands leases covered by the three western IFOAs is presented in Table 10.

Table 10: Timber and forest products harvested from western IFOA regions in 2014–15

Product	Volume (m ³) or quantity (t)		Estimated net harvest area (ha)
Riverina Red Gum region			
High-quality saw log	5,194 m ³		693
Low-quality sawlog	7,453 m ³		
Residue	26,263 t		
Early thinning	29,213 t		381
Residue (Western Lands leases)	12,405 t		611
Firewood permits issued	Number	Quantity	n/a
	390	574	
Brigalow–Nandewar region			
Cypress log	21,209 m ³		1,487
Ironbark log	1,121 m ³		Undertaken in conjunction with cypress sawlog and integrated residue operations
Timber products (including ironbark and cypress fencing)	nil ³		
Firewood (not including permits under the <i>Forestry Act 1916</i> [<i>Forestry Act 2012</i> as of January 2013])	3,225 t		1,378
Firewood permits issued – see IFOA cl. 82	Number	Quantity	n/a
	576	740 t	
Didgeridoo	0		0
Broombush	362 t		
South Western Cypress region			
Cypress log – south of Mitchell Highway	23,427 m ³		3,094
Cypress log – north of Mitchell Highway	nil		
Cypress log (Western Lands leases)	nil		
Residue	8,613 t		605
Timber products	nil		
Firewood permits issued – see IFOA cl. 82	Number	Quantity	n/a
	111	95 t	

Source: *Annual Report of Forestry Operations Covering Integrated Forestry Operations Approvals* (FCNSW 2015c).

Indicator 2.1d Annual removal of non-wood forest products compared to the level determined to be sustainable

This indicator helps assess the sustainability of extracting non-wood forest products. These include products of biological origin, such as seedlings, non-biological products such as gravel, and forest-based services and activities, such as grazing, beekeeping, and communications sites. Some wood products not sent to the sawmill for processing (such as firewood) are included in this indicator. These products and services can make significant contributions to the livelihoods of NSW communities.

Table 11 shows recent trends in the extraction of selected non-wood forest products from state forests across all forestry regions, compared to a baseline volume in 1999–2000 (the first year in which data on non-wood products was collected).

Table 11: Selected non-wood forest products obtained from state forests in NSW – recent trends compared to baseline

Selected forest products	1999–2000	2012–13	2013–14	2014–15
Apiculture (sites)	1,413	3,705	3,919	4,015
Broombush (tonnes)	n/a	1,955	2,396	4,582
Charcoal (tonnes)	n/a	1,690	1,763	1,124
Telecommunication sites	n/a	131	131	138
Firewood - non-commercial (tonnes)*	5,930	3,873	9,053	10,150
Gravel/Sand/Rock (tonnes)	44,141	70,051	66,232	37,696
Grazing (hectares)	354,938	290,817	288,176	284,748

* Some values have been derived using conversion factors due to multiple units of measure used.

Sources: [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2015b) and [A Draft Report on Progress with Implementation of the New South Wales Regional Forest Agreements \(RFAs\)](#) (DECC 2009).

Beekeeping on national park estate tenure

There are 916 sites throughout the forestry regions which are used by apiarists for beekeeping purposes. Twenty-five of these are in the Eden region, 343 in the Southern region, 150 in the Lower North East and 398 in the Upper North East.

In New South Wales most honey is produced from eucalypts which usually flower every two to four years. It is estimated that 3% of NSW national parks and reserves are accessed by bees from apiary sites in any one year, usually for up to eight weeks at a time.

Grazing in western forests

Forestry Corporation is required to report annually on the total area within state forests in the South Western Cypress, Brigalow–Nandewar, and Riverina Red Gum regions over which grazing of domestic stock was authorised by Forestry Corporation (whether under new or existing grazing permits or forest leases).

The information for 2014–15 is presented in Table 12.

Table 12: Information about grazing operations in western IFOA regions 2014–15

IFOA area	Grazing area (ha)
Brigalow–Nandewar	4,660
South Western Cypress	43,181
Riverina Red Gum	2,569

Source: FCNSW 2014–15 annual report on forestry operations in western IFOAs (FCNSW 2015c)

Indicator 2.1e The proportion of the total area of native forest harvested that has been effectively regenerated, and the area of plantation clearfell harvested and the proportion of that effectively re-established

Re-establishment of forests after harvesting is essential for maintaining productive capacity. This indicator is used to assess the success of post-harvest regeneration in native forests and re-stocking or regeneration of plantation forests.

Effective forest regeneration requires careful planning and the use of appropriate silvicultural techniques to create ideal conditions for regeneration, provide habitat for wildlife and maintain a diverse forest ecosystem. The most appropriate technique varies depending on factors such as the type and maturity of tree, climate and the amount of sunlight.

Regeneration surveys are completed after harvesting to make sure areas are regenerating well and there are enough strong seedlings to restore the area and contribute to the future timber supply. Regeneration approaches are modified over time in response to the results of these surveys.

Forestry Corporation does not clear native forests to establish plantations and some hardwood plantations are regenerated naturally from seed, rather than through planting.

Natural regeneration of commercial species is usually achieved, but in a small number of cases may be insufficient. This is due to a range of factors including poor seed bank, unfavourable weather conditions and competition from weeds. Follow-up treatments such as hazard reduction burning, mechanical disturbance or enrichment planting are used to regenerate these areas successfully. Survey results for the period show that 81% of areas surveyed had sufficient stocking.

Forestry Corporation reports planting seasons by calendar year. No new (first rotation) plantations were established on previously cleared land by Forestry Corporation during the 2014–15 planting season.

In 2014–15, 9285 hectares of the softwood plantation forests age class were re-established, representing an increase of over 20% on the previous year's age class, and 132 hectares of hardwood plantations were re-established.

Table 13: Hardwood and cypress forest harvest and regeneration

Year	Estimated area harvest (ha)	Percentage regenerated (%)
2012–13	31,221	69
2013–14	23,807	67
2014–15	23,354	81

Source: [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2015b).

Criterion 3: Maintenance of ecosystem health and vitality

Indicator 3.1a Scale and impact of agents and processes affecting forest health and vitality

A variety of agents and processes such as pests, weeds, disease and insect infestations can affect forest ecosystem health and vitality. This indicator aims to measure the scale and impact of these agents and processes so that adequate management responses can be developed. This indicator should be considered together with those discussed under Criterion 1: Conservation of Biological Diversity, to give an overall picture of forest health and vitality.

Invasive species impose a considerable burden on the state's biodiversity, agriculture and economy. Pest animals, weeds and pathogens have been identified as a major threat to 70% of species listed in the *Threatened Species Conservation Act 1995*, and cost the NSW economy around \$3 billion annually in lost production and management costs. Forestry Corporation spent around \$1.9 million on pest animal and weed control in 2014–15.

The [New South Wales State of the Environment 2015](#) (SoE) report (EPA 2015) identifies the most problematic species and summarises the range of responses. These include the establishment of regional weeds committees, the [Saving our Species](#) program, the [NSW Biosecurity Strategy 2013–2021](#), and a draft invasive species plan for New South Wales which was prepared for consultation during 2015.

NPWS has developed [regional pest management strategies](#) for addressing the threat of pests, weeds and diseases in national parks. The strategies identify priority areas and are often implemented in partnership with local communities, research bodies and other agencies. The following case studies demonstrate some innovative and effective approaches to pest management implemented in 2014–15.

Case study: Orange hawkweed

Orange hawkweed (*Hieracium aurantiacum*), which is listed as a Class 1 noxious weed in Australia, is a serious threat to biodiversity and native plants in Kosciuszko National Park. In 2014–15, the volunteer-supported program which locates and eradicates orange hawkweed in the park, was enhanced by two innovative new techniques: dogs that are trained to sniff out the plants, and unmanned aerial vehicles (drones).

The drones were developed in partnership with the University of Sydney's Australian Centre for Field Robotics. They are being trialed over remote and inaccessible areas and will enable NPWS to construct a map of orange hawkweed infestations. These new strategies for weed detection will improve the prospects for eradicating this pest.



Figure 9: Orange hawkweed, *Hieracium aurantiacum*. Photo: © J Hickson

A bushwalker detected a new infestation of mouse ear hawkweed in the national park in January 2015. The infestation was subsequently quarantined, mapped and treated. Staff and volunteers did not detect any further infestation during surveys of the surrounding area and at other high visitation areas on the Main Range.

Case study: Crofton weed

Crofton weed (*Ageratina adenophora*) is an invasive species that spreads rapidly via windborne seeds. It threatens a number of vulnerable ecological communities and native species along the NSW coast.

In May 2014 the rust fungus, *Baeodromus eupatorii*, was approved for release in Australia for the biological control of this pest. The fungus (which, like crofton weed, is from Mexico) infects the young leaves and stems of the plant, affecting its ability to grow and reproduce (see photo).

NPWS funded the CSIRO to undertake the first field releases in Australia. Between June and October 2014, the rust fungus was released at five crofton weed infested sites in national parks and conservation areas in south-east New South Wales. Two different release methods were compared. Infected potted plants placed among crofton weed infestations led to significantly more infections than the alternative method of wedging cut stems with infected leaves into the foliage of field plants. The fungus has now been observed to cause extensive defoliation of crofton weed and naturally spread to nearby infestations (15 kilometres recorded within 12 months of the first releases on the NSW south coast).

Following this initial success, CSIRO gained financial support from the NSW Weeds Action Program (Department of Primary Industries) and from the NSW Environmental Trust. It has supported stakeholders and the community to release the rust more broadly throughout the weed's distribution area across eastern New South Wales.



Figure 10: Crofton weed rust infection. Photo: L Morin/CSIRO

Forestry Corporation conducts annual surveys to determine the impacts of disease and pests on the health of timber plantations it manages. In 2014–15 the survey found generally good levels of forest health; however, Christmas beetles caused considerable damage in older hardwood plantations, and myrtle rust was recorded in some younger plantations. There were slight increases in the area of softwood plantations affected by pine aphids and needle cast. Drought-related tree mortality in softwood plantations was lower than in previous years. Further details are available in the Forestry Corporation's [Sustainability Supplement 2014–15](#) (FCNSW 2015b).

Working across tenures to address bell miner associated dieback

Bell miner associated dieback (BMAD), a form of dieback affecting eucalypts, is a significant problem in NSW forests, including national parks and plantations.

Bell miners effectively farm leaf-eating psyllid insects by aggressively excluding other birds which would otherwise feed on them. This allows psyllid numbers to increase and they repeatedly defoliate the trees. This causes tree deaths, which in turn results in a loss of both threatened species' habitat and commercial timber.

There is no consensus on the full range of contributing factors, nor on the most appropriate remedy; however, a lack of low-intensity fire in the landscape may contribute to the spread of BMAD across large forest areas. Two large-scale trials have been assessing adaptive management approaches involving low-intensity fire since 2006.

Managing BMAD is a priority for maintaining and enhancing forest health. The BMAD Working Group, comprised of NPWS, Forestry Corporation, community groups, landholders and other stakeholders, continues to investigate the extent of the phenomenon and support research into management approaches.



Figure 11: Bell miner, *Manorina melanophrys*. Photo: J Turbill/OEH

Indicator 3.1b Area of forest burnt by planned and unplanned fire

This indicator helps improve understanding of the impact of fire on forest ecosystems in NSW and informs ecosystem management. Fire is an important tool for managing forest ecosystems, although wildfires can have serious impacts on forest health and vitality. Planned burns can improve biodiversity, stimulate regrowth and reduce fuel load, thus decreasing the likelihood of dangerous bushfires. A statewide update was not available for this report.

Burning operations in western forests

The IFOAs for the South Western Cypress, Brigalow–Nandewar, and Riverina Red Gum regions require burning operations to be reported annually.

During 2014–15, Forestry Corporation carried out hazard reduction burning over 3343 hectares of Pilliga East State Forest, in the Brigalow–Nandewar region.

No burning operations were carried out in the South Western Cypress or Riverina Red Gum regions.

Criterion 4: Conservation and maintenance of soil and water resources

Updates were not available for all indicators. Where new information has not been provided, refer to the [State of the Forests Report 2013](#) (ABARES 2014) for summaries of management practices, legal instruments and regulatory frameworks for various aspects of the conservation and maintenance of soil and water resources. The *State of the Forests Report 2018* may update this information.

Indicator 4.1a Area of forest land managed primarily for protective functions

This indicator assesses the value placed on protecting soil and hydrological functions in forest ecosystems, by identifying the area of forest land managed for these purposes.

No new data was provided for 2014–15; however, the following case study describes a program established during this period to protect and restore ecological functioning.

Case study: Flooding the forest

The first controlled flooding event in a new program to rejuvenate ecosystems in state forests along the Murray River took place between August and November 2014.

The [Koondrook–Perricoota Flood Enhancement Works](#), which are designed to mimic natural flooding, delivered 26 billion litres of water to an estimated 4500 hectares of forest, creeks and wetlands, including bird and fish breeding sites.

