



Environment Protection Authority

NSW forestry snapshot report 2021–2022

Implementation of NSW Forest Agreements
and Integrated Forestry Operations Approvals



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Acknowledgement of Country

The EPA acknowledges the Traditional Custodians of the land on which we live and work, honours the ancestors and the Elders both past and present and extends that respect to all Aboriginal people.

We recognise Aboriginal peoples' spiritual and cultural connection and inherent right to protect the land, waters, skies and natural resources of New South Wales. This connection goes deep and has since the Dreaming.

We also acknowledge our Aboriginal and Torres Strait Islander employees who are an integral part of our diverse workforce, and recognise the knowledge and wisdom embedded forever in Aboriginal and Torres Strait Islander custodianship of Country and culture.

Contents

Acknowledgement of Country	ii
Overview	1
Introduction	3
Guide to key sections in this report	4
What regions are reported	4
Links to other reporting	5
NSW Forestry Industry Roadmap	6
Monitoring, evaluation and reporting	7
Section 1: ESFM performance indicators	9
Snapshot of ecologically sustainable forest management	10
Maintaining forest values for present and future generations	10
Forest biological diversity	11
The productive capacity and sustainability of forest ecosystems	18
Health and vitality of native forest ecosystems	29
Soil and water quality	32
Contribution of native forests to global geochemical cycles	33
Long-term social and economic benefits of native forests	35
Natural and cultural heritage values	37
Ensuring public participation, provision of information, accountability and transparency in forestry operations	41
Providing incentives for voluntary compliance, capacity building and adoption of best practice standards	42
Applying best-available knowledge and adaptive management processes for best practice forest management	43
Applying the precautionary principle in preventing environmental harm	43
Section 2: Compliance	44
Compliance with IFOAs and other requirements	45
EPA compliance program	45
Crown native forestry compliance and enforcement activities	46
Private native forestry compliance and enforcement activities	48
Fisheries	48
Appendix A: Principles of ecologically sustainable forest management	49
Appendix B: NSW IFOAs, FAs and RFAs	50
Shortened forms	51
References	52

Overview

This is the 23rd annual report on NSW Forest Agreements (FAs) and integrated forestry operations approvals (IFOAs) prepared under section 69H of the *Forestry Act 2012* (Forestry Act). It provides a snapshot for 2021–22 of performance against the principles of ecologically sustainable forest management (ESFM) in NSW forest regions and compliance with IFOAs in coastal and western regions.

As the report is for 2021–22 it relates to a period that fell under the NSW Government of that time.

The last remaining NSW forest agreement, the Southern Region FA, lapsed in May 2022, the other three agreements having previously lapsed in early 2019. With the expiry of all four NSW FAs the obligation under the Forestry Act to report annually ceases and this 2021–22 forest snapshot will be the last in the series. Public reporting on native forestry in NSW, including on the ESFM principles, will continue through established statutory monitoring and reporting mechanisms, and the annual reports and websites of relevant NSW Government agencies.

Relevant sections of this report include information on ESFM monitoring, research activities, harvesting and timber volumes, regeneration, protection of biodiversity, and climate change impacts.

The widespread disturbance to landscapes, biodiversity, infrastructure, and forestry operations caused by the 2019–20 bushfires and subsequent severe storm and rain events continued to have an impact on forest areas and operations during 2021–22, particularly in the Coastal IFOA regions.

Biodiversity conservation highlights in this reporting period included:

- transfer of 148,533 hectares of land to the NSW national parks system, bringing the national parks estate to 7.6 million hectares, of which 3.71 million hectares fall within the Coastal IFOA regions
- 58 conservation agreements to protect 3,365 ha of koala habitat were established with private landowners under the NSW Koala Strategy
- focused pest animal and weed control continued across NSW forests and adjacent land tenures through the efforts of various NSW agencies and private land holders.

For the 2021–22 reporting period Forestry Corporation of NSW (Forestry Corporation) timber harvesting quantities were within the permissible volumes and quantities approved under the IFOAs. Regeneration surveys in coastal areas harvested under the Coastal IFOA found 85% of survey plots in native forests were regenerating with commercial species. This is above the 65% regeneration threshold Forestry Corporation considers enough for commercial species.

The NSW Environment Protection Authority's regulatory work continued to focus on high-risk operations, particularly in Coastal IFOA regions. This focus included assessing compliance with the protection of hollow-bearing and recruitment trees, streams, soil, forest structure and exclusion zones to protect koala habitat, threatened species and ecological communities.

The EPA visited 32 operations in State forests in 2021–22, which resulted in Forestry Corporation being issued:

- official cautions for one operation
- formal warning letters for two operations
- advisory letters for two operations
- penalty notices for three operations.

In 2021–22 two prosecutions that had commenced against Forestry Corporation in 2018–19 were finalised, resulting in convictions for seven charges and a total of \$523,600 payable in fines and costs.

Actions under the NSW Forestry Industry Roadmap, launched in 2016 by the Government of the time, that were completed or continuing in 2021–22 are summarised in this snapshot report. Most of the reform actions of the roadmap were completed before this period and reported in previous forestry snapshots. An important regulatory action of the roadmap completed during this period was the review of the Private Native Forestry Codes of Practice, with new codes starting in May 2022.

Research, monitoring and reporting to evaluate ESFM continued in 2021–22 under the NSW Forest Monitoring and Improvement Program, independently overseen by the NSW Natural Resources Commission. The program continues to improve the information base available for ecologically sustainable forest management through a number of research projects and reports that analysed baselines, drivers and trends for:

- forest extent and health across all tenures in the Coastal IFOA regions in the period 1998–2020
- species occupancy and distribution, water quality and quantity, and soil stability and health in forests across NSW Regional Forest Agreement areas.

National Parks and Wildlife Service (NPWS) agreements with Aboriginal communities in 2021–22 saw 149 parks and reserves covering almost a third of the national parks estate jointly managed. Forestry Corporation continued access and co-management arrangements with Aboriginal communities under Indigenous Land Use Agreements and through arrangements with communities across the state to manage areas of State forest for camping, teaching and practising culture. Both NPWS and Forestry Corporation provided training to Aboriginal community members and supported cultural activities.

Introduction

This is the 23rd annual report on the implementation of the NSW Forest Agreements and compliance with integrated forestry operations approvals. It is prepared under section 69H of the *Forestry Act 2012*.

This snapshot covers the 1 July 2021 to 30 June 2022 reporting period.

The 2021–22 forestry snapshot reports on:

- ecologically sustainable forest management activities in relevant NSW forestry regions
- compliance with the integrated forestry operations approvals in the coastal regions and the Riverina Red Gum, Brigalow–Nandewar and South Western Cypress regions of western NSW
- management of forests across all tenures, including national parks, for conservation, recreation, cultural heritage and other values.

Since 1999, the FAs and IFOAs have provided a strategic and operational framework to manage public forests in NSW, with the overall objective of achieving forest conservation and ecologically sustainable forestry management.

NSW Regional Forest Agreements (RFAs) between the NSW and Australian governments are another key component of the NSW forestry management framework.

The obligation under the Forestry Act to report annually on the implementation of the FAs, monitoring of ecologically sustainable forestry management and compliance with the IFOAs ceases with the expiry of the Southern Region FA. This snapshot will, therefore, be the final report in this series, which commenced in 2000.

Monitoring and reporting on native forestry in NSW will continue in accordance with the requirements of relevant statutory mechanisms, including the IFOAs and the NSW RFAs, and through the annual reports and websites of relevant NSW Government departments, agencies and organisations. Links to relevant information and websites can be found throughout this snapshot.

The implementation of FAs and IFOAs and responsibility for ecologically sustainable forestry management, which include forest conservation and management across tenures, has been a long-term cooperative undertaking between NSW Government departments, agencies and organisations.

As of 30 June 2022, this included:

- Environment and Planning
 - Department of Planning and Environment (DPE)¹
 - Environment and Heritage Group (EHG)
 - National Parks and Wildlife Service (NPWS)
 - NSW Environment Protection Authority (EPA) — maintained as an independent authority
 - NSW Natural Resources Commission (NRC) — maintained as an independent body

¹ In March 2022, the Department of Planning, Industry and Environment (DPIE) became the Department of Planning and Environment (DPE), its EES division became the Environment and Heritage Group (EHG). On 1 January 2024 DPE separated into two departments, the functions relevant to forest management moved into the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW). This report uses the agency names as they were on 30 June 2022.

- Regional NSW
 - Department of Regional NSW (DRNSW)
 - Department of Primary Industries (DPI), including Forestry, Fisheries and Biosecurity NSW
 - Local Land Services (LLS)
 - Forestry Corporation of NSW (Forestry Corporation) — maintained as a state-owned corporation

Guide to key sections in this report

Section 1 provides a summary of action against ecologically sustainable forestry management criteria and indicators for native forests of all tenures in NSW coastal regions, including timber supply in coastal and western IFOA regions.

The report adopts the principles of ecologically sustainable forestry management as set out in section 69L(2) of the Forestry Act to inform its structure. These principles are in accord with those agreed between the NSW and Australian governments in the three NSW Regional Forest Agreements (as amended November 2018). See Appendix A for the list of ecologically sustainable forestry management principles.

Section 2 outlines compliance with regulatory instruments, including the IFOAs for all regions.

What regions are reported

This snapshot report covers coastal and western forestry regions in NSW.

NSW Forest Agreements for the Upper North East (UNE), Lower North East (LNE) and Eden regions lapsed in March 2019 and were not renewed. The Southern Region FA (including the Tumut sub-region) expired in May 2022 and was not renewed.

These regions previously had separate IFOAs in place, but from November 2018 they were replaced by one combined approval — the Coastal IFOA. The Coastal IFOA introduced a new structure and outcomes-based regulatory approach with a clear hierarchy of outcomes, conditions and protocols.²

When the FAs for the forestry regions lapsed, any outstanding issues contained in these FAs, including milestones and undertakings, were rolled into other mechanisms such as the Coastal IFOA, and the NSW and Australian governments' Regional Forest Agreements.

In November 2018, the North East, Eden and Southern RFAs were varied with extensions until 2039. They each now have a 20-year rolling life; at any point in time they will be between 15 and 20 years from expiring, depending on the satisfactory completion of five-yearly reviews.

As well as the Coastal IFOA, there are IFOAs in place for three western NSW inland forestry regions: the Brigalow–Nandewar, South Western Cypress, and Riverina Red Gum regions (Western IFOAs). These three western forestry regions are not covered by either FAs or NSW RFAs.

The Riverina Red Gum region overlaps with the South Western Cypress region, but they have separate IFOAs in place for their operations.

Annual reporting requirements for the western forest areas and the coastal regions include demonstrating compliance with IFOAs, and details of timber harvesting and products including compliance with harvesting limits.

Appendix B shows the start and end dates of each FA, IFOA, and NSW RFA.

The coastal and western forestry regions covered in this report are mapped in Figure 1.

² www.epa.nsw.gov.au/your-environment/native-forestry/public-native-forestry/integrated-forestry-operations-approvals/coastal-ifo

Figure 1 Integrated Forestry Operations Approval (IFOA) regions



More information about the forestry regions and the regulatory framework for NSW native forests is available on the [EPA website](#)³.

The publication *Overview of the New South Wales Forest Management Framework V1.1* (DPI 2021a) describes the legislative and policy framework for forest management in NSW as of March 2021, and provides an explanation of the interaction between NSW RFAs, FAs and IFOAs. It also outlines the NSW agencies involved in forest management and the delivery of ecologically sustainable forestry maintenance and their responsibilities against relevant legislation.

Links to other reporting

This report has been streamlined to link with, but not duplicate, other reporting compiled over the same period, including:

- 2021–22 annual reports of relevant NSW agencies
- Forestry Corporation of NSW *2021–2022 Sustainability Report*
- *NSW State of the Environment 2021* (SoE) report
- reports of the NSW Forest Monitoring and Improvement Program (overseen by the NRC)
- program and research reports of relevant NSW agencies and organisations

It also references reports of the Commonwealth Government such as:

- *Australia's State of the Forests Report 2018* (SOFR 2018)⁴
- *Australian State of the Environment* reports.

³ www.epa.nsw.gov.au/your-environment/native-forestry/overview/regulatory-framework

⁴ SOFR 2023 will be the next report in this series. It was not published or available at time of preparation of this Snapshot.

NSW Forestry Industry Roadmap

The NSW Forestry Industry Roadmap (the roadmap) was launched in August 2016 as a strategic action plan to build a stronger, more competitive and ecologically sustainable forestry industry in NSW (NSW Government 2016).

The roadmap included a range of actions to improve the management and regulation of native forestry in NSW to balance environmental outcomes, industry needs and community expectations. The actions were set out under four priority pillars.

1. Regulatory modernisation and environmental sustainability
2. Balancing supply and demand
3. Improving community understanding and confidence
4. Supporting industry innovation and new markets

Background information on the roadmap is available in previous snapshots and on the [NSW DPI website](#)⁵.

Roadmap implementation update 2021–22

By 30 June 2022 all but a few commitments (under Pillar 1) were completed. An update on the outstanding actions during the 2021–22 reporting period is provided below.

Detailed updates on actions completed under each pillar before this reporting period can be found in previous forestry snapshot reports (starting with the 2016–17 snapshot).

Pillar 1 – Regulatory modernisation and environmental sustainability

The regulatory modernisation commitments were a significant component of the roadmap and included five that related to native forestry. Three of these actions were completed in previous years and of the two remaining, one was completed in the 2021–22 reporting period while the other was not progressed.