The program aims to restore wetland habitat and improve the health of forest ecosystems. Monitoring shows that native fish, tadpoles, macro invertebrates, birds and vegetation responded well to the flooding, which will be repeated on a regular basis.

The \$80-million joint program is delivered through a partnership which includes Forestry Corporation, the State Water Corporation, community groups, and the cross-border Living Murray initiative.

Indicator 4.1b Management of the risk of soil erosion in forests

This indicator identifies the extent of measures in place to address soil erosion in forest management planning and field operations. Managing soil erosion in forests helps protect soil fertility and water quality.

While the IFOAs and the Plantations and Reafforestation Act and Code ensure the risk of soil erosion is appropriately managed, Forestry Corporation processes are continually reviewed and improved where necessary.

In 2015, Forestry Corporation completed an extensive internal review into hardwood timber plantation re-establishment techniques following an erosion incident during a plantation's fallow period before replanting. As a result, plantation managers now collaborate with soil and water specialists during the planning phase of every hardwood plantation harvest operation to identify areas at risk of erosion.

Where a soil and water specialist identifies an increased risk of erosion, site-specific protection measures are implemented. These include increasing the buffer widths around streams, specific cultivation practices that reduce the potential for runoff to concentrate, and sowing a cover crop immediately after harvesting.

Indicator 4.1c Management of the risks to soil physical properties in forests

This indicator aims to assess the extent of measures in place to address the risk to the physical properties of soil in forest management planning and field operations. In forests where areas are subject to soil compaction resulting from human activities, managing and addressing risk helps protect soil structure, fertility and hydrological processes.

No updates were available from the EPA, Forestry Corporation or NPWS for the reporting period, and existing well-established frameworks for managing risks to soil physical properties have continued to apply.

Indicator 4.1d Management of the risks to water *quantity* in forests

This indicator aims to measure the extent to which the risk to water quantity has been identified and addressed in forest management. Water quantity is important for forest ecosystem health and for maintaining sustainable water supply to downstream users.

No updates were available for the reporting period.

Indicator 4.1e Management of the risks to water *quality* in forests

This indicator aims to measure the extent to which the risk to water quality has been identified and addressed in forest management. Water quality is important for ecosystem health and for maintaining sustainable water supply.

No updates were provided for the reporting period from EPA, Forestry Corporation or NPWS, and existing well-established frameworks for managing risks to water quality in forests have continued to apply.

Criterion 5: Maintenance of forest contribution to global carbon cycles

Indicator 5.1a Contribution of forest ecosystems and forest industries to the global greenhouse gas balance

This indicator identifies the contribution of NSW forests to the global carbon cycle. Forest operations and bushfires can result in increased carbon emissions; however, sustainably managed forests play an important role in reducing greenhouse gases by sequestering carbon through forest growth, and through carbon storage in hardwood products such as flooring and furniture.

Forestry Corporation calculates that in 2014–15, softwood planted forests sequestered a net 3.36 megatonnes of carbon, and native and plantation hardwood forests sequestered a net 4.39 megatonnes. Details of how this is calculated are available in the [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2014b).

Criterion 6: Maintenance and enhancement of long-term multiple benefits to meet the needs of society

Annual updates on data and activities are not always available for these indicators. Where updates have not been provided refer to the [State of the Forests Report 2013](#) (ABARES 2014). The *State of the Forests Report 2018* may update this information.

Indicator 6.1a Value and volume of wood and wood products

The forestry industry can contribute positively to the NSW economy, and in turn the national economy, and provide significant benefits for NSW communities. This indicator aims to monitor the socio-economic benefits of wood products and their contribution to the state economy by assessing trends in value and volume of wood and wood products.

No updates were available for the reporting period.

Indicator 6.1b Values, quantities and use of non-wood forest products

This indicator aims to monitor the socio-economic benefits of 'non-wood' forest products in NSW by assessing trends in value, quantities and use.

No updates were available for the reporting period.

Indicator 6.1c Value of forest-based services

This indicator aims to identify both forest-based and ecosystem services to provide a broad measure of the value forest-based services provide to the environment and population of New South Wales.

No new data was available; however, there is information regarding forest-based tourism at Indicator 6.3a.

Indicator 6.2a Investment and expenditure in forest management

This indicator aims to evaluate investment and expenditure in forest management as a broad measure of long- and short-term commitment to forest management.

No data on expenditure was provided by DPI for the reporting period.

Forestry Corporation and NPWS upgraded hundreds of kilometres of state forest roads to improve access for tourists, emergency services and local families. These included a 30-kilometre section of the Barrington Tops Forest Road, over 150 kilometres of roads in state forests and national parks in the Bellingen, Coffs Harbour and Nambucca shires, and more than 120 kilometres of park and forest roads in Candole State Forest in the Clarence Valley. Roads were also upgraded in the Border Ranges, Mount Jerusalem, Richmond Range, Toonumbar, Wollumbin and Yabbra national parks, and the Yabbra and Unumgar state forests.

Indicator 6.2b Investment in research, development, extension and use of new and improved technologies

This indicator aims to evaluate investment in forestry research, development and technologies as a broad measure of the commitment of forests managers and governments to sustainable forest management practices and continual improvement.

No updates were available for the reporting period.

Indicator 6.3a Area of forest available for public recreation and tourism and the use and type of facilities and activities on offer

This indicator identifies the area of land available for public recreation and tourism, and the range and use of recreation and tourism activities on offer. Identifying public recreation and tourism activities is a broad measure of the commitment to managing and maintaining the forest for this purpose to provide benefit and enjoyment for the people of New South Wales.

In 2014–15 NSW national parks experienced the highest recorded visitation levels, with over 39 million visits. A visitor survey found an increase in customer satisfaction from 90% to 94% (Roy Morgan Research 2015). Although the dollar value of national park tourism has not been specifically measured, this data suggests that national parks provide significant socio-economic value to regional economies.

Table 14: Estimated visits to NPWS parks in 2014–15

Region	Number of visits
Upper North East	3,483,213
Lower North East	4,514,540
Southern	6,782,571
Eden	427,060
Total	15,207,384

Source: OEH estimate based on 2013 [State of the Parks](#) survey.

NPWS invests significantly in infrastructure to facilitate positive visitor experiences. Improvements in the Southern Region in 2014–15 included upgraded facilities at Blue Gum and Clyde River camping areas, new walking tracks in Morton National Park and continuing the upgrade of the popular Minnamurra Rainforest boardwalk.

Case study: Thredbo Valley Track

With 12,000 passes issued in the first six months after it was officially opened in January 2015, usage of the Thredbo Valley Track in Kosciuszko National Park has far exceeded expectations. The 17-kilometre shared-use track, which is popular with mountain bikers and walkers, links the Thredbo and Crackenback Resorts and features several camping spots.

NPWS is planning to extend the track so it links to other biking trails in Jindabyne and outside the national park, ultimately creating a point-to-point single track over 60 kilometres long. The aim is to create an internationally recognised mountain bike experience, which will make an important contribution to the local economy.



Figure 12: Part of the Thredbo Valley Track in Kosciuszko National Park.
Photo: L Morrell/OEH

Forestry Corporation provides facilities and services at over 130 designated recreational visitor sites in forests, including camping areas, water, rubbish collection and toilets. Forestry Corporation's 2014–15 visitation survey found that the most popular visitor locations were in Watagan Mountains (with 600,000 visitors) and Orara East State Forest (135,000 visitors). More details are available in the [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2014b).

NSW state forest locations won several local and state tourism awards in 2014–15. These awards demonstrate the value of forest locations and activities to the tourism industry and forest visitors. Old Bottlebutt in Burrawan State Forest – the largest red bloodwood tree in the southern hemisphere – won a gold award at the NSW Tourism Awards after a new viewing platform, walking track and picnic facilities were installed. This iconic site was also a finalist in the Australian Tourism Awards.

Indicator 6.4a Area of forest to which Indigenous people have use and rights that protect their special values and are recognised through formal and informal management regimes

This indicator monitors the area of land where tenure and management arrangements are in place to ensure Indigenous people can maintain their cultural, spiritual and social connections to forest areas. It recognises the special relationship Indigenous people have to land and the importance of maintaining these values for the continuity of Indigenous cultures.

The four main tenure and land management categories are:

- Indigenous owned and managed
- Indigenous managed
- Indigenous joint management with government or private entities
- other special rights (such as Indigenous Land Use Agreements).

Of the 28 national park estate joint management arrangements with Aboriginal communities across New South Wales, 14 are within Forest Agreement areas.

In 2014–15, three new agreements were signed in the Southern region. A plan of management was adopted for the jointly managed Yuin *Bangguri* (Mountain) Parks, (incorporating Gulaga and Biamanga national parks) in October 2014, and the Gundungurra Non-Native Title Indigenous Land Use Agreement was registered in February 2015.

Indicator 6.4b Registered places of non-Indigenous cultural value in forests that are formally managed to protect those values

This indicator monitors the protection of non-Indigenous cultural, historical, educational, aesthetic and social heritage values within forests. It recognises the importance of maintaining these values for the continuity of non-Indigenous peoples' cultural connection to forests.

In 2014–15, NPWS completed an oral history project with community members in the Eden region to document the social significance of local horse riding trails. Eleven oral histories were collected, documenting local history back to the point of early European settlement. The project shows the long association local families have with the tracks. Some of the stories also describe cooperation between the first settlers and Indigenous inhabitants.

Restoration work on the Montague Island Light Station was completed in 2014–15, including reinstatement of the kitchen garden within the grounds. Such restoration work helps visitors understand the non-Indigenous heritage of the island.

The Kiandra Courthouse was opened to the public on specific occasions during 2014–15 for interpretive displays and as part of a coach circuit which included Yarrangobilly Caves.

Indicator 6.4c The extent to which Indigenous values are protected, maintained and enhanced through Indigenous participation in forest management

This indicator aims to measure the extent to which Indigenous people participate in forest management. Indigenous people have a strong relationship with the land and this indicator helps identify and highlight the importance of maintaining their participation in forest management.

In 2014, the Arakwal and Montague Island national parks were added to the IUCN Green List, which recognises excellence in protected area management. This excellence is

largely due to the strong collaborative engagement with traditional owners and local Aboriginal communities.

Indigenous forestry region representatives presented workshops at the IUCN World Parks Congress in November 2014, which attracted around 6000 participants from 160 different countries. Representatives from the Gulaga and Biamanga boards of management presented *Sharing our Culture Yuin Bangguri (Mountain) Parks*, and Bundjalung representatives from the Arakwal Corporation, with the Arakwal National Park Chairperson, presented *Sustainable Partnerships to Protect People, Place and Culture*.

Forestry Corporation partners with Aboriginal people to ensure the protection of cultural heritage and significant sites. In 2014–15, 15 Aboriginal community groups were contracted to identify and manage traditional sites before and after harvesting. More information about this and other initiatives is available in the [Forestry Corporation Sustainability Supplement 2014–15](#) (FCNSW 2014b).

Indicator 6.5a Direct and indirect employment in the forest sector

This indicator measures the level of direct and indirect employment in the forest sector. Employment in the forest sector is a direct measure of how forest and forest contact industries contribute to the NSW economy.

In 2014–15, 22,000 people worked in the forestry industry, including 582 full-time equivalent (FTE) staff at Forestry Corporation.

NPWS employed 1899 FTE staff during this period. The agency continued to benefit from a strong representation of Aboriginal people in its workforce.

The Department of Primary Industries' Forest Research and Policy Unit employs 22 FTE staff. This includes 4.5 FTE staff to administer the Plantations and Reafforestation Act.

Criterion 7: Legal, institutional and economic framework for forest conservation and sustainable management

Indicator 7.1a Extent to which the legal framework supports the conservation and sustainable management of forests

This indicator outlines the legal framework in New South Wales and describes how the legislation and policy can support the protection and sustainable management of forests in New South Wales. No changes to the extent to which the legal framework supports the conservation and sustainable management of forests occurred during the reporting period.

Indicator 7.1b Extent to which the institutional framework supports the conservation and sustainable management of forests

This indicator outlines the institutions and frameworks responsible for contributing to the sustainable management of the State's forests. Such institutions include those which help engage the community in the broader process of sustainability and natural resource management decision-making with respect to sustainable forest management.

In New South Wales, there is a clear delineation between the institutions responsible for operations, policy and environmental regulation of forestry management.

Forestry operations are the responsibility of Forestry Corporation of NSW.

Forestry policy development and implementation is the responsibility of the Department of Primary Industries.

The environmental regulation of forestry operations is the responsibility of the NSW Environment Protection Authority.

There were no new amendments to the Forestry Act during this period.

Indicator 7.1c Extent to which the economic framework supports the conservation and sustainable management of forests

This indicator outlines NSW Government policies on investment, taxation and trade to demonstrate the extent to which economic policy supports the conservation and sustainable management of forests.

No updates were provided for the reporting period.

Indicator 7.1d Capacity to measure and monitor changes in the conservation and sustainable management of forests

This indicator identifies assessment and monitoring systems in place to support and monitor changes and impacts in sustainable forest management.

A summary of assessment and monitoring systems is provided in the [Forestry Corporation Annual Report 2014–15](#) (FCNSW 2015a).

Indicator 7.1e Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services

This indicator should identify the scope of research effort in the forest sector. Developing a scientific understanding of the State's forest ecosystem characteristics and functions is important to assist with sustainable forest management.

A summary of various research activities is provided in the [Forestry Corporation Annual Report 2014–15](#) (FCNSW 2015a).

NPWS conducted threatened species surveys in the UNE region, including spotted-tailed quoll, Hastings River mouse and brush-tailed rock-wallabies, which will help improve management plans for protecting these species. The program of targeted surveys to address gaps in flora data continued across the region.

During this period, the OEH [Saving our Species](#) program undertook 118 management actions in support of 20 threatened species in 197 state forests.

2. Compliance with integrated forestry operations approvals and other requirements

Introduction

IFOAs provide the operational framework for the conduct of forestry operations in state forests and on Crown-timber land. The approvals, made under the Forestry Act, contain non-licence terms and terms of licences under the *Protection of the Environment Operations Act 1997* (environment protection licences [EPLs]), *Threatened Species Conservation Act* (threatened species licences [TSLs]) and the *Fisheries Management Act 1994* (fisheries licences). Non-licence terms, TSLs and EPLs are administered by the EPA, and fisheries licences are administered by Department of Primary Industries (Fisheries). An IFOA enables an integrated environmental regulatory regime for native forest harvesting operations.

There are seven IFOAs, covering the Upper North East, Lower North East, Southern (including Tumut), Eden, Brigalow–Nandewar, South Western Cypress and Riverina Red Gum regions.

TSLs apply to all native forestry operations. In the Upper North East, Lower North East, Southern and Eden regions, EPLs are only required for harvesting operations that meet criteria set out in cl.24 of Schedule 1 of the *Protection of the Environment Operations Act*. For other harvesting operations in these regions, Forestry Corporation may elect not to apply an EPL, but must still comply with s.120 of the *Protection of the Environment Operations Act* that prohibits the pollution of waters.

Forestry operations in the Brigalow–Nandewar, South West Cypress and Riverina Red Gum regions are required to apply an EPL to all operations.

No new IFOAs were established over 2014–15, although a comprehensive remake of the four Coastal IFOAs continued.

IFOA amendments

Two amendments were made to the IFOAs during 2014–15:

- [Amendment No. 6 to the IFOA for Lower North East](#) commenced on 15 May 2015. This amended some of the general terms, including definitions, and the terms of the licence under the *Threatened Species Conservation Act*.
- [Amendment No. 4 to the IFOA for Riverina Red Gum](#) commenced on 1 July 2014. This allows residue operations to continue at the existing annual volume rates until 31 December 2015.

EPA compliance program

The EPA is responsible for the regulation of native forestry operations on private and public (Crown) land in New South Wales.

The EPA regulates the impact of native forestry operations on soil and water, threatened species and their habitat to promote ecologically sustainable forest management. The EPA's compliance program is implemented in accordance with the [Crown Forestry Compliance Strategy 2013–16](#) (EPA 2013a) and [Private Native Forestry Compliance Strategy 2013–16](#) (EPA 2013b).

To achieve the objectives of these strategies the EPA also develops an annual list of key environmental compliance priorities for Crown and private native forestry. The compliance priorities for 2014–15 are summarised in Table 15.

Table 15: Crown and private native forestry compliance priorities for 2014–15

Crown forestry environmental compliance priorities	Private native forestry environmental compliance priorities
Identifying, retaining and protecting adequate and appropriate trees for maintenance and replacement of arboreal tree-hollow habitat.	Identifying, retaining and protecting adequate and appropriate trees for maintenance and replacement of arboreal tree-hollow habitat.
Protecting koalas and their habitat.	Protecting koalas and their habitat.
Protecting water quality and in-stream habitat degradation resulting from inadequate road and snig track crossing location, design, construction, operation and maintenance.	Protecting water quality and in-stream habitat degradation resulting from inadequate road and snig track crossing location, design, construction, operation and maintenance.
Protecting key exclusion zones in: a) Western NSW – Forest Management Zones, Drainage Feature Protection Zones and Threatened Species Protection Zones. b) Coastal NSW – Mapped Rainforest, Rocky Outcrops, Riparian Protection Zones and Threatened Species Exclusion Zones.	Preventing soil erosion and water quality degradation resulting from inadequate road and snig track drainage establishment and maintenance.
Improving identification and protection of threatened ecological communities (TECs).	Protecting streams and drainage features.
Maintaining forest structure through adequate basal area assessments.	
Considering bell miner associated dieback (BMAD) in the regulatory framework.	

Compliance priorities ensure that the EPA targets its regulatory effort on issues deemed to be high risk and high public interest. They also provide a clear indication of the EPA's expectations regarding environmental performance.

The EPA's compliance program comprises responsive and proactive activities. Responsive activities include investigating public complaints or notifications and incidents self-reported by Forestry Corporation. Proactive activities such as audits can focus on geographic areas where public notifications are less likely.

An annual report detailing the regulatory achievements or actions delivered against each of these compliance priorities has been produced, see [Native Forestry Environmental Compliance Priorities: Actions taken in 2014–15](#) (EPA 2016).

Range of regulatory tools to achieve compliance

The EPA uses a range of regulatory tools to help achieve compliance, including audits, investigations, issuing penalty infringement notices, and education and training.

The EPA's compliance audits are always third-party audits, i.e. independent from the entity being audited. Compliance audits are a preventative tool insofar as they aim to identify risks before they develop into an environmental incident. Compliance audits use a systematic process of assessing actual performance against environmental risk. The scale of harm, sensitivity of the environment and likelihood of environmental harm occurring are used to determine risk. This is followed by a request to take action where improvements are required to reduce environmental risk.

The request allows the auditee to take appropriate risk abatement action to prevent future incidents.

The EPA carries out investigations as part of incident management and in response to community concerns. Unlike audits, investigations do not follow a structured process but apply a more flexible approach to assess non-compliance. The result of an investigation can vary and lead to a range of measures being applied such as guidance, requests for clean-up or remedial action, incident management, or recommendations for policy and legislative reform.

Crown native forestry compliance and enforcement activities by the EPA

The EPA's compliance priorities are set annually and are subject to ongoing review. The findings and proposed actions from compliance audits and investigations inform future regulatory activities.

In 2014–15, the EPA completed 24 proactive compliance audits and 31 investigations of forestry operations on NSW public lands. This regulatory work targeted retention of hollow-bearing and recruitment trees, landscape and threatened species protection and mark-up, water pollution and road crossing drainage, and koala compliance priorities.

Ten of the 31 investigations were triggered from reports by the public and two were triggered from Forestry Corporation reporting. One investigation that was administrative in nature is not included in the reporting for individual IFOA regions.

Compliance audit reports for individual public forestry operations are available on the EPA's [compliance audit report register](#).

Total non-compliances on public land

Non compliances found and reported by the EPA included:

- 10 non-compliances with EPL conditions
- 9 non-compliances with s.120 of the *Protection of the Environment Operations Act 1997*
- 236 non-compliances with TSL conditions.

During 2014–15 the EPA issued Forestry Corporation with 78 requests to develop and implement audit action plans to prevent recurrence of non-compliance incidents and minimise the risk of future environmental incidents. The EPA also issued Forestry Corporation with 28 advisory letters, one formal warning, six 'show cause' letters, nine official cautions, one clean-up notice, and six penalty notices.

IFOA region summary

Upper North East region (UNE)

The EPA completed five audits in the Upper North East IFOA region. These focused on TSL requirements regarding landscape boundary mark-up and protection including

rainforest, rocky outcrops, streams, high conservation value old growth, and ridge and headwater. They also included water pollution, road crossing drainage, and hollow-bearing and recruitment tree selection and protection.

The region achieved an overall compliance rate of approximately 93%, comprising 233 assessments of compliance with 16 recorded non-compliances. Non-compliance mainly related to hollow-bearing and recruitment tree selection and retention.

As a result of these findings, the EPA issued 12 audit action plan requests for matters that had moderate to low environmental risks.

The EPA completed three investigations in this region. Non-compliances related to a forestry operation occurring in an area with high levels of koala activity.

Lower North East region (LNE)

Six audits were completed in the Lower North East IFOA region. These focused on TSL and EPL requirements regarding water pollution, hollow-bearing and recruitment trees, landscape protection (including rocky outcrops), high conservation value old growth, and rainforest. The audits also addressed protection for threatened species such as the Hastings River mouse and important populations such as wombats north of the Oxley Highway.



Figure 13: Hastings River mouse, *Pseudomys oralis*. Photo: E Slater/OEH

The region achieved an overall compliance rate of 75%, comprising 329 assessments with 83 recorded non-compliances. The key non-compliances found by the EPA were related to landscape and stream protection, boundary mark-up, and wombat habitat identification and protection. There were mixed results for recruitment tree selection. Some of these incidents generated separate investigations resulting in regulatory action.

The EPA issued 27 audit action plan requests for matters that had high to low environmental risks.

The EPA completed ten investigations in the LNE region. Key offences related to water pollution and logging.

Forestry Corporation was issued with four penalty notices for this region. Two penalty notices were for water pollution at road crossings, one was for logging without having thoroughly searched for koalas, and the other was for harvesting hollow-bearing trees within 100 metres of the recorded range of a threatened species, Stephens' banded snake.

Southern region

Five audits were completed in the Southern IFOA region. These focused on TSL requirements regarding water pollution and road crossing drainage, marking exclusion zone boundaries, hollow-bearing and recruitment trees, protecting exclusion zones for streams, rainforest, ridge and headwater, and exclusion zones for threatened species such as owls.

The region achieved an overall compliance rate of 69%, comprising 180 assessments with 56 recorded non-compliances. The key non-compliances found by the EPA were failure to select proper recruitment trees, failure to protect hollow-bearing and recruitment trees, and lack of stream protection.

The EPA issued 18 audit action plan requests for matters that had high to low environmental risks.

Five investigations were completed, all regarding rainforest protection.

Tumut subregion

The Southern Region Forest Agreement and IFOA both contain a specific clause that refers to a smaller area, the Tumut subregion.

The EPA conducted no audits or investigations in this subregion during the reporting period.

Eden region

Two audits were completed in the Eden region. These focused on TSL requirements regarding marking boundaries, hollow-bearing and recruitment trees, and protecting exclusion zones for streams and rocky outcrops.

The region achieved an overall compliance rate of 66%, comprising 103 assessments of compliance with 35 recorded non-compliances. Key non-compliances related to hollow-bearing and recruitment tree selection, retention and protection.

The EPA issued eight audit action plan requests for matters that had high to low environmental risks.

The EPA completed 12 investigations regarding hollow-bearing and recruitment tree mark-up and selection, and stream, threatened species and rocky outcrop protection. Two penalty notices and four official cautions were issued.

Brigalow–Nandewar region

The EPA completed three audits in this region during the reporting period. These focused on IFOA conditions for streams, environmentally sensitive areas and forest structure.

The region achieved an overall compliance rate of 83%, comprising 123 assessments of compliance with 21 recorded non-compliances. Key non-compliances related to protecting and marking up boundaries for environmentally sensitive areas, and retaining forest structure (in particular, white cypress).

The EPA issued ten audit action plan requests for matters that had high to low environmental risks.

Riverina Red Gum region

Three audits were completed in the Riverina Red Gum region. The region achieved an overall compliance rate of 98%; non-compliances were for compartment mark-up and coarse woody debris.

The EPA issued three audit action plan requests for matters that had moderate environmental risks.

South Western Cypress region

The EPA conducted no audits or investigations in this region during the reporting period.

Private native forestry compliance and enforcement activities by the EPA

The EPA is implementing a PNF monitoring and compliance strategy, and undertaking operational inspections, audits and investigations. This is supported by regulatory extension activities.

During 2014–15, the EPA undertook 32 audits and investigations of PNF operations.

As a result of these audits and investigations, the EPA issued two 'show cause' notices, one clean-up notice and two official cautions. The cautions were issued to two harvesting contractors located on the mid north coast for ten breaches of the PNF Code of Practice. These breaches related to not using a forest operation plan, inadequate protection of hollow-bearing and recruitment trees, not protecting streams, and inadequate drainage of snig tracks. The EPA is working with landholders and contractors to improve operational best practice. This includes identifying features to be protected so that steps can be taken to minimise disturbance during harvesting operations.

Forestry Corporation internal compliance program

Forestry Corporation updated its risk management guidelines to standardise the risk matrix and risk assessment procedure. Related guidelines for internal reporting of non-conformance incidents were also updated following the introduction of a new software system. This new system enables field staff to record incidents, risks, and non-compliance using mobile apps. It also facilitates the implementation of action plans to address these issues, as tasks can be assigned to staff and progress tracked. This facilitates increased accountability for reporting and addressing non-compliances.

In addition to its internal compliance, Forestry Corporation was externally audited to check compliance with the Australian Forestry Standard (AS 4708:2007) and Environmental Management System (ISO 14001:2004) in October 2014. See page 15.