- reviewing and extending the three NSW Regional Forest Agreements with the Australian Government – *previously completed*
- reviewing the regulatory arrangements for both public and private native forestry to develop a modern and simple regulatory framework – *previously completed*
- reviewing and remaking a new Coastal IFOA – *previously completed*
- reviewing the existing private native forestry Codes of Practice – *completed in 2021–22*
- reviewing the Western IFOAs – *not progressed in 2021–22*

Private Native Forestry (PNF) Review

The rules for conducting native forestry on private land are set out in four Private Native Forestry Codes of Practice (PNF Codes) established under the *Local Land Services Act 2013* (LLS Act). The PNF Codes apply to four areas of the state: Northern NSW, Southern NSW, River Red Gum forests, and Cypress and Western hardwood forests.

The PNF Review was initiated to develop a modern and streamlined regulatory framework and aimed to balance the sustainable development of the private native farm forestry and agricultural industries while recognising the environmental values of the private native forest estate. Following initial public consultation on the terms of reference for the PNF Review, the PNF Codes were updated, and draft codes released for public consultation in 2020, then further revised during 2020–21 to incorporate stakeholder feedback.

⁵ www.dpi.nsw.gov.au/forestry/industry-roadmap

The revised draft PNF Codes were reviewed by the NSW Natural Resources Commission to make sure they met the principles of ecologically sustainable forest management. The NRC delivered its final report in March 2022 (NRC 2022a). The new PNF Codes started on 2 May 2022, marking the end of the PNF review.

Key changes to the PNF Codes include updated forest management plans requiring approval by LLS, revised harvesting intensity limits, improved stream protections, and updated listed species ecological prescriptions with additional flora and fauna including stronger koala protections. They also provide for enhanced monitoring requirements, and provisions addressing the precautionary principle, including:

- the requirement to develop a monitoring, evaluation and reporting framework (PNF MER Framework) to be overseen by the NSW Forest Monitoring Steering Committee
- provisions for the Minister responsible for the LLS Act, or the EPA, to request a review or suspension of harvest operations on private land where an unforeseen disturbance (e.g. wildfire, mass dieback, biosecurity event) has caused or has the potential to cause serious or irreversible environmental damage at a bioregional scale.

Further information about private native forestry and the new codes can be found on the [LLS website](#)⁶.

Review of Western IFOAs

One of the actions identified under the roadmap was a comprehensive review of the Western IFOAs, which cover the Riverina Red Gum, South Western Cypress and Brigalow–Nandewar regions of NSW. The review of the Western IFOAs did not progress during the 2021–22 reporting period.⁷

More information on the Western IFOAs is available on the [EPA website](#)⁸.

Monitoring, evaluation and reporting

Measuring and monitoring forests over time, researching interacting factors and conditions that impact forests, identifying knowledge gaps, and evaluating information and trends are all critical to continual improvement in ecologically sustainable forest management in NSW. Reporting the findings from monitoring, research and evaluation efforts informs government policy and programs and industry practise, and also provides the public with access to information.

The NSW Forest Monitoring and Improvement Program (FMIP) was established in 2019, under Pillar 3 of the roadmap, to improve the evidence base for decision-making and reporting to support the ecologically sustainable management of NSW forests across all tenures including state forests, national parks, private native forests and Crown forested land.

The program is independently overseen by the Natural Resources Commission (NRC), which chairs the NSW Forest Monitoring Steering Committee comprising relevant NSW Government agencies and independent experts. The NRC works collaboratively with NSW agencies, universities, the private sector, communities and industry in the delivery of the program. The NSW Forest Monitoring and Improvement Program includes the Coastal IFOA monitoring program, the PNF monitoring program, and is also responsible for coordinating the NSW RFA monitoring plan.

Funding for cross-tenure monitoring ceased in June 2022, with the NSW Forest Monitoring Steering Committee's focus changing to monitoring in production forests across private and public land. Information about FMIP activities over the reporting period can be found in the NRC's *2021–22 Annual Report* (NRC 2022b), with further details including publications and annual progress reports on the FMIP, Coastal IFOA Monitoring Program, and PNF monitoring program provided on the [NRC website](#).⁹

⁶ www.lls.nsw.gov.au/help-and-advice/private-native-forestry

⁷ Discussions and planning for the review commenced after the 2021–22 reporting period in 2023.

⁸ www.epa.nsw.gov.au/your-environment/native-forestry/public-native-forestry/integrated-forestry-operations-approvals

⁹ www.nrc.nsw.gov.au/publications

DPE, NPWS, DPI and Forestry Corporation all continued to carry out monitoring, research, evaluation and reporting activities and programs during 2021–22 with a view to improving the evidence base for decision-making for forest management. From April 2021, the primary mechanism for monitoring of land in the national park estate became the NPWS Ecological Health Monitoring Program.

Section 1: ESFM performance indicators



Snapshot of ecologically sustainable forest management

Ecologically sustainable forest management is an internationally recognised approach that aims to maintain the broad range of environmental, economic and social values of forests for current and future generations. The approach was adopted as a basic principle in forest management in NSW in the 1990s. The NSW Forest Agreements (FAs) and NSW Regional Forest Agreements (RFAs) include ecologically sustainable forest management (ESFM) principles, criteria and performance indicators that reflect these key values and are underpinned by comprehensive regulatory arrangements to deliver on these commitments.

More information on this approach and the indicators is available in *Ecologically Sustainable Forest Management Criteria and Indicators for the NSW Forest Agreement Regions* (EPA 2017) and *Overview of the New South Wales Forest Management Framework V1.1* (DPI 2021a).

This report provides a snapshot of progress in actions to support ecologically sustainable forestry management in forest regions during the 2021–22 reporting period, including details of sustainable timber harvesting volumes and wood products. It also summarises compliance with integrated forestry operations approvals (IFOAs).

The structure of this section of the report is based around the principles of ecologically sustainable forestry management as set out in section 69L of the *Forestry Act 2012*, which align with the principles in the NSW Regional Forest Agreements. These principles are listed in Appendix A.

Comprehensive reporting against ESFM criteria and indicators at a national level happens every five years as part of the Australian Government's [State of the Forests Report](#) (SOFR), produced by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES). The report covers biophysical, conservation, social, cultural and economic aspects of forests across 44 indicators. The most recent full report is the *State of the Forests 2018* (ABARES 2018).¹⁰

The NSW Forest Monitoring and Improvement Program (FMIP) continues to monitor, evaluate and report on ecologically sustainable forestry management.

NSW forestry regions are still recovering from the severe bushfires experienced during the summer of 2019–20, and further impacts from intermittent damaging storm events and flooding in subsequent years including 2021–22.

These events significantly impacted native forestry areas covered by this snapshot report, particularly in the Coastal IFOA regions, including areas of important natural values, animal habitat, water catchments and timber supply. An immediate response to these events was required of agencies, organisations, researchers, and communities involved in the ecologically sustainable management of NSW forests. In 2021–22 activities to aid the recovery of forest environments continued as did the analysis, research, monitoring and evaluation of affected sites.

Maintaining forest values for present and future generations

This principle embodies the idea of intergenerational equity – that in meeting the needs of the present generation, the ability of future generations to meet their needs is not compromised.

Through appropriate planning and operational practices including targets, indicators of performance and monitoring programs, ecologically sustainable forestry management is practiced at regional and local scales. This aims to achieve sustainable forest management to deliver the full range of environmental, social and economic values from the forest estate.

¹⁰ www.agriculture.gov.au/abares/forestsaustralia/sofr Updating of SOFR started in 2023 and will continue into 2024.

Forest biological diversity

Protecting forest habitat

Reserving a proportion of forested land in protected areas helps ensure the conservation of biodiversity. In 2018 there was an estimated 19.9 million hectares of native forest in NSW, 6.4 million hectares of which were protected in a range of formal and informal categories (ABARES 2018).

Regional Forest Agreements between the State and Commonwealth Governments conserve forest values across the landscape by promoting the establishment of a comprehensive, adequate and representative (CAR) forest reserve system, providing ecologically sustainable forest management outside of reserves and identifying a smaller proportion of public forest available for forestry. IFOAs set rules to protect habitat and environmental values during native forestry operations on public land and ensure harvested areas are regrown in perpetuity.

The CAR reserve system aims to safeguard vulnerable species and communities and provide links between reserves and other protected areas. The NSW national parks estate and substantial areas of NSW State forests are part of the national CAR reserve system which is guided by principles and criteria agreed by the Commonwealth, State and Territory Governments (Commonwealth of Australia 1997). Information about the CAR reserve system and the most recent data for forest in different types of CAR reserve is available in SOFR 2018 (ABARES 2018).

Protected areas include formal reserves, such as national parks protected under the *National Parks and Wildlife Act 1974* (NPW Act), land reserved for conservation as flora reserves under the Forestry Act, informal Crown reserves, and areas with values protected by prescription, such as scenic protection areas and timber harvesting exclusion zones. Twenty-eight per cent of the total forest area of NSW is reported as forming part of Australia's national reserve and having a primary management intent of nature conservation, with 77% of this forest on public land in NSW (ABARES 2018). Other protected areas and conservation on private land also contribute to protecting environmental values.

In 2021–22, 148,533 ha of land were transferred to the national parks system in NSW bringing the national parks estate to 7.6 million hectares, or 9.48% of NSW. Of this, 3.71 million hectares fall within the Coastal IFOA regions. A further 126,476 ha were acquired by the National Parks and Wildlife Service. Over 58,000 hectares of flora reserves, managed by either NPWS or Forestry Corporation, also lie within the Coastal IFOA regions.

Fragmentation of native forest cover

The loss of large, contiguous, forested areas into smaller pieces of forest (fragmentation) can isolate populations of forest-dwelling species that cannot move across areas not connected by native vegetation. This reduces genetic diversity within species. While fragmentation can happen naturally, the main cause of increasing forest fragmentation over the past 200 years has been clearing of woody native vegetation associated with land use change mainly for agriculture, mining, urban development and infrastructure.

The NSW Department of Planning and Environment reports on landcover change annually based on a calendar year. The reports assess rates of woody vegetation change from different land-use activities — agriculture, infrastructure, forestry — and provide information about conservation and management actions. The information is provided through the *Statewide Landcover and Tree Study* (SLATS) native vegetation data reports. Information on method, landcover classes and data products, and long-term trends, can be found on the [DPE website](#).¹¹

The SLATS forestry landcover class includes areas where vegetation removal has been attributed to forest harvesting activities including private native forestry, harvesting within state forests and harvesting within plantations. State forests are harvested for renewable timber and regrown in

¹¹ www.environment.nsw.gov.au/topics/animals-and-plants/native-vegetation/landcover-science/long-term-trends-in-woody-vegetation-clearing

perpetuity, therefore while native forestry creates a level of temporary disturbance, as harvested areas are regrown the nature and extent is regulated for long-term environmental and ecological sustainability.

The most recent SLATS for 2021 reports a 35% decrease in the area of native forest harvesting (excluding plantations) compared to 2020. The number of hectares harvested for private native forestry decreased by 20% in 2021 compared to 2020. These areas are expected to be regenerated post-harvesting. Further information, including a comparison of land cover change over time and geographic distribution, can be found on the [DPE website](#).¹²

Vegetation loss due to fire was previously part of SLATS reporting but is now part of separate annual fire extent and severity mapping (FESM) reporting, with these datasets included in the NSW government sharing and enabling environmental data (SEED) resource portal.¹³ FESM was developed in collaboration with the NSW Rural Fire Service.

The annual fire extent and severity mapping report for the 2021–22 fire year shows that the fire season had relatively low wildfire activity with a total of 41,336 hectares burnt statewide across all land tenures. The report provides a breakdown of fire extent and severity by land tenure (DPE 2022a).

There were less fire impacted State forests in 2021–22 than in the previous fire year with 284 hectares burnt in 2021–22 compared to 1,083 hectares in 2020–21. In NSW national parks system 704 hectares burnt in 2021–22 compared to 3,880 hectares in 2020–21. This contrasts significantly to the extent of fire impact on both tenures in the 2019–20 fire season when 832,877 hectares of State forests and 2,593,940 hectares of the NSW national park system were burnt.

During the reporting period a project under the NSW Forest Monitoring and Improvement Program analysed baselines, drivers and trends for forest extent and health across all tenures in the Coastal IFOA region in the period 1998–2020¹⁴. Initial work found that forest extent remained relatively stable across both state forests and national parks within the region between 1998 and 2018, with some increase on private land based on the analysis methods. However, forest conditions were significantly impacted by the 2019–20 bushfires, disproportionately affecting state forests and national parks compared with forests on private land (NRC 2022c). Findings from this work can be found on the NRC website, and the report, methods and project data are also available on the Terrestrial Ecosystem Research Network (TERN).¹⁵

Information on forest fragmentation is reported at national and jurisdictional scales by the Australian Government through its State of the Forest Report and State of the Environment reporting.

Protecting forest-dwelling species

Forest-dwelling species (vertebrate fauna for the purpose of this report) may use forest habitat for all or part of their lifecycle. Monitoring these species helps inform conservation and forest management strategies. Monitoring is particularly important for species at risk of not maintaining viable breeding populations. Agencies involved in forestry carry out a range of research and monitoring programs in NSW forests, both independently and in collaboration.