Forestry Corporation publishes the number of non-compliance incidents requiring corrective action identified by its supervisors annually. Table 16 summarises the non-compliance incidents recorded in the six years to 2014–15.

Table 16: Number of non-compliance incidents that required corrective action recorded across all state forests by Forestry Corporation, 2009–15

Year	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15
Number of compliance check sheets conducted by Forestry Corporation supervisors						
Compliance monitoring	-	-	354	392	284	668
Systems implementation	-	-	38	24	20	45
Type of incident	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15
Soil and water	143	135	175	84	110	nr*
Flora and fauna	93	103	32	61	25	nr
Fish habitat and passage	38	67	28	1	0	nr
Other non-compliance issues (e.g. safety)	319	72	150	86	36	nr
Total	593	377	385	232	171	32**

* nr = not reported.

** Guidelines for internal reporting of non-compliance incidents have changed with the introduction of a new risk and incident management system. The categorisation of incidents is now reported for the three more serious consequence ratings and remains specific to forest management, excluding workplace health and safety. Forestry Corporation workplace health and safety performance is reported in the Annual Report (FCNSW 2015a).

Fisheries

Compliance with the fisheries threatened species licence contained in the IFOAs is audited by Fisheries.

No offences or issues were investigated for the 2014–15 reporting period.

3. Achievement of milestones and undertakings defined for NSW forest regions

Introduction

What are milestones?

Milestones record tasks and the timing required for continual improvement in the management of forested areas. Examples of topics for milestones are:

- developing environmental management systems (EMS)
- preparing management plans for areas of high conservation value
- reporting harvested timber volumes and other forest products such as firewood
- coordinating approaches to land management issues, such as pest, weed and feral animal control
- entering joint venture initiatives with local landholders and Aboriginal people
- monitoring criteria and indicators
- developing strategies with stakeholders to provide cooperative management opportunities
- preparing management plans for tourism and recreation within forest areas.

What are undertakings?

Undertakings are other tasks agreed between state agencies that are listed in approvals or licences. They include:

- documents to be prepared, such as policies, roading plans and grazing management plans
- training to be provided
- monthly reports and annual reports
- systems for providing public access to documents.

Progress in coastal Forest Agreements and IFOAs

Appendix 1 reports on 2014–15 progress of milestones specified in the NSW Forest Agreements for the UNE, LNE, Eden and Southern regions.

For comparison, progress against the milestones is reported in previous [annual progress reports](#), and the combined five- and ten-year report: [Review of New South Wales Forest Agreements and Integrated Forestry Operations Approvals – Upper North East, Lower North East, Eden and Southern regions](#) (DECCW 2010).

Appendix 1 does not duplicate this work but updates it where necessary. Only ongoing milestones are reported. Completed milestones and those no longer applicable are only reported if there are significant updates or changes.

Progress in western NSW IFOAs

Brigalow and Nandewar Community Conservation Area Agreement and Brigalow–Nandewar IFOA

Milestones and undertakings in the Brigalow–Nandewar region are set out in the [Brigalow and Nandewar Community Conservation Area Agreement](#) (CCA Agreement) (CCC 2009) and the [Brigalow–Nandewar IFOA](#) (EPA 2010a).

The achievement of milestones and undertakings is reported in Appendix 2.

Riverina Red Gum IFOA

Undertakings in the Riverina Red Gum region are set out in the [Riverina Red Gum IFOA](#) (EPA 2010b).

The achievement of milestones and undertakings is reported in Appendix 3.

South Western Cypress IFOA

Undertakings in the South Western Cypress region are set out in the [South Western Cypress IFOA](#) (EPA 2011).

The achievement of milestones and undertakings is reported in Appendix 4.

Appendix 1: Milestones and undertakings – Coastal IFOAs

This appendix reports on 2014–15 progress of milestones and undertakings specified in the NSW Forest Agreements for the UNE, LNE, Eden and Southern regions. For some milestones and undertakings short summaries of the previous five years may be included if relevant.

Milestones and undertakings previously recorded as complete or no longer applicable are not listed.

Report milestone number	Milestone	Progress for 2014–15
1. Environmental Management Systems – no further reporting, see previous report		
2. Management planning		
Milestone 2.1 Agency: NPWS	Plans of management for the NPWS estate Refer to UNE, LNE and Eden Forest Agreements (FAs) section 2.3.2, Att 8; Southern FA section 2.3.2	Of the 394 reserves in the UNE and LNE regions, 258 have plans of management adopted by the NSW Minister for the Environment and 36 have draft plans that have been publicly exhibited. A statement of management intent has been prepared for 88 reserves. Statements of management intent are in preparation for 11 reserves, and a plan for the remaining park is in preparation by the Aboriginal board of management. Of the 18 reserves in the Eden region, 17 have plans of management adopted by the NSW Minister for the Environment and one has a draft plan that has been publicly exhibited. Of the 128 reserves in the Southern region, 113 have plans of management adopted by the NSW Minister for the Environment and three draft plans have been publicly exhibited. A statement of management intent has been prepared for 11 reserves. A statement of management intent is in preparation for the remaining reserve (an Aboriginal area).
Milestone 2.4 Agency: FCNSW	Report on meeting targets in ecologically sustainable forest management (ESFM) plans Refer to UNE, LNE, Eden, Southern FAs section 2.2.6	FCNSW continues to report at a statewide-scale on performance across a range of social, environmental, economic and sustainability areas through its Annual Report and Sustainability Supplement . Indicators contribute to the delivery of ESFM reporting outcomes.
Milestone 2.5 Agency: FCNSW and NPWS	Formation of a working group in Southern region to make recommendations on the management and tenure of areas of state forests that are isolated from the productive state forests Refer to Southern FA section 6.16	Ongoing No changes reported for 2014–15.

Report milestone number	Milestone	Progress for 2014–15
Milestone 2.7 Agency: FCNSW	Working plans for flora reserves to be incorporated into ESFM plans Refer to UNE and LNE and FAs section 2.2.2; Eden FA section 2.2.2; Southern FA sections 2.2.2, 2.3.2	Ongoing Almost all existing flora reserves on state forests have management plans. Management plans will be progressively prepared for new reserves. Model plans (document templates) have been issued to guide future preparation of management plans.
Milestone 2.8 Agency: FCNSW	Working plans for informal reserves to be incorporated into ESFM plans Refer to UNE, LNE and Eden FAs section 2.3.3; Southern FA section 2.3.3	FCNSW notes the informal reserves are interspersed within the broader forest landscape (unlike flora reserves which occur as more discrete units of forest). FCNSW considers, from a management perspective, the FMZ guidelines prescribe what is allowable in each zone. Other plans, such as pest and weed and burning plans address the broader landscape which includes the informal reserve areas. See also progress reported in the five- and ten-year FA IFOA review (2.8).
3. CAR reserve system		
Milestone 3.2 Agency: Fisheries	Aquatic reserves declared under the Fisheries Management Act that affect forestry operations in the UNE, LNE, Eden or Southern regions Refer to LNE, UNE, Eden, Southern FAs section 2.3.4	No new aquatic reserves declared in the reporting period. Also refer to Marine Protected Areas .

Report milestone number	Milestone	Progress for 2014–15
<p>Milestone 3.3 Agencies: NPWS with FCNSW</p>	<p>Upgrading of forest management zones (FMZs), reviewing mineral objections and lands for further consideration (FURCONS) Refer to UNE and LNE FAs sections 2.3.1, 2.3.3, 6.16.2; Eden FA section 6.16.1; Southern FA section 2.3.3</p>	<p>There have been no further reviews of forest management zones, mineral objections or lands for further consideration in 2014–15. However, over the past five years, 236.7 hectares of former state forest land was added to the reserve system, comprising:</p> <ul style="list-style-type: none"> • 2010–11: 6 ha of former state forest land in the Werakata State Conservation Area, near Newcastle (LNE) • 2011–12: 219 ha of former state forest leasehold, as an addition to Copeland Tops State Conservation Area (LNE) • 2012–13: 6.8 ha of former state forest, as an addition to Goonengerry National Park (UNE), and 4.9 ha of former state forest, as an addition to Maria National Park (LNE). <p>Public consultation on amendments to FMZs will take place in 2016. On 5 March 2015, 287 hectares of Tumut State Forest was reserved as part of Wereboldera State Conservation Area as compensation for the transfer of approximately 17 hectares of Bogandyera Nature Reserve to state forests to provide for road access to Mannus State Forest.</p>
<p>4. Crown reserves and assessment of Crown land</p>		
<p>Milestone 4.1 Agency: NPWS</p>	<p>Management and five-year review of Crown reserves and state conservation areas Refer to UNE, LNE and Eden FAs 2.3.3; UNE and LNE FA section 2.3.3; Eden FA section 2.2.3; Southern Forest Agreement section 2.3.3</p>	<p>No progress to report. The third five-year review is due to commence in 2017.</p>
<p>Milestone 4.2 Agency: NPWS</p>	<p>Identification and assessment of additional areas available for formal reservation Refer to UNE and LNE FAs section 6.16.2</p>	<p>There were no new assessments or reservations of additional Crown land under the UNE and LNE Forest Agreements in 2014–15. To date, 2400 ha have been agreed for transfer by the Land and Property Management Authority (LPMA, now Local Land Services [LLS]) and 21,000 ha require further negotiations with Department of Industries (Mineral Resources) or determination of current Aboriginal land claims. A whole of New South Wales review of the management of Crown lands is currently underway and any outstanding Crown lands will be assessed under this process.</p>
<p>5. Threatened species management – no further reporting, see 2010–11 report</p>		

6. Pest, weed and feral animal control		
Milestone 6.2 Agency: FCNSW	Preparation of grazing management plans, feral and introduced predator control plans and threatened flora species management plans on state forests Refer to UNE, LNE and Eden FAs section 2.4.2; Southern FA section 2.4.3	Model strategic plans for pest and weed management have been approved by the EPA. FCNSW has prepared regional pest and weed plans based on this approved model. Regional grazing plans are being progressively prepared based on an FCNSW approved model. As part of the remake of the coastal IFOAs, all supplementary plans including grazing will be reviewed to align with any new requirements. Five and ten-year review points have been completed. See also progress reported in the five- and ten-year FA IFOA review (6.2).
7. Managing for other forest values and uses		
Milestone 7.4 Agencies: OEH, which chairs Occupation Permit Taskforce (NPWS, FCNSW, and NSW Farmers)	After consultation, the Occupation Permit Taskforce must oversee the phasing out of occupation permits in state forests which currently exist in areas identified as formal reserves and informal reserves and permissive occupancies on Crown land identified as formal reserves and informal reserves. Refer to UNE, LNE, Eden FAs section 2.3.3; Southern FA section 2.3.3	No further changes reported since the Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010).
8. Private land		
Milestone 8.1 Agency: OEH Veg. mapping	Identification of private land of conservation priority Refer to UNE and LNE FAs section 2.9.1 – 1 January 2000; Southern FA section 2.9 – 30 June 2002	Processes in place for identifying private land of conservation priority are listed on page 26 of the Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010). The information will continue to be updated in subsequent reports.
Milestone 8.5 Agency: FCNSW	Improve administrative arrangements and cooperation and coordination by state agencies to facilitate the timber industry utilising private forest resources including marketing and pricing Refer to Southern FA Att 6 (3)	The Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010) summarised programs and arrangements by state agencies and non-government organisations, including marketing and pricing, to assist use and management of private forest resources.

<p>Milestone 8.6 Agency: EPA and OEH</p>	<p>Arrangements to ensure ESFM on private forests involving the provision of technical advice, extension services, research and assistance in the estimation of sustainable yield Refer to Southern FA Att 6 (3.1)</p>	<p>Completed. The NSW Report on Native Vegetation summarises actions by private forestry land managers, with the help of OEH, to conserve and manage native vegetation.</p>
<p>9. Private native forestry and plantations – no further reporting required – final update was in the 2010–11 report</p>		
<p>10. World heritage and wilderness</p>		
<p>Milestone 10.1 Agency: NPWS</p>	<p>Review of Gondwana Rainforests of Australia (previously known as the Central Eastern Rainforest Reserves of Australia – CERRA) World Heritage properties to identify any additional rainforest to be included Refer to UNE and LNE FAs section 2.7</p>	<p>As reported previously, proposed extensions to the Gondwana Rainforests of Australia World Heritage property were placed on Australia’s Tentative List for World Heritage nomination in 2010. No progress on preparation of a nomination was reported for 2014-15.</p>
<p>Milestone 10.2 Agency: NPWS</p>	<p>Studies of the dedicated reserve system to identify World Heritage values, including eucalypt-dominant vegetation and religious beliefs embedded in the landscape Refer to UNE and LNE FAs section 2.7; Eden FA section 2.6; Southern FA section 2.7</p>	<p>As noted in previous reports, the National Parks Association undertook preliminary studies in 2012 and proposed a nomination for consideration by NPWS. No progress is reported for 2014–15. World Heritage values assessments have not taken place for the UNE during the reporting period.</p>
<p>11. Cultural heritage – no further reporting required – final update was in the 2010–11 report</p>		

12. Aboriginal interests		
<p>Milestone 12.4 Agencies: NPWS FCNSW</p>	<p>NPWS and FCNSW to undertake joint management arrangements with local Aboriginal communities and examination of state forests for co-management arrangements Refer to UNE, LNE and Eden FAs section 5.1.1; UNE and LNE FAs section 5.1.1; Southern Forest Agreement section 5.1.1</p>	<p>Fourteen formal joint management arrangements (including leases, Indigenous land use agreements [ILUAs] and memoranda of understanding [MoUs]) have been formalised with Aboriginal communities within the Forest Agreement areas under the <i>National Parks and Wildlife Act 1974</i>. There are also a number of joint management agreements under negotiation.</p> <p>The Gundungurra non-Native Title Indigenous Land Use Agreement was registered and commenced in February 2015. It covers reserves in the Southern Forest Agreement area.</p> <p>Plan of Management – Yuin Bangguri (Mountain) Parks, which incorporates Gulaga and Biamanga national parks, was adopted by the Minister in October 2014. The boards of management decided that Bellbrook Farm would be incorporated into Gulaga National Park and a long-term strategic vision for the property is being developed. This will contribute to the Cultural Tourism and Community Education Masterplan for both parks.</p> <p>FCNSW encourages Aboriginal groups to undertake traditional activities in native state forests. All programs identified in previous reports are still underway. In addition:</p> <ul style="list-style-type: none"> • Bulahdelah Mountain Aboriginal Place has a joint management arrangement with Karuah Local Aboriginal Land Council for walking trails and lookouts. The Taree Indigenous Development and Employment (TIDE) employment agency will employ local Aboriginal people to undertake projects associated with management of the site. • Ongoing negotiations for Native Title on state forest (various locations) enables the title holders to access the forest for traditional uses and potentially for enterprise development and partnerships. <p>FCNSW Hardwood Forests Division has an Aboriginal Partnership Liaison Team of six cultural heritage officers who work with Aboriginal communities to further develop these partnership arrangements.</p> <p>Aboriginal groups are regularly contracted to FCNSW for archaeological site survey as part of the planning process for harvesting and roading operations.</p>

<p>Milestone 12.5 Agencies: NPWS FCNSW</p>	<p>Joint ventures with local Aboriginal communities and development of project plans Refer to UNE, LNE and Eden FAs section 5.1.1; Southern Forest Agreement section 5.1.1</p>	<p>FCNSW Regional Aboriginal Affairs Officers continued to facilitate consultation and input from Aboriginal communities, on appropriate protection measures for sites. A range of joint ventures with local Aboriginal communities are already in place in a number of state forests; see Milestone 12.4 above for details. NPWS and FCNSW continue to provide in-kind support to the Bundian Way Management Committee and advice to the project coordinator. The South Coast Aboriginal Working Group continued steering project plans and proposals, including community celebration arrangements for the newly declared Cullunghutti Aboriginal Area, and further progression of interim strategies and actions for the park management planning process. The Aboriginal Project Officer at NPWS Nowra Area completed an interpretation panel which was approved by the Jerrinja Community Elders and Aunties. The panel includes oral history stories about Lake Wollumboola.</p>
<p>13. Aboriginal interests in the Hume and Riverina regions of FCNSW and the South West Slopes region of NPWS</p>		
<p>Milestone 13.2 Agency: FCNSW</p>	<p>Specified enterprise development on state forests within Hume and Riverina regions of FCNSW Refer to Southern FA section 5.1.4.2</p>	<p>The Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010) summarised initiatives. No further update provided by FCNSW for 2014–15.</p>
<p>Milestone 13.5 Agency: FCNSW</p>	<p>FCNSW to initiate specific employment opportunities in the Hume and Riverina regions of FCNSW subject to external funding Refer to Southern FA section 5.1.4.4</p>	<p>The Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010) summarised initiatives. No further update provided by FCNSW for 2014–15.</p>

<p>Milestone 13.7 Agency: NPWS</p>	<p>Specified employment and training opportunities with NPWS Refer to Southern FA section 5.1.4.6</p>	<p>Two temporary (three-year) Aboriginal Field Officer positions were maintained with the Enhanced Bushfire Management Program. These positions, which are based in Narooma and Tanja, are jointly funded by the OEH and Biamanga and Gulaga boards of management. An Aboriginal Cadet Ranger position was maintained and is based in Narooma.</p> <p>A temporary (two-year) Aboriginal Field Officer was maintained for the Southern Ranges Region Enhanced Bushfire Management Program.</p> <p>A temporary full-time (two-year) Aboriginal Field Officer (Aboriginal identified position) was maintained for the South Coast Region Enhanced Bushfire Management Program. Another Aboriginal person was appointed full-time to the program but is not an identified position. These positions are based at Nowra Depot but cover the South Coast region.</p> <p>A temporary part-time Clerk position is continuing for an Aboriginal Community Projects Officer in Nowra.</p> <p>South Coast Region continued employment of full-time Aboriginal Rangers and Field Officers in all of its areas.</p>
<p>14. Supply arrangements</p>		
<p>Milestone 14.1 Agency: FCNSW</p>	<p>Consultation on timber arrangements through the development of plans of operation Refer to UNE, LNE and Eden FAs section 3.4; Southern FA section 4.3</p>	<p>FCNSW regions continue to consult with stakeholders, such as industry and neighbours, in the development of annual plans of operation. During 2014–15 FCNSW commenced development of a new forest management plan to replace the ESFM plans for the coastal forests. This will undergo public consultation.</p>
<p>15. Supplementing timber supply</p>		
<p>Milestone 15.1 Agency: FCNSW</p>	<p>Supplementary timber supply by actions such as purchasing private lands and/or timber rights to supply high-quality large sawlogs and large veneer logs Refer to UNE and LNE FAs sections 2.9.2, 3.3, 3.6, 6.16.2, Att 10; Eden FA section 2.8.2; Southern FA sections 3.3.3, 3.6</p>	<p>In 2014–15 FCNSW obtained 2185 m³ of supplementary timber supply. Of this, 992 m³ was high-quality logs.</p>

Milestone 15.2 Agency: FCNSW	Development of a process to consider unmet targets prior to land purchases Refer to UNE and LNE FAs section 6.16.2; Southern FA section 3.3.3	The Review of NSW Forest Agreements and Integrated Forestry Operations Approvals (DECCW 2010) summarised initiatives to consider unmet targets before land purchases. FCNSW also noted that, as an alternative to purchasing land, it continues to source additional timber by purchasing timber rights.
Milestone 15.3 Agency: FCNSW	Establishment of plantations Refer to UNE FA section 3.2; LNE FA sections 3.1, 3.3, 3.6; Southern FA section 3.6, Att 8	No new establishment of hardwood plantations in 2014–15 by FCNSW.
16. Forest Resource and Management Evaluation System (FRAMES) improvement, inventory, sustainable yield, volume review		
Milestone 16.1 Agency: FCNSW	Continuous FRAMES development program for the UNE, LNE, Eden and Southern regions Refer to UNE, LNE, Eden FAs section 3.5; Southern FA section 3.5 and Att 6 (7)	The development of new methods and technologies ensures that FRAMES and resource assessment continues to evolve and improve. The upcoming Forest Agreements reviews will provide further details regarding progress against this milestone.
Milestone 16.2 Agency: FCNSW	Inventory system for regrowth forests for Eden; improvement to inventory in UNE, LNE and Southern Refer to UNE, LNE and Eden FAs section 3.5, Att 8; Southern FA section 3.5, Att 6 (6) (e)	350 inventory plots were completed 2014 and a recovery study (assessment, felling and grading of 300 sample trees) was undertaken in 2015. FRAMES model development commenced (see Milestone 16.1), replacing the previous modelling tool (REDEN).
Milestone 16.3 Agency: FCNSW	Commission and publish an independent review of the FRAMES system, including improvements applying to South Coast and Tumut subregions Refer to Southern FA Att 6 (8 point 1)	The FCNSW project to review resource availability in Eden during 2013–15 continued. An independent review of FRAMES should take place when this project has been completed.

<p>Milestone 16.4 Agency: FCNSW</p>	<p>Monitoring FRAMES through comparison of actual versus predicted volumes Refer to UNE, LNE, Eden section 3.5; Southern FA section 3.5, Att 6 (6) (f), Att 6 (7 point 12)</p>	<p>Nothing to report for 2014–15. Further reporting will occur pending the completion of the project to improve mapping of forest boundaries.</p>
<p>Milestone 16.5 Agency: FCNSW</p>	<p>Strategic and operational requirements of sustainable yield systems and processes, review sustainable yield every five years using enhanced FRAMES and publish methods Refer to UNE, LNE and Eden FAs section 3.1; Southern FA Att 6 (8)</p>	<p>Expansion of Light Detection and Ranging (LiDAR) capture will help FCNSW meet operational requirements by enabling better resource estimates. This is being developed in Eden and the Riverina Red Gum area, and will be extended to the North Coast.</p>
<p>Milestone 16.6 Agency: FCNSW</p>	<p>Complete and publish independent audits of sustainable yield Refer to Southern FA Att 6 (8 point 3)</p>	<p>No progress reported specifically for the Southern FA region. An independent review of Eden will be done when modelling and analysis is completed. Annual reporting is undertaken as part of biological assets valuation, which is audited by the NSW Auditor General. There is provision for a future audit of systems and processes.</p>
<p>Milestone 16.7 Agency: FCNSW</p>	<p>Review of wood supply and timber volumes Refer to UNE and LNE FAs sections 3.2, 3.5</p>	<p>Resource estimates and FRAMES modelling are continuously refined as new information becomes available (especially through LiDAR and updated plot measurement).</p>
<p>17. FCNSW practices including silviculture</p>		
<p>Milestone 17.4 Agency:FCNSW</p>	<p>Establishing demonstration areas in the UNE and LNE regions and establishing a register of locations where different silvicultural practices and silvicultural regimes can be examined in Southern region, as an aid for field supervisor training. UNE and LNE Forest Agreements section 2.2.8. Southern FA sections 2.2.8, 4.2, Att 6 (2) (o)</p>	<p>A series of silviculture trials have been established on the North Coast to consider the impact of different silvicultural practices.</p>

<p>Milestone 17.10 Agency: FCNSW</p>	<p>Liaison by FCNSW with the NSW Department of Planning, NPWS and the EPA on proposed forestry operations not covered by a Forest Agreement or IFOA including environmental assessment and evaluation Refer to UNE, LNE and Eden FAs FA section 2.2.7</p>	<p>This milestone is considered to be ongoing as liaison will occur when relevant situations arise. FCNSW did not report significant liaison with key agencies during the reporting period 2014–15.</p>
<p>19. Charcoal provisions in NSW Forest Agreements – no further reporting required – final update was in the 2010–11 report</p>		
<p>20. Staff training, employment and industry initiatives – no further reporting required – final update was in the 2010–11 report</p>		
<p>21. Community awareness and education – no further reporting required – final update was in the 2010–11 report</p>		
<p>22. Community consultation – informing the public – no further reporting required – final update was in the 2010–11 report</p>		
<p>23. Reporting and monitoring</p>		
<p>Milestone 23.1 Agency: EPA</p>	<p>Monitoring and reporting of criteria and indicators Refer to UNE and LNE FAs section 2.11.2, Att 9; Eden FA section 2.10.2, Att 9; Southern FA section 2.11.2, Att 7</p>	<p>Continued work on revised ESFM criteria and indicators, which are scheduled for release in 2017. The new criteria and indicators will reflect the recommendations of the Review of the NSW Forest Agreements and IFOAs, that they be practical, measurable, cost-effective, and capable of being implemented at the regional level. The indicators will align with the new Montreal Implementation Group (MIG) indicators wherever practical.</p>
<p>Milestone 23.2 Agency: EPA</p>	<p>Annual reports on Forest Agreements and tabling reports Refer to UNE, LNE and Eden, Southern FA section 6.9</p>	<p>Annual reports on the implementation of the NSW Forest Agreements have been completed up to and including the current report. Annual reports have been tabled up to 2012–13. Progress for all regions is compiled into one annual report. The annual reports provide progress on:</p> <ul style="list-style-type: none"> • achievement of milestones in the NSW Forest Agreements • monitoring of key ESFM criteria and indicators by FCNSW and OEH • compliance with the IFOAs.