SOFR 2018 summarises national, state and territory reporting from 1998 to 2016 on forest-dwelling species for which ecological information is available. As of 2016, there were 896 forest-dwelling vertebrate fauna species in NSW, of which 434 were dependent on forest habitat (ABARES 2018).

¹² www.environment.nsw.gov.au/topics/animals-and-plants/native-vegetation/landcover-science/2021-nsw-vegetation-clearing-report

¹³ FESM: www.environment.nsw.gov.au/topics/animals-and-plants/native-vegetation/landcover-science/fire-extent-and-severity-maps. SEED: datasets.seed.nsw.gov.au/dataset/fire-extent-and-severity-mapping-fesm

¹⁴ www.nrc.nsw.gov.au/fmip/ecosystem-fe1

¹⁵ Terrestrial Ecosystem Research Network (TERN): www.tern.org.au/

A range of ongoing species-specific monitoring programs required under the Coastal IFOA have been underway in NSW State forest areas for many years. These include monitoring the southern brown bandicoot, smoky mouse, giant burrowing frog, koala and yellow-bellied glider. The NSW Forest Monitoring Steering committee, chaired by the NRC, is overseeing a fauna monitoring program under the Coastal IFOA monitoring program using remote sampling devices (ultrasonic sound recorders, sound recorders and cameras) to track species occupancy over time¹⁶

In May 2022, a team of scientists from universities, NSW agencies and the private sector delivered the final report and output on work commissioned by the NSW Forest Monitoring and Improvement Program in 2020 to develop baselines, drivers and trends for species occupancy and distribution in forests across NSW RFA regions. The researchers found that the combined effects of climate change and fire represent the most significant threat to biodiversity in eastern NSW forests (NRC 2022d).

The work is the largest project of this type to date in NSW forest management. The methods and datasets developed by the researchers provide critical information, data and tools to advance knowledge of flora and fauna in NSW forests. Full findings and analysis are available in the final report on the [NRC website](#).

NSW [BioNet](#)¹⁷, the NSW Government's biodiversity data repository, incorporates a comprehensive threatened biodiversity profile search facility for open viewing of threatened species, populations and ecological community profiles, including forest-dwellers.¹⁸ A second search facility, the [BioNet Atlas](#), allows the open viewing of distribution records of any threatened or non-threatened entity in NSW.¹⁹ Any user can contribute sighting records of species, populations and communities to the BioNet species sightings data collection. The BioNet repository is used by DPE, NPWS, EPA, Forestry Corporation and the LLS, and is maintained by DPE.

DPE is improving the timeliness of data capture into BioNet through the Digital Environmental Assessment Program to be implemented in 2025. This will include new technology that supports near real-time data submission to BioNet, and revision of requirements for licensees so that data is supplied more frequently.

NSW Koala Strategy

On 9 April 2022, the then NSW Government released a new NSW Koala Strategy with the long-term vision to double the number of koalas in NSW by 2050. The strategy is the first in a series of five-year plans and identifies conservation targets to be achieved by the end of 2026. It builds on the first Koala Strategy (2018–21) and supports a range of actions focused around four pillars: koala habitat conservation; supporting local community action; improving koala safety and health; and building knowledge about koalas (DPE 2022b).

Under the [NSW Koala Research Plan 2019–28](#) a total of \$3.27 million has been allocated to eight research projects that started in 2022 and 10 projects that started in 2019. The research plan sets out priorities for research over the 10 years to 2028 (OEH 2019). It aims to address knowledge gaps to enable better-informed management to protect koalas and stabilise and increase their numbers in the wild in NSW. Details of the individual research projects can be found on the NSW Koala Research Plan website²⁰

¹⁶ www.nrc.nsw.gov.au/ifoamer-biodiversity

¹⁷ www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet

¹⁸ www.environment.nsw.gov.au/threatenedspeciesapp

¹⁹ www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

²⁰ www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/nsw-koala-strategy/nsw-koala-research-plan

In 2021–22, under the NSW Koala Strategy, the NSW Government:

- established 58 conservation agreements with private landowners to protect 3,365 ha of koala habitat
- purchased more than 2,000 ha of koala habitat to add to the national park estate, fulfilling commitments under both the current and previous strategies
- advanced the process to transfer 7,140 ha of state forest to the management of the National Parks and Wildlife Service as flora reserves.

Other details, including a progress report for 2021–22, can be found in the publication *NSW Koala Strategy Implementation Plan and Progress Report 2021–22* (DPE 2022c) and on the [NSW Koala Strategy website](#)²¹

Natural Resources Commission

In the 2021–22 reporting period, as part of its broader forest monitoring program, the NSW Natural Resource Commission continued overseeing monitoring programs for the Coastal IFOA and NSW Regional Forest Agreements with the NSW Forest Monitoring Steering Committee.

The NRC also continued overseeing an independent research program under the NSW Koala Strategy aimed at better understanding how koalas are responding to harvesting in State forests on the NSW North Coast. The research projects investigated how koala habitat and koala populations respond to selective harvesting associated with coastal IFOA prescriptions. A report synthesising the research completed to date and outlining implications for management was delivered in September 2021 (NRC 2022e). Updates on the research program can be found on the [NRC website](#).²²

The NSW Environmental Trust engaged the NRC to oversee the delivery of a research program focusing on the causes of mass eucalyptus tree mortality or dieback, including bell miner associated dieback threat to eucalypt forests along the eastern seaboard²³. The \$1 million program will support research projects that inform the effective management of risks to the environment and economy posed by dieback. The Trust also engaged the NRC to evaluate the Trust's Protection of Koalas in the Murrah Flora Reserves.

Further information, research updates and reports related to the NRC's programs in 2021–22 are available on the [NRC website](#).²⁴

Department of Primary Industries research and monitoring

The NSW Department of Primary Industries conducts ongoing research to evaluate forestry management priorities and impacts of forestry practices. Research and monitoring approaches include field-based biological research, biometrics, spatial modelling, GIS mapping and cost-benefit analysis.

In 2021–22, DPI continued threatened species research and monitoring for a range of species including koalas, several bat species and the Hastings River mouse, with a particular focus on monitoring long-term study sites and in-field acoustic recording. Work on the development of artificial intelligence recognisers for the calls of about a dozen iconic forest species (including koalas, yellow-bellied gliders, squirrel gliders, powerful owls, sooty owls and glossy black cockatoos) was also undertaken to support analysis of how populations have changed over time.

Koala research activities, such as acoustic monitoring and GPS tracking projects, also continued in the current reporting period. DPI conducted parallel research projects investigating the impact of forest

²¹ www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/nsw-koala-strategy

²² www.nrc.nsw.gov.au/koala-research

²³ www.nrc.nsw.gov.au/forest-dieback

²⁴ www.nrc.nsw.gov.au/publications-current

disturbances – bushfires and timber harvesting – on koalas as part of efforts to better understand koala habitat threats and risks. The long-term collection and analysis of data on koalas and other species aims to track the responses of native wildlife over time under varying conditions. A major project developing baselines for forest fauna was completed in 2021. The project provided a 1990s snapshot for many species, contributing important context for future monitoring.

Details of DPI's forest research and monitoring activities are available on the [DPI website](#).²⁵

Forestry Corporation research and monitoring

The Forestry Corporation of NSW conducts many forest surveys and submits flora and fauna records to the NSW Government's BioNet.

DPI Forest Science team provides scientific and technical advice and research and development services to Forestry Corporation within the core activities of forest ecology; forest health and biosecurity; forest carbon; and forest resource assessment, modelling and biometrics. It also represents Forestry Corporation on forestry sector scientific and other committees related to ecologically sustainable forestry management.

Forestry Corporation has long-standing monitoring and survey programs for water quality and flora and fauna biodiversity dating from the 1970s. It has collaborated with other agencies and universities in conservation projects such as the reintroduction of bandicoots and potoroos from State Forests into Booderee National Park (FCNSW 2021b).

In 2021–22, monitoring continued of wildlife at 40 sites in State forests south of Eden, progressing work that had started in 2007. Monitoring also continued for yellow-bellied gliders in forests near Tumberumba, the Hastings River mouse in the Northern Tableland forests, the smoky mouse and the giant burrowing frog in south coast forests, and dams have allowed monitoring of Littlejohns tree frog and other frog species in Eden, Batemans Bay and central coast forests.

A GPS-tracking study of koalas was carried out with DPI Forest Science and the Port Macquarie Koala hospital between 2018 and 2021 with the field work being completed in 2021 and first results on tree use published in 2022.

Monitoring and targeted searches for a range of species increased following the 2019–20 fires.

In 2021–22 Forestry Corporation invested \$1.66 million in research through a Service Level Agreement with DPI Forest Science and also directly in applied research and collaborative partnerships with other organisations (FCNSW 2022b). Information about completed and continuing research activities is included in the statutory information in the Forestry Corporation *Annual Report 2021–22* (FCNSW 2022a), and ongoing research and monitoring programs are summarised in the Forestry Corporation Sustainability Report 2021–22 (FCNSW 2022b).

Department of Planning and Environment research and monitoring

The Department of Planning and Environment carries out a range of forest-related research and monitoring including field based and applied research, spatial modelling and GIS mapping. It does research, monitoring and reporting across forested lands in partnership with other agencies with active programs for koala detection and research, rainforest conservation, forest old growth mapping, restoration science and threatened species conservation.

DPE developed the [NSW Koala Habitat Information Base](#) in 2019, including a state wide review of koala tree preferences. In the current reporting period, further research on koalas included trialling the use of drones and other sampling methods to evaluate their effectiveness for surveying and monitoring koala populations. In 2021–22 the NSW Government provided funding to support the establishment of

²⁵ www.dpi.nsw.gov.au/forestry/science

the [NSW Wildlife Drone Hub](#) enabling the use of drones to detect both vegetation and wildlife. The hub manages data collected by drones and provides a suite of digital tools.

In 2021–22 DPE continued its research and reporting efforts in a number of other key programs including the Biodiversity Indicator Program, Saving our Species, SLATS, FESM and its maintenance of BioNet. While the Forestry Monitoring and Improvement Program, overseen by the NRC, is complementary to DPE programs it does not provide a comprehensive measure of the ecological health of national parks. Monitoring of biodiversity in national parks is carried out under the Ecological Health Monitoring Program, with initial piloting of the program at eight national parks sites during the reporting period.

The NSW and Australian Regional Climate Modelling ([NARClIM](#)) system developed by DPE produces regional climate data projections for humidity, precipitation, temperature, radiations, winds, and others. The information produced by NARClIM supports future planning, mitigation, adaptation and policy development.

All of these activities are important in the forest context as they inform ongoing understanding of the condition, extent and ecological health of forested areas in NSW.

WildCount and the Ecological Health Monitoring Program

WildCount was a 10-year long-term ecological monitoring program that started in 2012 and used motion-sensitive cameras to monitor animals across national parks in eastern NSW. Its original aim was to detect changes in the distribution of a suite of native species using annual occupancy data and act as an early warning system for native species declines. It was the broadest fauna monitoring study of its kind in Australia and one of the biggest in the world.

Many of the monitored national parks were in IFOA/FA regions, although WildCount did not monitor animals on State forests. Information and monitoring data about State forests is recorded and available through the BioNet Atlas. Of the 204 WildCount sites across 146 national parks and reserves, 173 were in 128 reserves within the boundaries of the IFOA areas:

- 143 sites across 99 reserves in the Coastal area
- 16 sites across 15 reserves in the Brigalow and Nandewar area
- 14 sites across 14 reserves in the South Western Cypress area.

In the 2021 field season, the program's tenth year, 93 different species and groups were identified in IFOA areas. This included records of 11 threatened species: Albert's lyrebird, black-striped wallaby, brush-tailed phascogale, brush-tailed rock-wallaby, koala, long-nosed potoroo, masked owl, parma wallaby, red-legged pademelon, spotted-tailed quoll and speckled warbler.

In the context of the impacts of the 2019–20 fire season WildCount provided an extensive historical pre-fire dataset from 200 sites. During the fire season nearly 70 sites were burnt and the information captured through WildCount in 2020 and 2021 has provided relevant information about the impacts of bushfires on native animals. Analysis of the data indicated a varied response to fire severity immediately post-fire. Some species were negatively affected (long-nosed bandicoot, short-beaked echidna, eastern grey kangaroo) while others showed no real change in occupancy (superb lyrebird, bare-nosed wombat, swamp wallabies, common brushtail possums).

Records of WildCount sightings have been contributed to NSW BioNet and its data is also available from SEED.²⁶ During its operation a total of 185 species or species groups were recorded from approximately 1.9 million images. Most of these species and species groups were not recorded very often. Almost 95% of all images were from just 20 species (> 8,000 images each) and 80% of all images were from just seven species (> 50,000 images each).

²⁶ <https://datasets.seed.nsw.gov.au/dataset/wildcount-long-term-fauna-monitoring-nsw-national-parks-2012-2021>

A report on analysis of WildCount data from 2012 to 2016 was released in August 2020 and, with the program now finished, a 10-year report is in planned for publication in 2024.

More information on the program and associated reports can be found on the [WildCount webpage](#).²⁷

Starting in April 2021, the Ecological Health Monitoring Program has become the primary program for measuring the health of national parks. Scorecards are being developed across eight sites broadly representative of major NSW ecosystems and covering 30% of the national parks system. Monitoring will include park-wide surveillance monitoring sites as well as targeted monitoring of biodiversity indicators, threatened species and systematic monitoring of key threats (feral animal populations, fire regimes, etc).

More information on the Ecological Health Monitoring Program²⁸ can be found on the [NPWS webpage](#).

Biodiversity Indicator Program

The [Biodiversity Indicator Program](#) (BIP) was set up in 2017 to assess the status and trends of biodiversity and ecological integrity in NSW, as required by the *Biodiversity Conservation Act 2016*. DPE collaborated with subject matter experts to develop a technical method that describes key biodiversity indicators. The technical method was peer reviewed and published (OEH & CSIRO 2019). Many of the indicators align with criteria 1 and 3 of the [Montreal Process](#)²⁹ indicators.

The first assessment of the status of NSW biodiversity and ecological integrity under the program was released in February 2020 as the *NSW Biodiversity Outlook Report, Results from the Biodiversity Indicator Program: First assessment* (DPIE 2020a). It reported on 10 indicators as a baseline assessment. Additional report cards for invasive species and the community appreciation of biodiversity were published in 2021. The report card for the invasive species indicator found that, in total, 305 weeds and 36 pest animals that cause biodiversity loss have been recorded across New South Wales since 1980.³⁰

The Biodiversity Outlook Report is supported by implementation reports detailing how indicators have been assessed. Data packages for all indicators are available via the SEED data portal.³¹ Assessments will continue at recommended intervals and the program will contribute to the review of the Biodiversity Conservation Act³²

An assessment of the effects of the 2019–20 bushfires on a range of biodiversity and landscape values was carried out by DPE and resulted in the recalculation of three indicators developed for the Biodiversity Outlook Report – ecological condition, ecological carrying capacity and persistence of ecosystems. For the ecological carrying capacity indicator, the state-wide baseline level remaining in 2013 had been assessed at 33% of the natural levels before European settlement but had fallen to 31% in 2020 following the 2019–20 bushfires (EPA 2021).

Updated information on status and trends will be published in report cards and included in future Biodiversity Outlook Reports. Further information about the biodiversity indicator program, and the suite of reports, is available on the [DPE website](#).³³

²⁷ www.environment.nsw.gov.au/topics/animals-and-plants/surveys-monitoring-and-records/native-animal-monitoring

²⁸ www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/ecological-health-performance-scorecards

²⁹ www.agriculture.gov.au/forestry/international/forums/montreal

³⁰ www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/Biodiversity-Indicator-Program/report-card-invasive-species-supplement-to-biodiversity-outlook-report-210486.pdf

³¹ www.datasets.seed.nsw.gov.au/dataset/biodiversity-indicator-program-data-packages

³² www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/overview-of-biodiversity-reform/biodiversity-assessment-method-5-year-review

³³ www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biodiversity-indicator-program

The productive capacity and sustainability of forest ecosystems

Land available for timber production

Monitoring the productive capacity of native forests helps ensure demand for forest timber and other wood products can be met sustainably. Forestry Corporation continually regrows all harvested areas and aims to maintain appropriate sustainable yield models.

Land available in State forests

Forestry Corporation manages native State forests and timber plantations across NSW. In 2021–22 about 60% of the forest area managed by Forestry Corporation was available for timber production, about 18% managed as formal or informal reserves to protect natural and cultural values, and the remainder excluded from harvest operations for other reasons.

Forestry Corporation uses a land classification system called Forest Management Zoning (FMZ) to describe forest areas by management intent, identifying their values and the activities permitted within each. Forest management zoning maps are available from the Forestry Corporation [website](#)³⁴.

Forestry Corporation *Sustainability Report 2021–22* (FCNSW 2022b) provides interactive charts detailing areas of State forest (by zone) and timber reserves under their management across all State forests. Forestry Corporation also maintains timber rights to Crown-timber land and timber reserves on Crown land not under its management.

The report shows that in 2021–22:

- total defined forest area³⁵ managed by Forestry Corporation was 2,120,157 ha, of which a total of 2,064,153 ha was managed under the IFOAs. (Note: the IFOAs also apply to other tenures such as Crown leases, western lands lease and timber reserves where Forestry Corporation carries out harvesting operations, but do not exercise overall management control)
- total area of State forest in the Coastal IFOA region was around 1,555,500 ha; and 459,900 ha in the Western IFOA regions
- total area managed included hardwood productive plantation area of around 34,000 ha in northeast NSW, and softwood productive plantation area of around 205,600 ha in the central west, south and north of NSW.

Private native forestry

Private native forestry is the management of native forest on private land for sustainable timber harvesting, and for management of other values such as biodiversity and Aboriginal values. There are an estimated 7.4 million hectares of native forests on private land across NSW, which is approximately 37% of the 20 million hectares of native forest in NSW (ABARES 2019).

In NSW, private native forestry codes of practice are designed to protect significant landscape features such as vulnerable and endangered ecological communities, rainforest, old growth forest, wetlands, heathlands and cultural heritage items and sites. The private native forestry codes also contain provisions for keeping habitat trees (including feed trees, roost, nest and food resource trees) and recruitment trees capable of forming hollows for habitat in future.

Landholders are required to obtain a private native forestry plan from Local Land Services to carry out forestry operations on private land. The plan is a legally binding agreement between the landholder and LLS and is valid for up to 15 years. Once a plan is in place, landholders and contractors must

³⁴ www.forestrycorporation.com.au/about/maps

³⁵ Defined Forest Area: forest area managed by FCNSW that is certified under the Responsible Wood Certification Scheme — see further information and map at www.forestrycorporation.com.au/about/our-estate

meet the requirements of the relevant code. This includes the need to complete a forest management plan describing the proposed forestry operation before undertaking private native forestry operations.

Private native forestry approvals

LLS approves private native forestry plans, and the EPA regulates compliance and enforcement of them against the private native forestry codes of practice.

In 2021–22, a total of 57,830 ha were approved under 287 new private native forestry plans. Not all of this area is available for harvesting due to prescriptions to protect threatened species and manage important landscape and habitat features.

Tables 1 and 2 show new plans and related areas in hectares for 2015–16 to 2021–22. Approvals for earlier years can be found in previous forestry snapshot reports.

The number of plans and area of forestry operations approved each year may vary. Variances may happen in any given year, and between years, for a range of reasons including wet weather, fires, market demand or completion of previously approved harvesting. Only a proportion of the total approved area will have active forestry operations.

Table 1 Total number of private native forestry plans approved July 2015 – June 2022

Forest region	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
Northern NSW	306	314	229	216	275	252	223
Southern NSW ¹	13	11	2	12	9	18	41
Riverina Red Gum	18	10	11	9	2	8	19
Cypress & Western Hardwood	2	3	11	11	9	10	4
Totals	339	338	253	248	295	288	287

Source: LLS data – PNF Plans Public Register³⁶

1. PNF approvals in the Southern private native forestry code region increased in 2021-22 mainly due to fire impacted landholders seeking practical guidance from LLS on post-fire recovery and better preparation for future fires.

Table 2 Area (hectares) of private native forestry plans approved July 2015 – June 2022

Forest region	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21	2021–22
Northern NSW	41,464	33,177	24,584	24,458	30,738	30,586	22,170
Southern NSW	756	701	259	372	426	4,932	6,694
Riverina Red Gum	7,286	2,416	2,549	4,134	24	3,367	28,292 ¹
Cypress & Western Hardwood	2,155	1,892	4,261	4,555	3,248	3,685	674
Totals	51,661	38,186	31,653	33,519	34,436	42,570	57,830

Source: LLS data – PNF Plans Public Register

1. The increase in approval area in the River Red Gum PNF Code region in 2021-22 was mainly the result of a single PNF plan being renewed upon expiry of its original plan.

³⁶ Private native forestry plans public register: www.lls.nsw.gov.au/help-and-advice/private-native-forestry/reporting

Land available in plantations

Plantation forestry involves planting trees and shrubs for timber production or environmental purposes. Plantations are regulated and authorised under the *Plantations and Reafforestation Act 1999* and the *Plantations and Reafforestation (Code) Regulation 2001*. DPI undertook a review of the Act and the Code during the reporting period to assess their relevance and determine any changes required. Implementation of the review's non-regulatory recommendations is underway. Information about the review, including the report and recommendations, can be found on the DPI website³⁷

DPI is responsible for the regulation of native and non-native plantations including authorisation, compliance and enforcement. It maintains a public register of plantations that provides ongoing data on plantation authorisations from 1997 to the current year, including location, plantation type and area (hectares). Extra information summarising annual data related to plantation regulation activities is also produced by DPI.

The public register provides details of both public and private plantations authorised. Plantations not included on the public register are exempt from farm forestry and existing plantations are not required to be authorised under the Plantations and Reafforestation Act. The register, and extra annual results data, are accessible on the [plantation forestry](#) section of the DPI website³⁸

Figures for timber volumes and other products supplied from these plantations are reported on the Australian Bureau of Agricultural and Resource Economics and Sciences website³⁹

The largest area of plantation in NSW is on State forest (see previous section on 'Land available in State forests'). Information about production from State forest timber plantations is detailed in Forestry Corporation's *Sustainability Report 2021–22*.

Many plantations contain areas of remnant native vegetation that are identified at the time of plantation establishment and are required to be retained and protected. The area of retained native vegetation in NSW plantations as at 30 June 2022 amounted to approximately 38,000 ha.

Sustainable timber harvesting

Monitoring helps ensure wood and wood products are harvested and regrown at levels that meet society's need for forest products each year without causing a decline in the available timber, while ensuring maintenance of the functioning of the native forest system (ABARES 2018).

The IFOAs specify the types, volumes and quantities of native forest timber products that Forestry Corporation is allowed to harvest. The IFOAs allow annual variations to the specified volumes to accommodate environmental and economic changes, and require these volumes to be updated at review periods to ensure their ongoing sustainability. They also specify environmental conditions that ensure wildlife habitat, soil and water and sensitive environmental features are protected and maintained during timber harvesting operations.

Through the Coastal IFOA monitoring program, the Natural Resources Committee has established baselines for predicting and monitoring wood supply. To establish the baselines, the program first evaluated trends in historic and actual wood production from 2003 to 2019 and the various factors influencing trends over time, with a final report delivered in June 2022 (NRC 2022f). The program will also analyse the impact of the Coastal IFOA on wood supply.⁴⁰

³⁷ www.dpi.nsw.gov.au/forestry/policy/projects-and-programs/2022-review-of-plantations-and-reafforestation-legislation

³⁸ www.dpi.nsw.gov.au/forestry/forestry-operations/plantation-forestry

³⁹ www.agriculture.gov.au/abares/research-topics/forests/forest-economics

⁴⁰ <https://www.nrc.nsw.gov.au/ifo-mer-wood-supply>

Sustainable yield

Sustainable yield is a measure of how much wood can be harvested from a forest over a long period of time, while maintaining wood supply levels and meeting sustainable use objectives for the forest. Forestry Corporation reviews the available sustainable timber yield from native forests at least every five years and continually reconciles production against sustainable yield. Information about sustainable yield is also reported in its annual Sustainability Report and regular reconciliation reports on Forestry Corporation's website.⁴¹

Forestry Corporation reviewed the long-term sustainable yield for all coastal RFA areas — North Coast, South Coast and Tumut, and Eden — incorporating resource measurements, fire impact studies, and assessments of the impact of extended wet weather and flooding in subsequent years.

The RFAs and the IFOAs set out how sustainable yield is to be determined, reviewed and periodically updated. Formal five-yearly reviews of the sustainable yield from native State forests form part of RFA reporting and are published on the DPI website.⁴² All aspects of sustainable timber harvesting will be considered in the upcoming five-yearly reviews of the NSW RFAs, the Coastal IFOA, and also the review of the Western IFOAs that is currently being scoped.

During 2021-22 reporting period, hearings were held in Sydney and in regional areas for the *Inquiry into the long-term sustainability and future of the timber and forest products industry* which had been self-referred by the NSW Legislative Council's Portfolio Committee No.4 in March 2021. The inquiry focused on issues relating to the sustainability of the industry, future opportunities for the timber and forest products industry and timber dependent communities, and the role of government in addressing key environmental, economic and social challenges. Further information including submissions, hearing transcripts, the Committee's Report (tabled 15/09/2022) and the response of the NSW Government of the time (provided 15/12/2022) can be found on the NSW Parliament's website.⁴³

Compliance with sustainable forestry certifications

Forestry Corporation produces timber that is certified sustainable under the internationally recognised Responsible Wood® Scheme using the Australian Standard® for Sustainable Forest Management (AS 4708:2021). Forestry Corporation discontinued certification to the Environmental Management Standard ISO 14001:20015 as the requirements have been incorporated into the revised Responsible Wood Standard. To maintain certification, Forestry Corporation must show that its forestry activities are carried out in a systematic manner consistent with these standards and meet a range of forest management criteria set out in AS 4708:2021.

Forestry Corporation has regular independent, external surveillance and recertification audits of its Hardwood Forests Division and Softwood Plantations Division as part of maintaining its Responsible Wood® certifications. Summary audit reports are available from the [Forestry Corporation website](#).⁴⁴

Timber harvested in Coastal IFOA areas

The timber volumes harvested in the Eden and Lower North East (LNE) regions native forests and hardwood plantations during the 2021–22 reporting period was slightly higher than the previous reporting period, which had been significantly impacted by operational constraints as a result of the 2019-20 fires and subsequent periods of flooding. The impact of these constraints is reflected in the overall volumes harvested, particularly in Southern and Upper North East (UNE) regions. Further information is available in the Forestry Corporation Sustainability Report 2021–22.