24. Research and data management		
Milestone 24.6 Agency: EPA	A compendium of NSW forest research must be prepared Refer to UNE and LNE FAs section 2.11.3; Eden FA section 2.10.3; Southern FA section 2.11.3	Milestone no longer applicable. This will not be reported in future. Since the signing of the FAs, wider adoption of electronic information and search engines has transformed information publishing and retrieval. Consequently, the role of the research compendium has been superseded. Individual agencies continue to report on forest research via their websites including, for example, DPI .
Milestone 24.7 Agency: FCNSW	Operational research trial Refer to Eden FA section 3.1	The project depends on the outcomes of the IFOA remake, which will include consideration of conditions around operations in filter strips.
Milestone 24.8 Agency: FCNSW	Develop a suite of computational tools to help manage NSW forests at operational scales for a range of values, including wood yield, growth stage, water quality and quantity, natural and cultural heritage and wildlife habitat Refer to Southern FA Att 6 (6) (a)	FCNSW has a forest management system that integrates all regulatory and non-regulatory requirements to achieve best forest management outcomes. As part of the continuous improvement process FCNSW continues to develop and enhance tools to better manage forests at an operational scale. Refinements are currently being made to tactical inventory processes through use of LiDAR and mobile electronic devices (iPads). New tools have also been developed to assist ecological assessment undertaken during the harvest planning process.
Milestone 24.9 Agency: FCNSW	Develop by the end of 2010, a model to predict recruitment and maintenance of habitat trees over time Refer to Southern FA Att 6 (6) (b)	FCNSW reported no further developments in 2014–15.

Appendix 2: Milestones and undertakings with identified time periods: Brigalow–Nandewar region

Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
Community Conservation Area Agreement Undertakings 4.1 and 13.2	Community Conservation Area Agreement The Community Conservation Council will review the Community Conservation Area Agreement in consultation with the Community Conservation Advisory Committees after seven years. The Council may develop amendments or a replacement Agreement consistent with the Act.	10 June 2016	EPA	This undertaking is due by 2016.
Community Conservation Area Agreement Undertaking 10.1	Plans of management (OEH) OEH to develop plans of management for zones 1, 2 and 3 of the community conservation area in consultation with the Community Conservation Advisory Committees.	Ongoing	NPWS	Of the 62 reserves under zones 1, 2 and 3, five have plans of management adopted by the NSW Minister for the Environment and four draft plans have been publicly exhibited. A statement of management intent has been prepared for 49 reserves. Statements of management intent are in preparation for the remaining four reserves (all Aboriginal Areas).
Brigalow–Nandewar Green Firewood Strategy	No further reporting is required, see previous report.			

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Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clause 9(5)	Soil assessor training EPA approval of soil assessor training course(s).	When required	EPA	Completed EPA approved soil assessor training has been conducted in Brigalow–Nandewar region since 2009–2010. Training is conducted on a needs basis and there was no training in 2014–15.
IFOA clauses 29(1) and (5)	Proposed new Threatened Species Conservation Act listings EPA required to notify FCNSW of proposed new listings relevant to forestry operations.	When required	EPA to notify FCNSW	No update reported.
IFOA clauses 37(1) to (5)	37. Sustainable yield study for hardwood species (1) FCNSW is to conduct (over the first five years of the term of this approval) a study of the sustainable yield for logs and other timber products from tableland hardwood and western hardwood species (other than western ironbark trees) in the Brigalow–Nandewar region for the remainder of the term of this approval. See IFOA for full undertakings 37 (1) to (5).	Study to be undertaken within the first five years of commencement of the IFOA (by October 2015)	FCNSW	Not applicable.
IFOA clauses 41(1) to (7)	41. Travelling stock reserves FCNSW was required to draft a plan for managing logging operations and submit this plan to EPA. See IFOA for full undertakings 41(1) to (7).	FCNSW plan for managing logging operations on travelling stock reserves in the Brigalow–Nandewar region.	FCNSW (EPA may provide written comments)	A draft TSR management plan is being prepared and will be forwarded to the EPA for consideration and comment when complete.

Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clauses 44(1) to (3)	<p>44. Assessment of regeneration in silvicultural management</p> <p>(1) FCNSW must assess the extent and nature of regeneration in areas of land within the Brigalow–Nandewar region that are logged during the term of this approval. Assessments must be carried out on a regular and periodic basis.</p> <p>See IFOA for full undertakings 44 (1) to (3).</p>	<p>The first such assessment to be completed by the end of 2013</p>	<p>FCNSW</p>	<p>Assessment of regeneration is now being undertaken as part of the FCNSW Western Inventory program, using fixed plots, remote sensing and post-harvesting assessment tools. This has been ongoing for Brigalow since December 2014.</p>
IFOA clauses 46 (1) to (3)	<p>46. Pest animal management plan – review and amendment</p> <p>(1) FCNSW must review the pest animal management plan applying to state forests within the Brigalow–Nandewar region, regularly and periodically (and at least every five years from the date of its approval for implementation). Accordingly, the Pest Animal Management Plan 2006 Western Region Native Forests Operation Branch (NFOB) (referred to in clause 45) must be reviewed by 30 June 2011.</p> <p>See IFOA for full undertakings 46(1) to (3).</p>	<p>The Pest Animal Management Plan 2006 Western Region NFOB (referred to in clause 45) must be reviewed by 30 June 2011</p>	<p>FCNSW</p>	<p>Review completed. New Pest Animal Management Plan to apply from 1 July 2014 to 30 June 2019 (five-year period).</p>
IFOA clauses 49 (1) to (3)	<p>49. Weed management plan – review and amendment</p> <p>FCNSW must review the weed management plan applying to state forests within the Brigalow–Nandewar region, regularly and periodically (and at least every five years from its approval for implementation). Accordingly, the Weed Management Plan 2006 Western Region NFOB (referred to in clause 48) must be reviewed by 30 June 2011.</p> <p>See IFOA for full undertakings 49 (1) to (3).</p>	<p>The Weed Management Plan 2006 Western Region NFOB (referred to in clause 48) must be reviewed by 30 June 2011</p>	<p>FCNSW</p>	<p>Review completed. New Weed Management Plan to apply from 1 July 2014 to 30 June 2019 (five-year period).</p>

Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clauses 52 (1) to (3)	<p>52. Grazing management plan – review and amendment</p> <p>(1) FCNSW must review its grazing management plan applying to state forests within the Brigalow–Nandewar region, regularly and periodically (and at least every five years from the date of its approval for implementation). Accordingly, the Grazing Management Plan 2006 Western Region NFOB (referred to in clause 51) must be reviewed by 30 June 2011.</p> <p>See IFOA for full undertakings 52 (1) to (3).</p>	The Grazing Management Plan 2006 Western Region NFOB (referred to in clause 51) must be reviewed by 30 June 2011	FCNSW	Review completed. New Grazing Management Plan to apply from 1 July 2014 to 30 June 2019 (five-year period).
IFOA clause 55	<p>55. Burning operations management plan – preparation of first plan</p> <p>FCNSW must prepare (and approve for implementation) a burning operations management plan that complies with clause 54 within 12 months of the commencement of this approval. FCNSW is to invite EPA and DPI (Fisheries) to provide comments on a draft of the plan, and is to take into account any comments made by those agencies (within a reasonable time) in finalising the plan.</p>	Plan is to be finalised within 12 months of commencement	FCNSW (EPA and Fisheries may provide written comments)	Review completed. New Fuel Management Plan for Western Region (Including Brigalow Nandewar IFOA area) commenced 1 July 2014.
IFOA clauses 57 (1) to (3)	<p>57. Burning operations management plan – review and amendment</p> <p>(1) FCNSW must review the burning operations management plan applying to state forests within the Brigalow–Nandewar region, regularly and periodically (and at least every five years from the date of its approval for implementation).</p> <p>See IFOA for full undertakings 57 (1) to (3).</p>	Regularly and periodically – and at least every five years from the date of its approval for implementation	FCNSW	Review of the current plan (1 July 2014-30 June 2019) not due until 2019.

Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clauses 60 (1) to (3)	<p>60. Road and fire trail management plan – review and amendment</p> <p>(1) FCNSW must review the road and fire trail management plan applying to the Brigalow–Nandewar region, regularly and periodically (and at least every five years from its approval for implementation). Accordingly, the Road Management Plan 2006 Western Region NFOB must be reviewed by 30 June 2011.</p> <p>See IFOA for full undertakings 60 (1) to (3).</p>	<p>Regularly and periodically and at least every five years from its approval for implementation</p>	<p>FCNSW</p>	<p>Review completed. New Road Management Plan completed for Western Region (Including Brigalow Nandewar IFOA area) and commenced 1 July 2014.</p>
IFOA clauses 80 to 88	<p>80. Annual reports on forestry operations</p> <p>(1) FCNSW is to provide EPA and DPI (Fisheries) with a report on forestry operations undertaken in the Brigalow–Nandewar region in each financial year. The information that must be included in the annual report is set out in clauses 81 to 87.</p> <p>See IFOA for full undertakings 80 to 88.</p>	<p>The annual report for a financial year is to be provided to EPA and NSW Fisheries by 1 September in the next financial year (A copy of each annual report under this Division is to be kept FCNSW for the remainder of the term of this approval.)</p>	<p>FCNSW (to be confirmed by EPA and Fisheries)</p>	<p>FCNSW commenced preparation of the FCNSW 2014–15 annual report on forestry operations, which covers the Brigalow–Nandewar, South West Cypress and Riverina Red Gum IFOAs, for delivery to the EPA on or before 1 September 2015.</p>

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Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clauses 149 to 151	<p>149. Species management plans for certain threatened plant species</p> <p>FCNSW is to prepare a species management plan for each of the following threatened species of plant to assist in identifying, managing and controlling any adverse impacts of forestry operations on the species:</p> <p>(a) <i>Bertya</i> sp. A Cobar-Coolabah (also named <i>Bertya</i> opponents)</p> <p>(b) <i>Diuris tricolor</i></p> <p>(c) <i>Pomaderris queenslandica</i></p> <p>(d) <i>Pterostylis cobarensis</i></p> <p>(e) <i>Swainsona recta</i></p> <p>(f) <i>Swainsona sericea</i>.</p> <p>See IFOA for full undertakings 149–151.</p>	<p>Within 12 months of the commencement approval and to be submitted to EPA</p>	<p>FCNSW (with EPA)</p>	<p>Draft species management plans have been prepared. FCNSW is reviewing the EPA's comments in consultation with experts, with a view to finalising and implementing the plans.</p>
IFOA clauses 152 to 154	<p>152. Monitoring plans for plant species</p> <p>To review and approve the development of FMPs for the following species: <i>Acacia jucunda</i>, <i>Monotaxis macrophylla</i>, <i>Phebalium glandulosum</i> subsp. <i>eglandulosum</i>.</p> <p>See IFOA for full undertakings 152–154.</p>	<p>Within 12 months of the commencement approval and to be submitted to EPA</p>	<p>FCNSW</p>	<p>Draft monitoring plans have been prepared. FCNSW is reviewing the EPA's comments in consultation with experts, with a view to finalising and implementing the plans.</p>
IFOA clauses 149, 152 and 259	<p>Approved plans</p> <p>Intention to amend IFOA to give effect to approved plans under clauses referred to above. This will result in amendment and ultimately omission of clause 259.</p>	<p>Potentially within 12 months of the commencement approval</p>	<p>EPA and FCNSW</p>	<p>Subject to finalisation of actions 149 and 152.</p>

Report milestone number	Milestone	Timeframe	Responsibility	Progress for 2014–15
IFOA clause 155	<p>155. Strategic monitoring and assessment program</p> <p>FCNSW is to develop and undertake a strategic monitoring and assessment program in the Brigalow–Nandewar region:</p> <p>(a) to improve knowledge of the habitat requirements of threatened species within the region, and</p> <p>(b) to monitor populations of native animals and plants within the region and assess the extent to which any changes in population levels may be attributable to forest management and practice.</p> <p>See IFOA for full undertaking 155.</p>	FCNSW is to develop the strategic monitoring and assessment program in consultation with EPA before the end of the 12-month period following the commencement of this approval	FCNSW	<p>A draft strategic monitoring and assessment program has been developed.</p> <p>To ensure parity across the State, this draft program is now being considered as part of a statewide native forestry strategic monitoring program being developed as part of the Coastal IFOA remake.</p> <p>The timing of delivery of the monitoring and assessment programs is therefore linked to the delivery of the coastal IFOA remake.</p> <p>In the interim, FCNSW implemented a draft monitoring framework from October 2014.</p>
IFOA clauses 158 and 159	<p>Give effect to species management plans</p> <p>Approval of monitoring plan for <i>Polygala linariifolia</i> and <i>Tylophora linearis</i>.</p>	Not stated	EPA and FCNSW	Species management plans have been finalised and are being implemented.
IFOA clauses 233 (1) to (4)	<p>Auditing methodology for the retention of trees</p> <p>(1) FCNSW is to develop, in consultation with EPA, a methodology for auditing compliance with the requirements for the retention of trees for the purposes of this Part (namely, clauses 197 (2), 198, 199, 200, 206 and 216). FCNSW is to endeavour to have in place an auditing methodology (approved by EPA) within 12 months of the commencement of this approval.</p> <p>See IFOA for full undertaking 233 (1) to (4).</p>	Within 12 months of the commencement approval	EPA and FCNSW	<p>A draft methodology has been prepared.</p> <p>To ensure parity across the State, if possible, an agreed audit methodology will aim to be consistent with any tree retention assessment requirements that are developed through the coastal IFOA remake process. The timing of delivery of this audit methodology is therefore linked to the delivery of the coastal IFOA remake.</p>

Appendix 3: Milestones and undertakings – Riverina Red Gum IFOA

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
26	<p>Five-year review</p> <p>Five-year review of approval, consideration on minimum basal area retention, new Threatened Species Conservation Act listings, drainage protection features</p>	Jan 2016	Ministers (both agencies)	The five-year review has been delayed to 2018 due to delays finalising the Coastal IFOA remake. The Ministers amended the IFOA to delay the requirement to review the Western Lands leases residue yields components of this clause until the ten-year review period.
27 (1) to (4)	<p>Review early thinning operations (other than in the Western Lands leases)</p> <p>(1) A review of the early thinning program referred to in clause 5 will be conducted in the period 1 July 2012 to 31 December 2012 to determine a sustainable annual maximum amount of river red gum residue that may be produced from early thinning operations, taking into account the silvicultural and environmental impacts and benefits of the program, and the extent of the resource.</p> <p>(2) The terms of reference for the review will be set jointly by EPA and FCNSW.</p> <p>See IFOA for full undertakings 27 (1) to (4)</p>	Prior to 1 July 2012 – review will be conducted from 1 July 2012 to 31 December 2012	Joint FCNSW and EPA review conducted by independent scientific panel (membership mutually agreed by agencies) – jointly funded	Remote sensing data capture (LiDAR) and remeasurement of permanent growth plots was undertaken March–June 2015. This information will be used to undertake yield modelling to predict sustainable timber volumes beyond 2019.