⁴¹ www.forestrycorporation.com.au/about/pubs/timber-volumes-and-modelling

⁴² www.dpi.nsw.gov.au/forestry/policy/projects-and-programs/2018-nsw-rfa-review-and-renewal

⁴³ NSW Legislative Council, Portfolio Committee No. 4 – Customer Service and Natural Resources, *Inquiry into the long term sustainability and future of the timber and forest products industry*

⁴⁴ www.forestrycorporation.com.au/sustainability/certification

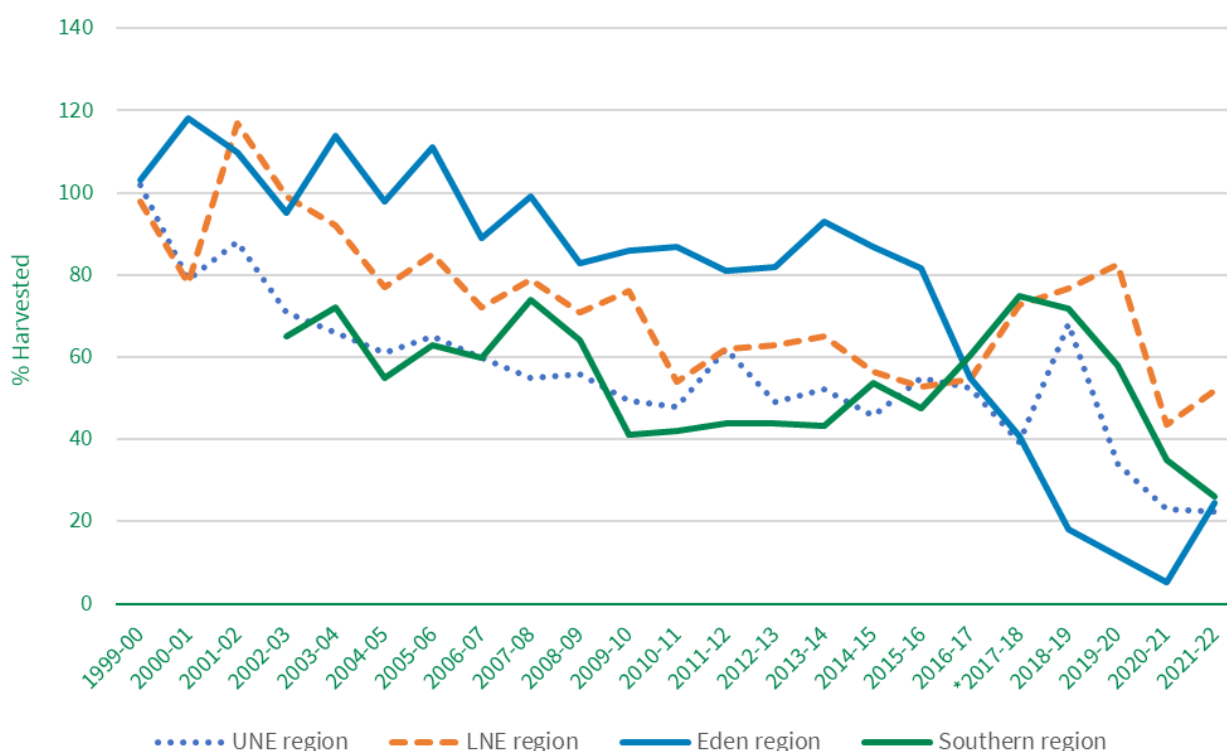
The following section reports timber volumes and quantities harvested against the timber volume limits specified in the Coastal IFOA (Protocol 31). Under the protocol timber volume limits must align with sustainable yield in accordance with the NSW Regional Forest Agreements. For the LNE and UNE regions, sustainable yield calculations include hardwood plantations.

Figure 2 depicts volumes of logs harvested as a percentage of the volume limits specified in the Coastal IFOA for the region.⁴⁵

The figure includes large veneer logs, high quality large logs, and poles, piles and girders. In snapshot reports before 2017–18, log volumes in the graph excluded poles, piles and girders while snapshot reports from 2017–18 on include them.

Volumes of logs harvested remained stable in the UNE region and decreased again in the Southern region. Both regions were significantly impacted by widespread and extreme bushfires in 2019–20. The volumes harvested in the LNE and Eden regions increased. Production in all areas was below permitted volumes.

Figure 2 Log volumes harvested as a percentage of volumes specified in the IFOA – all coastal regions



Source: Forestry Corporation data

Quota sawlogs are harvested from native forest in the Eden and Southern regions, and from native forest and hardwood plantations in the UNE and LNE regions. Since 2002 the Southern region includes South Coast and Tumut sub-regions.

* From 2017–18 and on, figure includes large veneer logs, high quality large logs, and poles, piles and girders. Before 2017–18, log volumes reported in this snapshot chart excluded poles, piles and girders.

Detailed data for the volumes and quantities of timber extracted from the coastal regions are shown in Table 3.

In the UNE region, 24,345 cubic metres (m³) of high-quality large sawlogs, large veneer logs and poles were harvested from native and hardwood plantation forests during 2021–22. This represents 22% of the permitted annual volume (109,000 m³).

⁴⁵ Timber product requirements and limits that apply to the Coastal regions are in Protocol 31, Part 5, Table 1 of the IFOA

In the LNE region, 82,806 m³ of high-quality large sawlogs, large veneer logs and poles were harvested from native and hardwood plantation forests, which is 51.8% of the permitted annual volume (160,000 m³), an increase of 13,000 m³ from the amount harvested in the previous year.

In the Eden region 5,641 m³ of high-quality large sawlogs were harvested from native forests, representing 24% of the permitted annual volume (23,000 m³). No piles, poles or girders were supplied from the Eden region.

Pulp grade timber harvested in the Eden region increased from 48,497 tonnes (t) the previous year to 134,243 t in 2021–22, representing 39% of the permitted annual volume (345,000 t).

In the Southern region, 25,376 m³ of high-quality large sawlogs were harvested from native forests. This represents 26% of the annual permitted volume of 96,500 m³ (48,500 m³ South Coast sub-region, 48,000 m³ Tumut sub-region).

The quantities by sub-region were:

- South Coast sub-region: 15,642 m³ (32% of permitted volume)
- Tumut sub-region: 9,734 m³ (20% of permitted volume).

Volumes and quantities not specified in the FAs and IFOAs

The coastal approvals do not set volume limits for certain timber products that form part of integrated harvesting operations, including low-quality sawlogs, firewood and landscape timbers (see Table 3 for details). In 2021–22, 251,425 m³ of non-specified (unregulated) logs were harvested from Forestry Corporation native forests and hardwood plantations across all Coastal IFOA regions, approximately 20% more than in 2020–21.

In the current reporting period, 231,160 t of non-specified pulp grade timber were produced. This is more than the previous year, when 112,480 t were produced. The majority of the increase was sourced from native forests in the Eden region (134,243 t compared to 48,497 t in 2020–21). There was an overall 45,470 t increase in unregulated pulpwood from native forest, sourced from the South Coast, Tumut and LNE regions.

Data for the volumes and quantities of timber extracted from the coastal regions are shown in Table 3.

Table 3 Quantities (m³) of native forest and hardwood plantation timber products – coastal regions 2021–22

Product type	Southern region		Eden region	LNE region		UNE region	
	South Coast	Tumut native forest	Native forest	Native forest	Hardwood plantation	Native forest	Hardwood plantation
Large veneer ¹	0	0	0	1,678	1,370	419	46
High-quality large sawlogs ¹	15,642	9,734	5,641	46,619	20,391	16,636	924
Large poles / piles and girders	0	0	0	5,937	6,811	6,012	308
Small veneer	0	0	0	1,058	2,584	160	34
High-quality small sawlogs	4,169	14,544	16,451	10,466	8,432	7,175	1,131
Low-quality sawlogs	5,303	45,523	0	34,249	23,170	12,952	3,980
Small poles / piles and girders	0	0	0	6,436	6,620	1,615	386
Biomass	0	0	0	0	2,392	0	2,028
Firewood/misc	14,747	2,250	551	13,833	7,358	3,972	854
Total (m³) ³	39,861	69,050	22,643	120,275	79,129	48,942	9,691

Product type	Southern region		Eden region	LNE region		UNE region	
	South Coast	Tumut native forest	Native forest	Native forest	Hardwood plantation	Native forest	Hardwood plantation
Pulp (Eden) ^{1,2} (tonnes)	0	0	134,243	0	0	0	0
Pulp/chipwood (tonnes)	19,322	25,861	–	20,101	26,175	0	5,448
Total (tonnes)	19,322	25,861	134,243	20,101	26,175	0	5,448

Source: Forestry Corporation NSW data. Figures are derived from an operational database; there may have been minor reconciliations since the end of the reporting period.

1. The Coastal IFOA specifies quotas for these products.
2. Pulp is split into regulated (Eden region only) and unregulated pulp/chipwood. Quota requirements apply to pulp grade timber in the Eden region under the IFOA. The measure for pulp is tonnes, not m³.
3. Minor rounding discrepancies may occur in totals.

Timber harvested in Western IFOA regions

Timber products obtained in 2021–22 from State forests and Western Lands Leases (WLL) covered by the three western IFOAs are summarised in Tables 4 to 6 below. Figures 3 to 6 show trends in harvesting of forest timber products in the three western IFOA regions from 2011–12 to 2021–22.

Riverina Red Gum region

The Riverina Red Gum IFOA identifies 20-year limits for high-quality large logs and residue logs in the Riverina Red Gum regions, including State forests and western lands leases areas, from 2011. It also allows a maximum cap over five years for residue from early thinning in State forests.

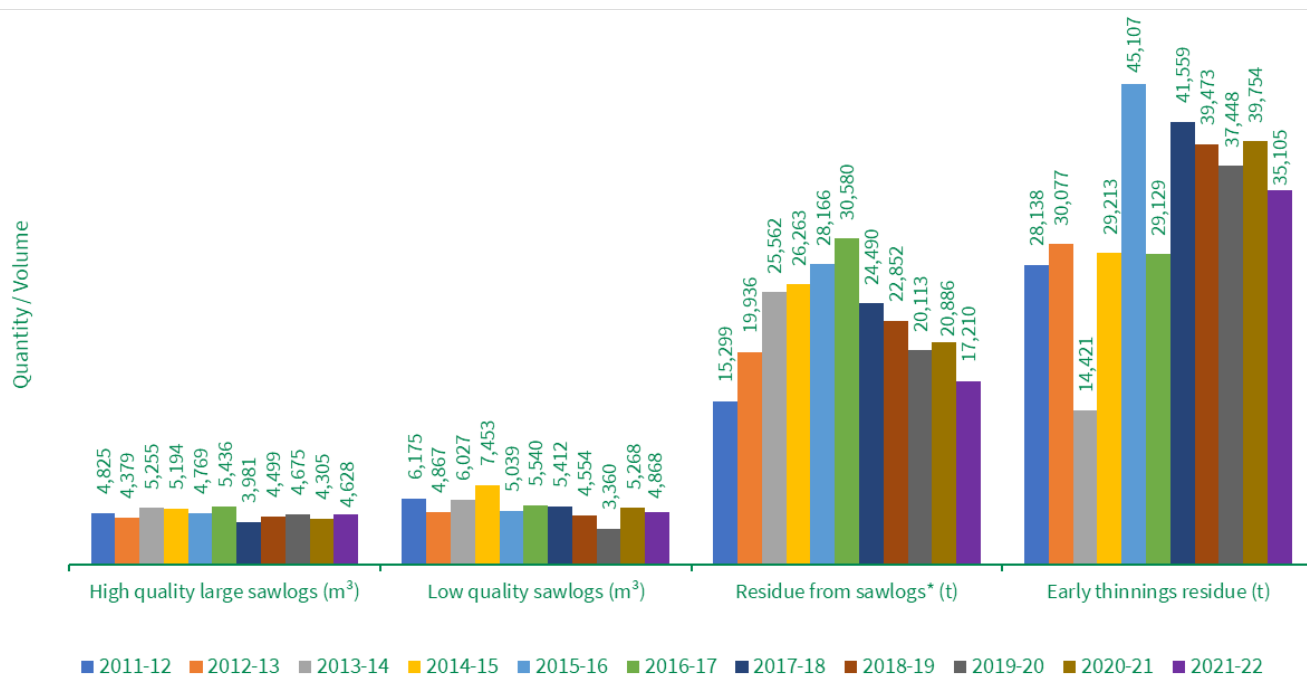
Figure 3 reports on the volume of sawlogs and residue from operations in the Riverina Red Gum region between 2011–12 and 2021–22.

During 2021–22, a total of 4,628 m³ of high-quality large sawlogs were harvested with 3,801 m³ from State forests and 1,642 m³ from western lands leases areas. This brings the total volume of high-quality sawlogs harvested in the eleven and a half years since January 2011 to 52,569 m³, accounting for 58% of the allowed 20-year volume of 90,253 m³ under the IFOA. A total of 4,868 m³ of low-quality sawlogs were harvested from State forests and western lands leases areas.

The quantity of residue grade logs generated in the course of producing the high-quality sawlogs was 17,210 t from State forests and a further 42,738 t harvested from western lands leases areas (not included in Figure 3).

The IFOA was amended in June 2019 to allow the continued harvesting of residue from early thinnings in Riverina State forests between 1 July 2019 and 30 June 2024, with a cap of 176,850 tonnes over the five years. The 35,105 t of residue grade logs harvested from early thinning operations in 2021–22 brings the total volume for the first two years to 74,859 t which represents 42% of the 5-year cap.