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
27 (5) to (10)	<p>Review residue operations in the Western Lands leases</p> <p>(5) FCNSW will conduct a series of reviews for the purpose of recommending the maximum volume of residue and residue logs (including dry residue and dry residue logs) that may be produced from logging operations (including early thinning operations) in the Western Lands leases for each of the following periods:</p> <p>a) 1 January 2014 to 31 December 2019 b) 1 January 2020 to 31 December 2025 c) 1 January 2026 to 31 December 2031.</p> <p>(6) The terms of reference for the review will be set jointly by FCNSW and EPA no less than 12 months before the commencement of the next review period (for example, the terms of reference for the review described in subclause (5)(b) must be settled by 31 December 2012). See IFOA for full undertakings 27 (5) to (10)</p>	<p>Joint terms of reference by 31 Dec 2012 for the first review period 1 January 2014 – 31 December 2019</p>	<p>Joint terms of reference FCNSW (lead) EPA review and joint recommendations required</p>	<p>The Minister for Primary Industries and the Minister for the Environment jointly amended the Riverina Red Gum IFOA requirements relating to the maximum volume of residue and residue logs that may be produced from logging (including early thinning) operations.</p> <p>The amendment took effect on 1 July 2014. It allowed residue operations to continue at the current annual volume rates until 31 December 2015.</p> <p>FCNSW began the second review of residue volumes on Western Lands Leases (WLL) in March 2015. The final report was in preparation for delivery to the EPA by October 2015.</p>
28 (2), (3)	<p>Optimal basal area retention rate trial</p> <p>(2) FCNSW may carry out a trial in accordance with this clause to determine the optimal rate of basal area retention for the purposes of clause 43, in a range between 6 and 12 square metres per hectare, having regard to the need for both ecologically sustainable forest management and a sustainable timber supply.</p> <p>See IFOA for full undertakings 27 (2) and (3)</p>	<p>Note: This research will inform the five-year review referred to in clause 26.</p> <p>Also part of Riverina Red Gum Structural Adjustment Package Agreements – to feed into Adaptive Management Program (by June 2013)</p>	<p>FCNSW (lead) must consult with the EPA as to the area selected and parameters of the trial</p>	<p>No progress to report in 2014–15.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
29 (1) to (4)	<p>Auditing methodology for tree retention requirements in this approval</p> <p>(1) FCNSW is to develop, within 12 months of the commencement of this approval and in consultation with EPA, a methodology for:</p> <p>a) auditing compliance with the requirements for the retention of trees for the purposes of this approval (clauses 42 to 45 and clause 179); and</p> <p>b) calculating diameter breast height over bark (DBHOB) using stump dimensions (clause 191).</p> <p>See IFOA for full undertakings 29 (1) to (4)</p> <p>See also tree retention requirements under clauses 42–45, 179 and 191.</p>	To be undertaken within 12 months of commencement (due 1 January 2012)	<p>FCNSW (lead) in consultation with the EPA</p> <p>Requires EPA written approval to have effect</p>	<p>A draft methodology has been prepared.</p> <p>To ensure parity across the State, if possible, an agreed audit methodology will aim to be consistent with any tree retention assessment requirements that are developed through the Coastal IFOA remake process. The timing of delivery of this audit methodology is therefore linked to the delivery of the Coastal IFOA remake.</p>
30 (1) to (4)	<p>Methodology for targeted survey for regent parrot</p> <p>(1) FCNSW is to develop, in consultation with EPA, a methodology for the targeted survey for the regent parrot required under clause 160, by 29 July 2011.</p>	Before 29 July 2011	<p>FCNSW (lead) in consultation with the EPA</p> <p>Requires EPA written approval to have effect</p>	Complete.
31	<p>Field protocol for measuring distances</p> <p>Develop a field protocol for measuring distances specified in clauses 104, 105 and 106.</p>	To be undertaken within 12 months of commencement (due 1 January 2012)	Joint FCNSW, Fisheries and the EPA	<p>As previously reported, a draft protocol has been prepared. The protocol will remain in draft until the feasibility of utilising improved technology around stream identification (including mapping using LiDAR) has been considered.</p> <p>FCNSW will continue using the interim conditions for measuring distances until the protocol has been finalised.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
47 (4), (6) and (7)	<p>Travelling stock reserves (TSRs)</p> <p>FCNSW must prepare a plan for managing operations on travelling stock reserves. EPA and LLS to be consulted.</p> <p>See IFOA for full undertakings 47 (1) to (9)</p>	<p>To be undertaken within 12 months of commencement (due 1 January 2012); the EPA to comment on FCNSW draft plan within two months of receiving draft.</p>	<p>FCNSW (lead) and OEH and LLS consulted</p>	<p>A draft TSR management plan is being prepared and will be forwarded to the EPA for consideration and comment when complete.</p>
50 (1) to (4)	<p>Assessment of regeneration in silvicultural management</p> <p>FCNSW must assess the extent and nature of regeneration in areas of land logged during the approval. OEH to be consulted regarding assessment of regeneration in silvicultural management.</p> <p>See IFOA for full undertakings 50 (1) to (4)</p>	<p>To be undertaken before carrying out the first assessment, which is due 31 December 2013</p>	<p>FCNSW (lead) and OEH consulted</p>	<p>The assessment has not been finalised as at 30 June 2015.</p>
52 (1) to (3)	<p>Pest animal management plan – review and amendment</p> <p>(1) FCNSW must review the pest animal management plan applying to state forests within the Riverina state forests, regularly and periodically (and at least every five years from the date of its approval for implementation).</p> <p>See IFOA for full undertakings 52 (1) to (3)</p>	<p>Regularly and periodically, and at least every five years from the date of its approval for implementation</p>	<p>FCNSW</p>	<p>The next review is due in 2019.</p>
55 (1) to (3)	<p>Weed management plan – review and amendment</p> <p>(1) FCNSW must review the weed management plan applying to state forests within the Riverina state forests, regularly and periodically (and at least every five years from its approval for implementation).</p> <p>See IFOA for full undertakings 55 (1) to (3)</p>	<p>Regularly and periodically, and at least every five years from the date of its approval for implementation</p>	<p>FCNSW</p>	<p>The next review is due in 2019.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
58 (1) to (3)	<p>Grazing management plan – review and amendment</p> <p>(1) FCNSW must review its grazing management plan applying to state forests within the Riverina state forests, regularly and periodically (and at least every five years from the date of its approval for implementation).</p> <p>See IFOA for full undertakings 58 (1) to (3)</p>	Regularly and periodically, and at least every five years from the date of its approval for implementation	FCNSW	The next review is due in 2019.
61	<p>Burning operations management plan – preparation of first plan</p> <p>FCNSW must prepare (and approve for implementation) a burning operations management plan that complies with clause 60 within 12 months of the commencement of this approval. FCNSW is to invite EPA and DPI (Fisheries) to provide comments on a draft of the plan, and is to take into account any comments made by those agencies (within a reasonable time) in finalising the plan.</p>	Plan is to be finalised within 12 months of commencement (due by 1 January 2012)	FCNSW (lead) EPA and Fisheries consulted	Review completed. New Fuel Management Plan for Western Region (including River Red Gum IFOA area) commenced 1 July 2014
63 (1) to (3)	<p>Burning operations management plan – review and amendment</p> <p>(1) FCNSW must review the burning operations management plan applying to state forests within the Riverina state forests, regularly and periodically (and at least every five years from the date of its approval for implementation).</p> <p>See IFOA for full undertakings 63 (1) to (3)</p>	Regularly and periodically, and at least every five years from the date of its approval for implementation	FCNSW	Review of the current plan (1 July 2014–30 June 2019) not due until 2019.

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IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
66 (1) to (3)	<p>Road and fire trail management plan – review and amendment</p> <p>(1) FCNSW must review the road and fire trail management plan applying to the Riverina state forests, regularly and periodically (and at least every five years from its approval for implementation).</p> <p>See IFOA for full undertakings 66 (1) to (3)</p>	Regularly and periodically, and at least every five years from the date of its approval for implementation	FCNSW	FCNSW completed the review and implemented the new road and fire trail management plan on 1 July 2014.
71 (1) to (5)	<p>Preparation of annual program of forestry operations</p> <p>FCNSW must prepare annual program of operations for each financial year and forward a copy of the annual program to the EPA and DPI (Fisheries) before the commencement of that financial year.</p> <p>See IFOA for full undertakings 71 (1) to (5)</p>	First one due 1 July 2011	FCNSW (lead) forward to EPA and Fisheries	EPA received the 2014–15 annual program of forestry operations for the Brigalow-Nandewar, South West Cypress and Riverina Red Gum IFOAs on 22 July 2014.
82	FCNSW to provide monthly advice on operations	Monthly reports commenced on 1 April 2011	FCNSW (lead)	Completed. This is an ongoing commitment.
86 to 91	<p>Annual reports on forestry operations</p> <p>Annual report for financial year must be given to EPA and Fisheries</p> <p>See IFOA for full undertakings 86 to 91</p>	By 1 Sept in next financial year (i.e. first report due 1 Sept 2012)	FCNSW (lead); report must be given to EPA and Fisheries	FCNSW commenced preparation of the FCNSW 2014–15 annual report on forestry operations, which covers the Brigalow–Nandewar, South West Cypress and Riverina Red Gum IFOAs, for delivery to the EPA on or before 1 September 2015.

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
138, 140–143	<p>New records to be forwarded to EPA</p> <p>(1) FCNSW must advise EPA of any record of a threatened species of animal or plant made or found in the Riverina state forests during the term of this approval ('new record') if FCNSW considers it may be suitable for inclusion on the Atlas of NSW Wildlife (referred to in clause 137). See IFOA for full undertakings related to new records</p>	<p>Within three months of the new record being made or two working days for spp. listed in cl. 140.</p>	<p>FCNSW – must notify EPA</p>	<p>New records are provided routinely (generally every 3 months) via the agreed data transfer arrangements between FCNSW and EPA.</p>
238–243	<p>Environmental protection licence annual return</p> <p>In addition to the annual report required (cls 86 to 91) FCNSW must prepare and give EPA an annual return relating to the EPL.</p>	<p>Calendar years – from the first year within 60 days of end of year (i.e. 1 March 2012)</p>	<p>FCNSW – must submit to EPA</p>	<p>EPL Annual Return submitted March 2015.</p>

Appendix 4: Milestones and undertakings – South Western Cypress IFOA

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
32, 142, 144, 148, 178	New evidence of species FCNSW to notify OEH of its discovery of new evidence of plant and animal species.	Within three months of the new record being made or found, or two working days for species listed in cl. 144	FCNSW	No action reported as being required for 2014–15.
41 (2), (4), (6) and (7)	Travelling stock reserves FCNSW to prepare a plan managing logging operations on TSRs. EPA to be consulted regarding draft plan for managing operations on travelling stock reserves.	To be undertaken within 12 months of commencement (Due 1 July 2012) FCNSW cannot carry out operations on TSRs until it has considered written comments on the plan from EPA EPA to comment on FCNSW draft plan within two months of receiving draft	FCNSW (lead) LLS and EPA consulted	A draft TSR management plan is being prepared which will be forwarded to the EPA for consideration and comment when complete.
44	Assessment of regeneration in silvicultural management FCNSW must assess the extent and nature of regeneration in areas of land within the South Western Cypress region that are logged during the term of this approval. EPA to be consulted regarding an assessment of regeneration in silvicultural management.	To be undertaken within the first five years of the IFOA (due by 31 December 2015) OEH consulted before carrying out the first assessment	FCNSW (lead) and EPA consulted	Draft prepared and currently being reviewed prior to EPA consultation.

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IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
46, 49, 52, 57, 60	<p>Plan reviews for South Western Cypress region</p> <p>FCNSW must review the pest animal management, weed, grazing, road management, and burning operation plans applying to state forests within the South Western Cypress region, regularly and periodically (and at least every five years from the date of its approval for implementation).</p>	<p>By 30 June 2016 and at least every five years for pest animal management, weed, grazing, road management plans</p> <p>By 30 June 2017 for review of burning operations plan</p> <p>Preparation of first burning operations plan – see 55 below</p>	FCNSW	<p>Reviews were undertaken in 2014–15. New plans were completed and commenced on 1 July 2014. They will remain current until 30 June 2019.</p>
55	<p>Preparation of first burning operations plan within 12 months of commencement</p> <p>FCNSW must prepare (and approve for implementation) a burning operations management plan that complies with cl. 54 within 12 months of the commencement of this approval. EPA and Fisheries to be invited to comment on a draft burning operations management plan.</p>	<p>Plan is to be finalised within 12 months of commencement (due by 1 July 2012)</p>	FCNSW (lead), Fisheries and EPA (comments)	<p>Review completed. New Fuel Management Plan for Western Region (Including SW Cypress IFOA area) commenced 1 July 2014</p>
65	<p>Preparation of annual program of forestry operations</p> <p>FCNSW must prepare annual program of operations for each financial year and must forward the annual program to EPA and DPI (Fisheries) before the commencement of that financial year.</p> <p>See IFOA for full undertakings 65 (1) to (5)</p>	<p>First one due 1 July 2011</p>	FCNSW (lead) forward to EPA and Fisheries	<p>EPA received the 2014–15 annual program of forestry operations for the Brigalow–Nandewar, South West Cypress and Riverina Red Gum IFOAs on 22 July 2014.</p>
76	<p>Monthly advice on operations</p> <p>FCNSW to provide monthly advice on operations</p>	<p>Monthly</p>	FCNSW (lead)	<p>The process of reporting is in place and reporting continues as per the requirements of the IFOA.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
80 to 88	<p>Annual reports on forestry operations</p> <p>Annual report for financial year must be given to EPA and Fisheries</p> <p>See IFOA for full undertakings 80 to 88</p>	<p>By 1 Sept in next financial year (i.e. first report due 1 Sept 2012)</p>	<p>FCNSW (lead); report must be given to EPA and Fisheries</p>	<p>FCNSW commenced preparation of the FCNSW 2014–15 annual report on forestry operations, which covers the Brigalow–Nandewar, South West Cypress and Riverina Red Gum IFOAs, for delivery to the EPA on or before 1 September 2015.</p>
149 and 151	<p>Preparation of species management plans</p> <p>FCNSW must prepare and forward species management plans for the plant species referred to in cl. 149 to the EPA before the end of the 12-month period following the commencement of this approval.</p> <p>The species are: <i>Austrostipa metatoris</i>, <i>A. wakoolica</i>, <i>Diuris tricolor</i>, <i>Pterostylis cobarensis</i>, <i>Swainsona sericea</i>.</p> <p>Note: It is contemplated that if OEH approves the contents of a species management plan, the IFOA will be amended to require the plan to be given effect to. EPA and FCNSW intend the species management plans required will be finalised and approved within 12 months of the commencement of the IFOA.</p>	<p>12 months of the commencement (due by 1 July 2012)</p>	<p>FCNSW (lead) and EPA approve</p>	<p>Draft species management plans have been prepared. FCNSW is reviewing the EPA's comments in consultation with experts, with a view to finalising and implementing the plans.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
155	<p>Strategic monitoring and assessment program (SM&AP)</p> <p>FCNSW is to develop and undertake a strategic monitoring and assessment program in the South Western Cypress region.</p>	<p>Within 12 months of the commencement (due by 1 July 2012)</p>	<p>FCNSW (lead) and OEH</p>	<p>SW Cypress SM&AP will use the same methodology as the draft Brigalow SM&AP.</p> <p>To ensure parity across the State, this draft program is now being considered as part of a statewide native forestry strategic monitoring program being developed as part of the Coastal IFOA remake.</p> <p>The timing of delivery of the monitoring and assessment program is therefore linked to the delivery of the Coastal IFOA remake.</p>
233 (1) to (4)	<p>Auditing compliance with Part (namely, clauses 198, and 216) – methodology to be developed</p> <p>(1) FCNSW is to develop, in consultation with EPA, a methodology for auditing compliance with the requirements for the retention of trees for the purposes of this Part (namely, cls 198 and 216). Forestry Corporation is to endeavour to have in place an auditing methodology (approved by EPA) within 12 months of the commencement of this approval.</p> <p>(4) The methodology developed under this clause does not have effect unless and until EPA has approved it in writing. It may be amended from time to time with the written approval of EPA.</p> <p>See IFOA for complete 233 (1) to (4)</p>	<p>12 months of the commencement (due by 1 July 2012)</p>	<p>FCNSW (lead) and EPA (approval)</p>	<p>A draft methodology has been prepared.</p> <p>To ensure parity across the State, if possible, an agreed audit methodology will aim to be consistent with any tree retention assessment requirements that are developed through the Coastal IFOA remake process. The timing of delivery of this audit methodology is therefore linked to the delivery of the Coastal IFOA remake.</p>

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
240	<p>Burning operations – annual planning and mapping within five years</p> <p>Before including a burning operation in an annual program of forestry operations, FCNSW must carry out a comparative assessment of the environmental impact of carrying out the operation and of not carrying out the operation.</p> <p>FCNSW must, within the five years of the commencement of this approval:</p> <p>(a) identify and map vegetation types within the state forests of the South Western Cypress region and prepare post-fire age class distribution maps for those vegetation types, and</p> <p>(b) develop a theoretical post-fire age class distribution model for those vegetation types to enable a comparison to be made with actual post-fire age class distribution for those types, in accordance with the process outlined in the FCNSW Corporate Fuel Management Plan 2008 (Chapter 6.2.2).</p> <p>See IFOA for full 240 (1) to (5)</p>	Annual assessment and mapping within five years (due July 2016)	FCNSW	New Fuel Management Plan for Western Region (Including SW Cypress IFOA area) commenced 1 July 2014
306 and 307	<p>Pollution incident notification</p> <p>Relating to breaches of the terms of the EPL (in carrying out logging operations and ancillary road construction).</p> <p>Notification and reports of pollution incidents causing or threatening material harm to the environment.</p>	<p>Details relating to a breach must be included on the register within 14 days of FCNSW becoming aware of the breach</p> <p>Written notification within seven days of FCNSW becoming aware of the incident</p>	FCNSW (lead) and EPA notified	The EPL Annual Return for 2015 was submitted to the EPA 26 February 2016.

IFOA clauses	Detail	Timeframe	Responsibility	Progress for 2014–15
309 to 314	Special annual return to be given to EPA In addition to the annual report required to be prepared under Chapter 1 (of the IFOA), FCNSW is to prepare and give to (the EPA) an annual return relating to logging operations and ancillary road construction regulated by the terms of the EPL.	Within 60 days of the end of each calendar year (first date 1 March 2012)	FCNSW (lead) and EPA notified	The special annual return relating to logging operations and ancillary road construction was submitted to the EPA 26 February 2015.

Acronyms and abbreviations

AFS	Australian Forestry Standard (AS 4708:2007)
BMAD	bell miner associated dieback
CAR	comprehensive, adequate and representative
CMA	(former) Catchment Management Authority
cl.	clause from an Act or other legislation
DBHOB	diameter breast height over bark (referring to tree measurement)
DPI	NSW Department of Primary Industries
EMS	environmental management system
EPA	NSW Environment Protection Authority
EPL	environment protection licence
ESFM	ecologically sustainable forest management
FA	NSW Forest Agreement
FCNSW	Forestry Corporation of NSW
FL	fisheries licence
FMZ	forest management zone
Forestry Corporation	Forestry Corporation of NSW
FRAMES	Forest Resource and Management Evaluation System
ha	hectares
IFOA	Integrated Forestry Operations Approval granted under the <i>Forestry Act 2012</i>
IUCN	International Union for Conservation of Nature (relating to protected area categories)
LiDAR	light detection and ranging
LNE	Lower North East region
LLS	Local Land Services
m	metres
MIG	Montreal Implementation Group
MOU	memorandum of understanding
NFOB	Native Forests Operation Branch
NSW	New South Wales
NPWS	NSW National Parks and Wildlife Service (within OEH)
PNF	private native forestry
PVP	property vegetation plan
SOE	state of the environment
SM&AP	strategic monitoring and assessment program
TSL	threatened species licence
TSR	travelling stock reserve
t	tonnes
UNE	Upper North East region

References

- ABARES 2014 (cited in this report as 'SOFR 2013'), *Australia's State of the Forests Report 2013*, Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee for Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, <http://www.agriculture.gov.au/abares/forestsaustralia/sofr>.
- Australian Forestry Standard Limited 2007, *The Australian Forestry Standard*, AS4708:2007, Australian Forestry Standard Limited, Yarralumla ACT.
- Australian Government 2009, *Australia's Strategy for the National Reserve System 2009–2030*, Natural Resource Policies and Program Committee, Australian Government, Canberra, www.environment.gov.au/system/files/resources/643fb071-77c0-49e4-ab2f-220733beb30d/files/nrsstrat.pdf.
- CCC 2009, *Brigalow and Nandewar Community Conservation Area Agreement*, Community Conservation Council, www.epa.nsw.gov.au/resources/forestagreements/ccaAgreement.pdf.
- DECC 2009, *A Draft Report on Progress with Implementation of the New South Wales Regional Forest Agreements (RFAs) North East RFA, Eden RFA, Southern RFA*. NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/resources/forestagreements/09200draftdfa.pdf
- DECCW 2010, *Review of NSW Forest Agreements and Integrated Forestry Operations Approvals: Upper North East, Lower North East, Eden and Southern regions*, Department of Environment, and Climate Change and Water NSW, Sydney, www.environment.nsw.gov.au/resources/forestagreements/ReviewFAandIFOA.pdf.
- EPA 2010a, *Integrated Forestry Operations Approval (IFOA) for the Brigalow and Nandewar Region*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/forestagreements/BrigNandIFOA.htm.
- EPA 2010b, *Integrated Forestry Operations Approval (IFOA) for the Riverina Red Gum Region*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/forestagreements/redgumifo.htm.
- EPA 2011, *Integrated Forestry Operations Approval (IFOA) for the South Western Cypress Region*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/forestagreements/swcypressifo.htm.
- EPA 2013a, *Crown Forestry Compliance Strategy 2013–16*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/resources/forestagreements/130526crwncompstrat.pdf
- EPA 2013b, *Private Native Forestry Compliance Strategy 2013–16*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/resources/pnf/130525pnfcompstrat.pdf.
- EPA 2014, *NSW Forest Agreements and IFOAs Implementation Report 2013–2014*, NSW Environment Protection Authority, Sydney.
- EPA 2015, [New South Wales State of the Environment 2015](http://www.environment.nsw.gov.au/soe/soe2015/index.htm), NSW Environment Protection Authority, Sydney, <http://www.epa.nsw.gov.au/soe/soe2015/index.htm>.
- EPA 2016, *Native Forestry Environmental Compliance Priorities: Actions taken in 2014–15*, NSW Environment Protection Authority, Sydney,

<http://www.epa.nsw.gov.au/resources/forestagreements/160098-Forestry-ECP-actions2014-15.pdf>.

EPA 2017, *Ecologically Sustainable Forest Management Criteria and Indicators for the NSW Forest Agreement regions 2016*, NSW Environment Protection Authority, Sydney, www.epa.nsw.gov.au/resources/forestagreements/revised-ecologically-sustainable-forestry-management-criteria-indicators-160178.pdf.

FCNSW 2015a, *Forestry Corporation Annual Report 2014–15*, Forestry Corporation of NSW, West Pennant Hills NSW, www.forestrycorporation.com.au/resources/pubs/corporate/annual-report.

FCNSW 2015b, *Forestry Corporation Sustainability Supplement 2014–15*, Forestry Corporation of NSW, West Pennant Hills NSW, www.forestrycorporation.com.au/_data/assets/pdf_file/0003/590340/FCNSW0281-SustainabilitySupp_FY15010216.pdf.

FCNSW 2015c, *Annual Report of Forestry Operations Covering Integrated Forestry Operations Approvals*, Forestry Corporation of NSW, West Pennant Hills NSW.

OEH 2014, *NSW Report on Native Vegetation 2013–14*, Office of Environment and Heritage NSW, Sydney, www.environment.nsw.gov.au/vegetation/reports.htm.

Roy Morgan Research 2015, *Annual Visits to PWG Managed Parks in New South Wales*, Office of Environment and Heritage, www.environment.nsw.gov.au/resources/research/2014-nsw-parks-visitation-survey-report.pdf.

SOFR 2013: See ABARES 2014

SFNSW 1999, *Managing our forests sustainably: Forest Management Zoning in NSW State Forests*, State Forests of NSW, Sydney, www.forests.nsw.gov.au/_data/assets/pdf_file/0003/438402/managing-our-forests-sustainably-forest-mgt-zoning-in-nsw-state-forests.pdf.