Figure 3 Volume (m³) of high-quality large sawlogs and low-quality sawlogs and quantity (t) of early thinnings obtained from the Riverina Red Gum region since the IFOA started



* Residue from State forest operations, western lands leases areas not included in chart, see graph below for quantity

Table 4 Timber and forest products harvested from the Riverina Red Gum region in 2021–22

Product	Volume (m ³) or quantity (t)	Estimated net harvest area (ha)
High-quality sawlog	3,801 m ³	234
Low-quality sawlog	3,226 m ³	(all three products from the same area)
Residue from sawlogs	17,210 t	
Early thinning residue	35,105 t	934
High-quality sawlog - WLL	827 m ³	928
Low-quality sawlog - WLL	1,642 m ³	(all three products from the same area)
Residue from sawlogs - WLL	42,738 t	
Firewood permits issued	1,927 t (1,425 permits)	n/a ¹

Source: Forestry Corporation

1. not available

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 forest products other than timber that are of economic value, such as broombush.

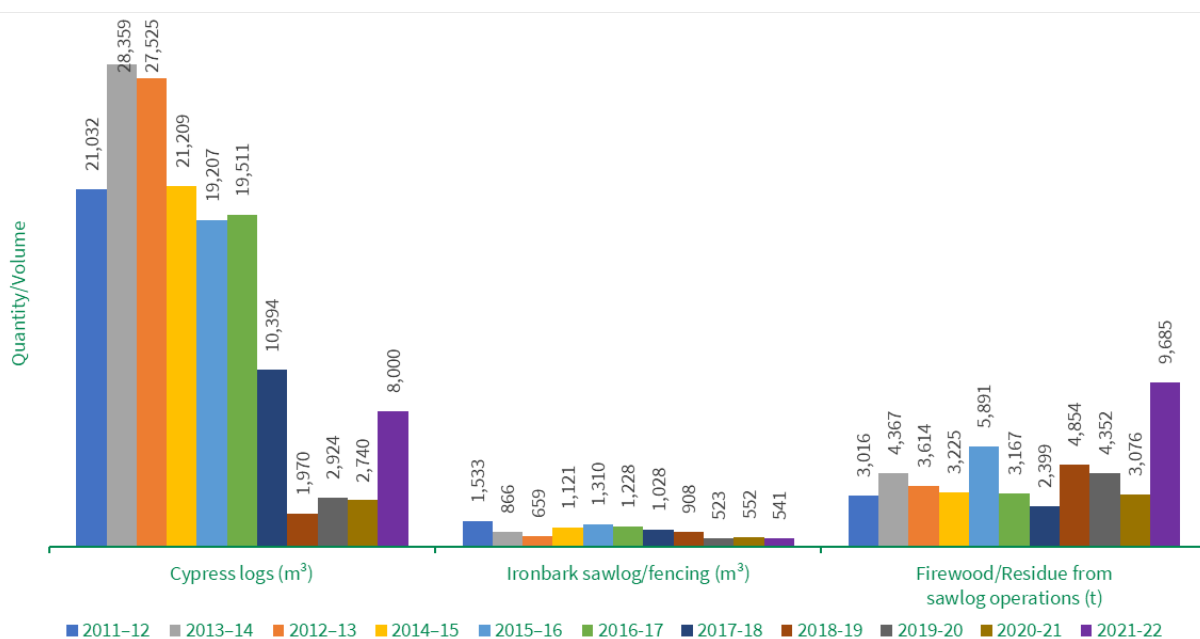
Figure 4 shows the volumes of cypress and ironbark sawlogs and fencing, and quantity of firewood taken from this region in 2021–22 compared with previous years.⁴⁶

In 2021–22, a total of 8,000 m³ of cypress logs were harvested in the region, representing 20% of the annual average permitted volume (41,000 m³). The notable decline in volumes of cypress logs after 2017–18 compared to previous years (see Figure 4) was mainly due to the closure of the Baradine sawmill in March 2018. The sawmill reopened under new owners in June 2021 having been refurbished.

A total of 541 m³ of ironbark sawlog and fencing timber were harvested, representing 26% of the specified annual limit (2,050 m³).

There was an increase in firewood and other harvest residues, taken in conjunction with cypress sawlog and integrated ironbark log operations, from 3,076 t in 2020–21 to 9,685 t in 2021–22. This is slightly above the maximum allocation of 9,100 t in a year however the IFOA allows for this provided amounts taken remain within the 10-year total allocation and associated average yearly allocation.⁴⁷

Figure 4 Volumes (m³) of cypress sawlogs and ironbark sawlogs and fencing and quantity (t) of firewood taken from the Brigalow–Nandewar region since the IFOA started



Source: Forestry Corporation

⁴⁶ Anomalies that appeared in the previous two NSW Forestry Snapshot Reports in the Figures 4, related to ironbark and firewood/residue for 2018–19 and 2019–20, have been corrected in the graph.

⁴⁷ Chapter 1 Clause 5(4)(b) of the IFOA for Brigalow–Nandewar identifies the maximum annual allocation permitted for firewood, and also a 10-year total allocation (starting 1/1/2016) and associated average yearly permitted allocation.

Table 5 Timber and forest products harvested from the Brigalow–Nandewar region in 2021–22

Product	Volume (m ³) or quantity (t)	Estimated net harvest area (ha)
Cypress log	8,000 m ³	905
Ironbark log	541 m ³	126
Timber products	nil	–
Firewood/residue (not including permits under the IFOA)	9,685 t	Taken in conjunction with cypress sawlog and integrated ironbark log operations
Firewood/permits issued (see IFOA cl. 82)	705 t (641 permits)	–
Didgeridoo	40 pieces	–
Broombush	179 t	–

Source: Forestry Corporation

South Western Cypress region

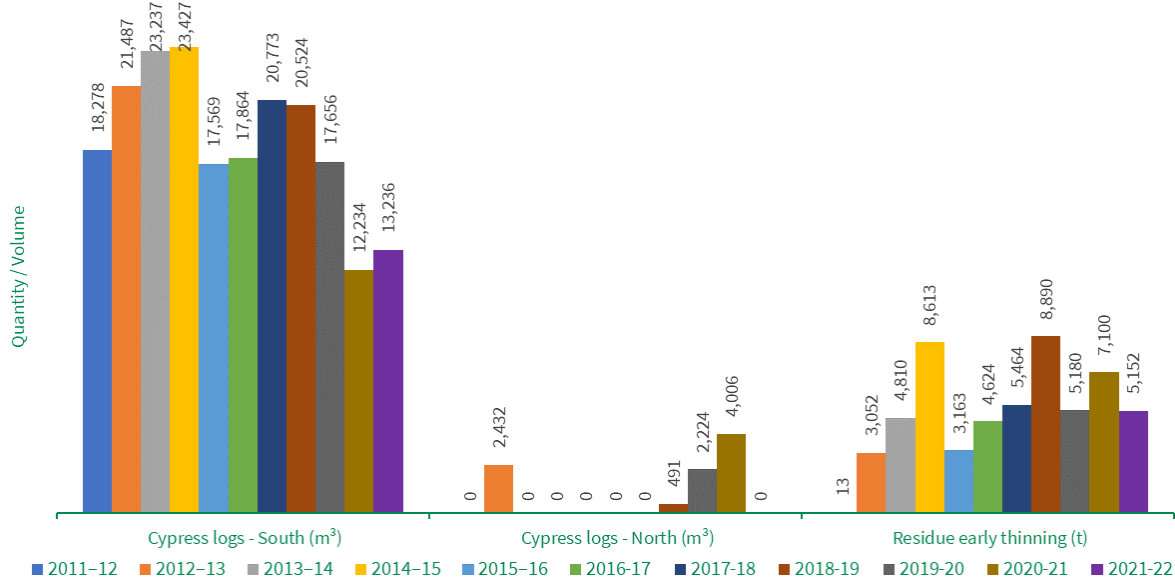
The South Western Cypress IFOA identifies average yearly allocations and specifies maximum annual limits for white cypress logs. The IFOA also specifies maximum annual limits for timber products other than logs and residue (such as craft wood and vine posts).

Figure 6 shows the volumes and quantities of timber, residue and other products taken from the South Western Cypress region in 2021–22 compared with previous years.

During 2021–22, a total of 13,236 m³ of cypress logs were harvested from south of the Mitchell Highway, representing 59% of the maximum permitted annual volume (22,390 m³). The allowable volume of cypress logs from this area is no more than 328,895 m³ for the 14.5-year period that started 1 July 2011. As of 30 June 2022, the total was 206,285 m³ which is 63% of the long-term total. No cypress logs were harvested north of the Mitchell Highway or on western lands leases areas.

A total of 5,152 t of residue timber from early thinning and sawlog operation harvest residues were produced. No timber products other than logs and residue were produced. The IFOA provides for harvesting of speciality products, although strict conditions in relation to the relevant species mean these products are not routinely harvested.

Figure 6 Volume (m³) of cypress sawlogs, timber products other than logs and residue and quantity (t) of residue timber from early thinning taken from the South Western Cypress region



Source: Forestry Corporation

Table 6 Timber and forest products harvested from the South Western Cypress region in 2021–22

Product	Volume (m ³) or quantity (t)	Estimated net harvest area (ha)
Cypress log – south of Mitchell Hwy	13,236 m ³	1,180
Cypress log – north of Mitchell Hwy	nil	–
Cypress log – WLL	nil	–
Residue	5,152 t	In conjunction with Cypress sawlog
Timber products – not logs or residue	nil	–
Didgeridoo	nil	–
Firewood permits issued (see IFOA cl. 82)	252 t (209 permits)	–

Source: Forestry Corporation

Sustainable harvesting – non-wood forest products

State forests are managed for multiple uses and provide a variety of non-timber products and services including access for apiary, grazing and quarrying. Forestry Corporation reports annually on trends in providing selected non-wood forest products and services from State forests in its *Sustainability Report* (FCNSW 2022b).

Native and softwood regeneration

Re-establishment of forests after harvesting is essential for maintaining productive capacity and a requirement under the Responsible Wood® Standard under which Forestry Corporation operates.

Native forests are naturally regenerated with a diverse range of flora, and Forestry Corporation monitors the regeneration of commercial species, which are those that can be harvested for timber. Softwood and native timber plantations are replanted by hand with commercial species.

Native forest regeneration

Native forests in NSW are harvested using silvicultural techniques that generally aim to optimise natural regeneration. Forestry Corporation monitors regeneration of native forests and uses different techniques depending on the forest conditions.

In 2021–22, a total of 1,055 ha of native forest were harvested using an integrated silvicultural prescription, with 6,363 ha using single tree selection and 1,238 ha an alternate coupe approach. Cypress release and thinning of 1,180 ha was also carried out and 1,355 ha of redgum harvested. In total 11,191 ha of native forest were harvested in this reporting period (FCNSW 2022b).

For coastal forests an assessment of survey plots during the reporting period found 85% were effectively stocked with commercial species of regenerated seedlings and trees retained after harvesting. This is higher than the regeneration threshold of 65% of assessed plots in any given harvest area for commercial species. Forestry Corporation uses a sampling methodology to assess regeneration success and is moving towards remote assessments using drones to augment census recording of regeneration success.

Information is available in Forestry Corporation's *Sustainability Report 2021–22* (FCNSW 2022b).

Plantations

Forestry Corporation reports on the area of native hardwood and softwood plantations harvested and replanted in its annual sustainability report.

In 2021–22 wet conditions enhanced seedling survival and growth, Forestry Corporation also continued to implement an accelerated replanting program with planting rates increased to restock fire-affected plantations (FCNSW 2022a).

Health and vitality of native forest ecosystems

Measuring the scale and impact of pest animals, weeds, disease and insect infestations in forests, and monitoring and mitigating fire impacts, helps inform the development of adequate management responses to these threats.

NSW State of the Environment reporting provides an overview of pest threats, monitoring and control strategies in NSW which is updated every three years.⁴⁸

Monitoring and control of pests and disease

Forestry Corporation

Forestry Corporation funds the DPI Forest Health Team to carry out annual surveys to find out the impacts of disease and pests on the health on the timber plantations it manages. Reports on health surveys detail the location, extent and severity of detected damaging pests, diseases, weeds and climatic factors with recommended corrective actions.

Forestry Corporation works with a range of partners and land managers to identify priority pests and weeds across tenures and carry out targeted control works at a coordinated landscape scale to maximise effectiveness. This includes working closely with LLS on a range of cross-tenure pest control programs and collaborating on regional strategic weed management plans.

In 2021–22, Forestry Corporation spent over \$1.3 million on pest animal and weed control in areas under its management (native forests and hardwood plantations).

Further details are available in Forestry Corporation's 2021–22 Annual Report (FCNSW 2022a) and Sustainability Report (FCNSW 2022b).

⁴⁸ www.soe.epa.nsw.gov.au

Department of Regional NSW – DPI and LLS

DPI Biosecurity provides forest health and biosecurity services to plantation and native forest managers on the detection, mapping and management of pests and diseases. LLS supports forest managers on public and private land to control and manage pest and weeds through integrated, collaborative control and management programs.

Key activities during the 2021–22 reporting period are outlined below.

Pest animals

Regional strategic pest animal management plans have been put in place for each of the eleven LLS regions and are relevant to all land tenures. The plans identify the priority established pest animals in each region and the general management approach for these species, to help guide more specific local management plans. The regional plans emphasise the shared management responsibility of public and private landholders as well as the important role of the general community in helping to prevent the establishment of new pest species. They are available on the [LLS website](#).⁴⁹

The plans cross-reference the NSW Invasive Species Plan 2018–2021⁵⁰ to help ensure a consistent approach to pest animal management across NSW. Statewide maps of the distribution and relative abundance of priority pest animals, originally published by DPI in 2017, were a key information source for the regional strategic pest animal management plans. These maps will be updated every five years, or more often for species that are still spreading rapidly, such as feral deer (updated 2020).⁵¹

During the reporting period the NSW Vertebrate Pest Research Unit⁵² continued research projects in collaboration with the Centre for Invasive Species Solutions and other partners. Improved solutions to manage the impacts of feral cats, feral deer, wild dogs/foxes, feral pigs and rabbits are being developed.

Following the 2019–20 bushfires, increased effort was directed towards the collaborative control of pest species such as deer and pigs in fire affected areas. This included extra investment and support at both the state and federal level.

Weeds

In 2021–22, the NSW Weed Biocontrol Taskforce, led by DPI's Weed Research Unit, did research to find suitable biological agents to combat ox-eye daisy, leaf cactus, mother-of-millions and blue heliotrope. The taskforce also mass reared and released agents to help in the management of gorse, Scotch broom, Hudson pear, Madeira vine and cat's claw creeper. All these weeds are in forest areas. Further weed biocontrol research continued on some aquatic weeds.

The eleven LLS regions each have a Regional Weeds Coordinator and Committee to support the delivery of the LLS Regional Strategic Weeds Management Plan. Regional weeds committees have members from a range of tenures and industries who have a duty to manage weeds, including private, commercial and government forestry. Each regional strategic weed management plan identifies forestry assets and biosecurity risks associated with forestry-related land uses in each region.

Local control authorities within each region, usually local councils, are responsible for operational inspections of land, compliance, control of certain high-risk weeds and engagement with owners and occupiers of land, including forestry lands. Local control authorities report on inspections through NSW DPI's Biosecurity Information System – Weeds (BIS).

In 2021–22 a total of 74,472 inspections were carried out across all land tenures, including land used for forestry. Records indicate that 195 inspections on State forests were conducted in 2021–22.

⁴⁹ www.lls.nsw.gov.au/biosecurity/pestplan

⁵⁰ www.dpi.nsw.gov.au/biosecurity/weeds/strategy/strategies/nsw-invasive-species-plan-2018-2021

⁵¹ www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/publications/distribution-maps-for-vertebrate-pests

⁵² www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/vertebrate-pest-research

Distribution of weeds in regional plans and maps of inspection locations are currently available to NSW Government agencies through BIS. In the future, the aim is for maps to be publicly available at a regional/broad scale on NSW WeedWise.

DPE and NPWS

Saving our Species management actions and strategies

The Saving our Species (SoS) program strategically identifies the most important actions for ensuring the survival of threatened species and ecological communities in the wild in NSW. In 2021–22 SoS implemented projects to reduce threats and monitor outcomes for 356 threatened species and 38 ecological communities.

SoS also includes specific strategies to address key threatening processes such as invasive pests and weed species, disease and climate change. These strategies include eradication and/or containment objectives where appropriate. SoS invests in targeted research to improve knowledge of threatened species and key threatening processes. During the reporting period, examples of SoS funded research projects included those to inform better management of feral cats and deer, exotic vines and scramblers, and projects to address priority knowledge gaps to inform improved management and conservation of threatened species.

On 1 July 2021, SoS secured an extra \$75 million to continue the program for the five years from 2021 to 2026. Further information can be found on the DPE website⁵³

The NPWS Threatened Species Framework

The NPWS Threatened Species Framework outlines a series of actions to meet a commitment of zero extinctions and to restore threatened species populations on national parks (DPIE 2021a). The 2030 target is to improve or stabilise the trajectory of all threatened species. Measures being implemented to protect threatened species on national parks include:

- declaration of important threatened species habitat as assets of intergenerational significance
- adding key threatened species habitat to the national park estate
- establishment of a network of feral predator-free areas to support the return of more than 25 locally extinct species
- delivery of the largest feral animal control program in national park history
- establishment of a dedicated ecological risk unit to ensure threatened species are considered in new fire plans
- rolling out an ecological health framework across national parks.

NPWS will report annually against the objectives of the framework. Further information is available on the [NPWS website](#)⁵⁴

Pest and weed monitoring and control on the national parks estate

In response to the 2019–20 bushfires NPWS started the largest feral animal control program it has ever attempted with an annual commitment to 1,000 hours of aerial shooting and 30,000 km of aerial baiting. In 2021–22 around 1,400 hours of aerial shooting and 28,039 km of aerial baiting were completed. Across all feral animal control programs over 32,400 animals were removed (DPE 2022d).

NPWS has a commitment to deliver 40,000 hectares of weed control each year. In 2021–22, NPWS completed 50,986 hectares of weed control.

⁵³ www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/saving-our-species-program

⁵⁴ www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/zero-extinctions-threatened-species-framework

Soil and water quality

Protecting the soil and water in forests ensures they can continue to provide important ecosystem services such as clean water, biodiversity and the prevention of soil erosion, and can be used sustainably for multiple purposes. Soil and water in forests may be damaged or degraded by activities such as road construction and maintenance, grazing, wood harvesting, fires and recreation. Drought, increasing temperatures, severe storms and bushfires can also harm these resources.

Ongoing strategies to mitigate these risks in native forests include conditions in the IFOAs, NSW Regional Forest Agreements and the private native forestry Codes of Practice for the protection of soil and water during forestry operations. Conditions in the Plantation and Reafforestation Act and Code mitigate these risks in plantations.

Monitoring soil and water

Forestry Corporation has been monitoring stream flow and water quality in native forests and softwood plantations since the 1960s. Early aspects of the program were to check if forestry activities had an identifiable impact on water quality and to quantify any impact. More recently a macroinvertebrate sampling program started and is being assessed for use for catchment scale monitoring. Results from the program have shown that water from streams in native forests is of a higher quality than from pine plantations. They have also shown that Forestry Corporation's management practices were successful at limiting impacts on turbidity and suspended sediment from forestry activities (FCNSW 2021b).

As part of the Forestry Monitoring and Improvement Program/Coastal IFOA suite of projects, the NRC oversees monitoring for issues associated with water quality in State forests. The FMIP has also established baselines for soil health and stability.

Following a literature and data review in 2020 work was commissioned by the Natural Resources Commission (NRC) to deliver baselines, drivers and trends for water quality and quantity in NSW Regional Forest Agreements regions. The report on water quality and quantity baselines was delivered in September 2021 (Guo D et al, 2021), and an updated report covering state-wide baselines and trends was delivered in June 2022 (Guo D et al, 2022).

Under the FMIP, the NRC also commissioned a consortium to deliver baselines, drivers and trends for soil stability and health in forests across the NSW Regional Forest Agreements areas, with a final report delivered in October 2021 (DPIE 2021b).

Details and updates on progress for water and soils projects can be found on the [NRC website](#).⁵⁵

Drought, temperature, fire and flood

The NSW State of the Environment reporting (EPA 2021) details how the NSW climate is changing due to global warming. Changes include increased variability in rainfall and temperature and some increase in the incidence of extreme weather events, changes expected to become more severe over time. Future effects of climate change were predicted to be more severe droughts and heatwaves; reduced water availability; damaging impacts on species, ecosystems and agriculture; and increased fire risk.

The *NSW State of the Environment 2021* also reported that fire weather conditions have become more severe and the fire season longer in some parts of NSW and projected that the trends would continue. The trend towards longer fire seasons and the increased incidence of fire-induced storms are supported in the findings of the NSW Bushfire Inquiry (DPC 2020).

The 2019–20 bushfires and subsequent severe storm and rain events have caused significant widespread disturbance to landscapes and infrastructure in forestry regions over the past three years particularly in the Coastal IFOA, impacting soil and water quality.

⁵⁵ www.nrc.nsw.gov.au/fmip-baselines-soil-and-water; www.nrc.nsw.gov.au/publications-current

During 2021–22, the EPA and Forestry Corporation continued to discuss risk mitigation measures for timber harvesting operations in fire-affected areas. Further information can be found on the EPA website⁵⁶ and Forestry Corporation website.⁵⁷

Monitoring and assessment of the impacts of the bushfire season and flooding on NSW forests to identify risks to soil and water quality, and biodiversity, continued during 2021–22, carried out by Forestry Corporation, DPI, EPA, DPE, NPWS, and the NRC and its collaborating institutions.

Under the Coastal IFOA monitoring program, a report from NRC commissioned research, on risks to achieving Coastal IFOA objectives and outcomes from changing fire regimes, concluded there is potential for cumulative impacts in harvested landscapes that are subject to fire. Further, larger areas of coastal NSW will be subject to more frequent and intense fires under predicted climate change, with increasing risks to forest health and biodiversity in eastern NSW forests (UOW 2021). The project report can be found on the [NRC website](#).⁵⁸

Contribution of native forests to global geochemical cycles

Sustainably managed forests play an important role in reducing greenhouse gases by sequestering carbon through forest growth and carbon storage in hardwood products, such as flooring and furniture. SOFR 2018 provides estimates for carbon storage up to 2016 (ABARES 2018).

A product substitution impact is also achieved by using locally grown, certified wood and timber products instead of products sourced from less-regulated markets or other popular but more carbon-intensive alternatives, such as concrete and steel.

A key component of DPI's forest carbon research program is the quantification of the carbon footprint of production forests and wood products in NSW, including the application of life cycle assessments. This is an ongoing area of research, with information on current projects and recent publications available on the [DPI website](#).⁵⁹

Carbon balance of NSW forests

Maintaining forest carbon stocks is an important indicator of sustainable forest management.

In its Sustainability Report, Forestry Corporation reports annually on the carbon balance including estimates of carbon stocks and flows in State forests, and the substitution effect of using renewable timber products rather than more carbon intensive alternatives (FCNSW 2022b).

Through the NSW Forest Management Improvement Program, the NRC has commissioned work to quantify the carbon balance of NSW forests and how this may change under different policy, management and climate scenarios. In February 2022, researchers delivered a comprehensive spatial and temporal analysis of NSW forests from 1990 to 2020, providing a better understanding of trends in forest carbon in NSW and establishing a baseline for future analysis. The research found that during the assessment period (1990–2021) NSW forests lost an estimated total 164 million tonnes of carbon, with much of the loss driven by the 2019–20 fire season. However, the results indicate net gains in forest carbon from the mid-2000s to 2019, then a large loss in 2020 due to the bushfire events (NRC 2022g).

Information and updates on this can be found on the NRC website.⁶⁰

⁵⁶ www.epa.nsw.gov.au/your-environment/native-forestry/bushfire-affected-forestry-operations

⁵⁷ www.forestrycorporation.com.au/operations/about-our-harvesting-operations/fire-affected-native-forests

⁵⁸ <https://www.nrc.nsw.gov.au/publications-current> (Risks to Coastal IFOA posed by fires)

⁵⁹ www.dpi.nsw.gov.au/forestry/science/forest-carbon

⁶⁰ www.nrc.nsw.gov.au/fmip/carbon-cc1

Projecting net carbon emissions from NSW forests

Carbon sequestration and emissions from NSW forests are addressed within the state's greenhouse gas inventory and included within DPE's annually updated projections of NSW emissions out to 2050 as part of the land use, land use change and forestry sector. Net sequestration from forests is inventoried and projected to offset emissions from other sectors within the state's accounts.

Information on NSW emission projections can be found on the DPE website⁶¹ with historical emissions and projections accessible via the interactive NSW Net Zero Emissions Dashboard.⁶²

Bushfires and regrowth

The Australian Government Department of Industry, Science, Energy and Resources, in its report *Estimating greenhouse gas emissions from bushfires in Australia's temperate forests: focus on 2019–20* (DISER 2020), proposed that the post-fire recovery of forests generates a large carbon sink as, in general, Australian eucalypt forests recover quickly. Burnt areas of forest, generally understorey vegetation, grasses and canopy (leaves/branches), rapidly build up carbon again following fire (within 10–15 years).

Forestry Corporation monitors regeneration of native forests post-harvesting, and during 2021–22 the replanting of all fire-affected plantations continued at an accelerated rate.

There will be ongoing monitoring by NSW Government agencies to see if the ability of native forests to recover after fire is impacted by more frequent and more intense fires, such as those experienced in 2019–20, and any impact on carbon uptake by forest areas.

NSW Net Zero Plan

NSW is committed to addressing climate change through a goal of net zero carbon emissions by 2050. The first stage of the Net Zero Plan⁶³ includes a target of 50% emissions reduction by 2030 compared to 2005 levels.

The plan also commits to improve and expand the NSW national park footprint to protect land that is currently a carbon sink and create opportunities for extra carbon sequestration through land restoration initiatives.

Forestry Corporation's climate change strategy, under development during the reporting period, outlines measures to build resilience in State forests and reduce emissions to contribute towards the NSW net zero goal.

⁶¹ www.environment.nsw.gov.au/research-and-publications/our-science-and-research/our-research/energy-and-climate-change/net-zero-emissions-modelling-and-research

⁶² www.seed.nsw.gov.au/net-zero-emissions-dashboard

⁶³ www.environment.nsw.gov.au/topics/climate-change/net-zero-plan

Long-term social and economic benefits of native forests

Forests are managed to deliver environmental, social, economic and heritage value to communities in NSW.

Forest products and services

Australian forest and wood products statistics produced by Australian Bureau of Agricultural and Resource Economics and Sciences indicate that, for 2020–21, the NSW total log harvest was 6.45 million m³ with 399,800 m³ of native hardwood, 297,790 m³ of plantation hardwood and 5.75 million m³ from softwood plantations, and a total value of over \$387.5 million – [ABARES website](#).⁶⁴ ABARES provides comprehensive information about NSW contributions to the national log harvest as well as the value of other forest products through its State of the Forest reports. The next report will be published in 2023.

Details of all timber harvested by Forestry Corporation in 2021–22, including under the Coastal IFOA and Western IFOAs, are published annually in Forestry Corporation’s Sustainability Report.

State forests also provide for a range of products and services that benefit local communities and promote economic diversification including firewood, honey, oils and cattle grazing. Forestry Corporation’s *Sustainability Report 2021–22* (FCNSW 2022b) includes information about many of the types and amounts of other products and services generated during the reporting period and comparisons with prior years.

A review of the *Forestry Regulation 2012*, which supports the implementation of the Forestry Act, was carried out during the reporting period. The review included changes to make transitional arrangements for beekeeping and grazing in State forests, set to expire in November 2022, permanent. The updated *Forestry Regulation 2022* started on 1 September 2022.⁶⁵

Honey is a major non-wood forest product. Honeybees help to pollinate a wide variety of crops and the loss of hives can jeopardise future local horticultural crops. The number of commercial bee sites in the national parks estate in 2021–22 increased to 1,997. The gazettal of the new Gardens of Stone State Conservation Area contributed to this increase, which resulted in a land tenure change of existing bee sites from State forests to NPWS. State forests continue to host the majority of apiary sites on public land, with just under 5,000 bee sites occupied on State forests during 2021–22.

The BPASS portal, managed by DPI, continued to grow in popularity during 2021–22 with up to 90% of beekeepers using the system by February 2022. An NSW Government-funded initiative, this online tool allows beekeepers in areas managed by NSW National Parks and Wildlife Service, Forestry Corporation and Local Land Services to apply for, and manage, their public apiary site permits and licences in one place. In response to its growing popularity, DPI invested a further \$50,000 to enhance BPASS, including automating refunds, improving payment receipts and upgrades to mapping capability. Information about BPASS can be found on the [DPI website](#)⁶⁶

Recreation and tourism

Recreation and tourism activities in native forests have a high social value for the NSW community, and forests are managed to accommodate these activities. A total of 5.48 million hectares of forested land is available for recreation and tourism in the NSW national parks system (lands reserved under the NPW Act). Two million hectares of the State forest estate are also available for recreation and tourism.⁶⁷

⁶⁴ www.agriculture.gov.au/abares/research-topics/forests/forest-economics

⁶⁵ www.dpi.nsw.gov.au/forestry/policy/projects-and-programs/2022-review-of-forestry-regulation

⁶⁶ www.dpi.nsw.gov.au/animals-and-livestock/bees/beekeeping-on-public-land/bpass

⁶⁷ Figure drawn from 2018 Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) data.

Both NSW national parks and State forests play a key role in the visitor economy. With nature-based tourism a high growth tourism sector, its contribution to the NSW economy is significant.

The 2022 park visitor survey estimated a strong rebound in visits to NSW national parks with growth of 5.8% to more than 53 million visits from the levels estimated in 2020. This growth happened despite 2022 being one of the wettest years on record leading to widespread and regular flooding. Over 72% of NPWS parks and reserves throughout the state fell within a declared disaster Local Government Area (LGA) in 2022. This required many closures to make repairs and maintain safety for visitors.

Growth in visits within this context highlights the value to the public of nature-based experiences and the role of national parks in generating travel and tourism especially to regional locations. Further details about the park visitor survey, which is carried out every two years, are available on the [DPE website](#)⁶⁸.

Forestry Corporation provides public access across its estate and facilities for a wide range of activities for community benefit. Many activities, such as mountain-bike riding, horse riding, camping and four-wheel driving, can happen in State forests free of charge. Organised groups, clubs (including mountain-biking, rock climbing, archery and shooting clubs), event organisers and commercial tourism operators can use State forests or set up recreational facilities within forests under a permit system.

Further information on recreation and tourism activities in State forests is available on Forestry Corporation's website.

Managing recreational assets

National Parks and Wildlife Service

Visitor infrastructure provides access to NSW national parks to support community wellbeing and the enjoyment of nature. It plays an important role in strengthening the connection between conservation and visitation.

In 2021–22, around \$94 million was invested in critical visitor infrastructure in NSW national parks state-wide, including walking trails, mountain bike trails and lookouts. This continuing investment in infrastructure boosted economic recovery particularly in regional areas where the tourism sector and local employment have been significantly impacted by drought, bushfire, the pandemic and floods. It is estimated that NSW national parks generate \$18 billion in economic activity each year for NSW.

Details of visitor infrastructure projects progressing are provided on the DPE website.⁶⁹

Forestry Corporation

The management of tourism and recreational facilities is part of Forestry Corporation's commitment to managing forests for these values. The extensive road network in State forests — over 60,000 km of roads — provides opportunities for recreational pursuits and a large number of designated visitor sites have been developed and enhanced over recent years, several winning state and national tourism awards.

In 2021–22, Forestry Corporation invested further in its program of bushfire and flood reparation of forest access and visitor areas. This included starting the largest-ever infrastructure repair program, with a major three-year program of works to restore roads and bridges impacted by flooding, including key community access roads, as well as works to enhance free-to-use picnic and camping areas, lookouts and walking trails.

Forestry Corporation also continued to progress tourism investment projects during this reporting period, supported by grant funding through the Bushfire Local Economic Recovery Program co-funded by the Australian and NSW Governments, and partnering with other organisations. Projects included:

⁶⁸ www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/park-visitor-survey

⁶⁹ www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/park-management/community-engagement/walking-tracks-and-trails-in-national-parks

- nature-based tourism enhancement in Bago State Forest, Snowy Valleys — to upgrade and enhance existing visitor areas in Bago State Forest and remediate and design for future preservation of sensitive Montane Peatlands (partner: the Mulloon Institute); and to re-establish the iconic Sugar Pine Walk destroyed during the 2019–20 bushfires (partner: Sculpture by the Sea).
- development of Guulabaa – Place of Koala, in Cowarra State Forest — to establish a new tourism precinct and wild koala breeding facility (partner: Koala Conservation Australia); WildNets forest adventures (partner: WildNets); the Big Koala sculpture (partner: Hello Koalas Sculpture Trail); and Bunyah café and gallery (partner: Bunyah Local Aboriginal Land Council).

The Forestry Corporation website has further information on visitor and recreational projects.⁷⁰

Employment in the forestry sector

Employment in the forestry sector is a direct measure of how forests contribute to the NSW economy. Forestry jobs range across wood product, pulp and paper manufacturing, harvesting, support services, tourism, conservation and reserve management, with higher numbers employed in wood, pulp and paper product manufacturing.

In 2021–22, employment in forestry and related industries in NSW increased by 5% year-on-year to 18,800. Employment levels in forestry and logging were down slightly year-on-year. NSW accounted for 29% of Australian employment in the sector, which fell by 1% to 63,600 in 2021–22 (DPI 2022)⁷¹

Forestry Corporation of NSW makes up a small part of the forestry industry and publishes information about its direct employees in its annual report. A lot of forestry sector employment is in private businesses including timber processors and contractors engaged in forest management, planting, timber harvesting and haulage.

The NSW Government has employees in policy and operational roles to support and regulate the forestry industry however they are not categorised as forest sector roles. Management of forested land outside of State forests is also not classified as forest sector employment by the NSW Government.

Natural and cultural heritage values

An important component of ecologically sustainable forest management is the identification and protection of natural and cultural heritage values and sites for the benefits they provide to both non-Aboriginal and Aboriginal communities.

Aboriginal connections to forest

Aboriginal people's participation in forest management helps ensure natural and cultural values of importance to them are protected, maintained and enhanced in NSW forests. As of 2016, over 56,000 Indigenous cultural places and heritage sites were registered across 37,548 ha of NSW forests (ABARES 2018).

There is increasing recognition of the importance of setting up tenure and management arrangements that let Aboriginal people maintain cultural, spiritual and social connections to land, including forest areas and the landscapes, flora and fauna of significance to local communities.

The State of the Forest Report 2018 identified four different types of Indigenous land ownership and management and provided data on the area of forest in these categories. Further work in 2020 refined the four categories and created a new dataset to allow separate reporting on the relationships between Indigenous peoples and land or forest (ABARES 2020; Jacobsen R et al 2020).⁷²

⁷⁰ www.forestrycorporation.com.au/visit/latest-visitor-updates

⁷¹ www.dpi.nsw.gov.au/about-us/publications/pdi/2022/forestry — employment in conservation, tourism and reserve management not included in these figures.

⁷² data.gov.au/data/dataset/australia-s-indigenous-forest-estate-2020

Indigenous ownership and management categories across all tenures

Indigenous owned: freehold land or forest that is owned by Indigenous communities, or land and forest for which ownership is vested through other mechanisms

Indigenous managed: land or forest that is managed by Indigenous communities (e.g. Crown reserves and leases)

Indigenous co-managed: land or forest that has formal, legally binding agreements in place to include input from Indigenous people in the process of developing and implementing a management plan (e.g. joint management arrangements, nature conservation reserve memorandums of understanding)

Other special rights: land or forest subject to native title determinations, registered Indigenous Land Use Agreements and legislated special cultural use provisions. These may provide for the right to access areas of cultural significance or the use of areas for cultural purposes or provide a legal requirement for consultation with the local Indigenous community before any major development activities take place

Source: ABARES 2020

National Parks and Wildlife Service

Aboriginal joint management (co-management)

Aboriginal joint management is a partnership between NPWS and Aboriginal communities for the management of a park or reserve or multiple parks and reserves. The program works with Aboriginal people to foster opportunities and partnerships that help protect their culture and heritage and enable them to manage parks and access traditional lands. Aboriginal joint management is one way in which NPWS embraces Aboriginal culture from ancient to modern and strengthens the role of Aboriginal communities in decision-making.

NPWS has 33 agreements with Aboriginal communities to jointly manage 149 parks and reserves covering almost a third of the national parks estate. Each year, the agency supports and funds a meeting of the NSW Aboriginal Joint Management Custodians (Aboriginal representatives of these agreements). The meeting and follow-up working groups are an opportunity for these representatives to have input into statewide NPWS policy issues.

Training

In 2021–22, NPWS arranged 5 training sessions attended by 28 Aboriginal board and committee members/community members. Training topics included:

- Aboriginal site identification
- use of the Aboriginal heritage information management system (AHIMS) to record Aboriginal cultural heritage sites
- rock art conservation and monitoring
- cultural fire management
- flying safely in the wire and obstruction environment
- introduction to firearms
- forklift operation.

Aboriginal park partnerships funding program

Each year NPWS offers a special funding program for Aboriginal park partnership projects. This funding is available to Aboriginal community groups partnering with NPWS. In 2021–22, \$231,000 in grants supported activities conducted across 20 parks and reserves.

Cultural events held on NPWS parks and reserves were attended by over 120 Aboriginal people. These events included:

- preservation and protection of cultural sites
- women's and men's culture camps
- cultural interpretation signage
- landscape design for Willandra Lakes community research and training centre
- return of recorded cultural information to the Githabul elders.
- development of a yarning circle and cultural tours
- identification and preservation of archived artifact collection.

Twelve Aboriginal businesses were contracted for \$95,750 to run workshops and general on-ground works including construction, restoration and post fire weed control.

Traditional owner led post fire recovery projects

During 2021–22, NPWS continued to contribute to project implementation for the Commonwealth regional bushfire recovery funding. Traditional owner led projects, a component of this recovery investment, were progressed in consultation with Aboriginal organisations in each of the bushfire affected regions of NSW — Alpine, Blue Mountains, South Coast, and North Coast.

Projects to be implemented over the next six months include Aboriginal communities doing cultural fire management, weed and pest animal control, threatened species protection, cultural heritage surveys, monitoring and protection, and completing training and capacity building in all these areas.

Forestry Corporation

The Aboriginal Partnership Liaison Team in Forestry Corporation's Hardwood Forests Division works with Aboriginal communities to develop partnership arrangements and manage key sites.

As at June 2022, these areas included:

- 343,241 ha of State forests with Indigenous Land Use Agreements
- six gazetted Aboriginal places
- 5,192 Aboriginal heritage sites
- 1,688 ha managed for Aboriginal cultural heritage.

Forestry Corporation continued to provide access and co-management arrangements with Aboriginal communities. As well as arrangements through Indigenous Land Use Agreements there are seven agreements with communities across the state to manage areas of State forest for camping, teaching and practising culture.

Forty-seven Aboriginal groups were regularly contracted to Forestry Corporation for archaeological site surveys as part of the planning process for harvesting and roading operations. Six Aboriginal groups hold seed and plant collection permits for State forests.

Forestry Corporation also worked with Aboriginal communities to provide fire training and carry out cultural burning in State forests.

Further information can be found in Forestry Corporation's annual sustainability report and on the website.⁷³

⁷³ www.forestrycorporation.com.au/operations/aboriginal-partnerships

Local Land Services

Local Land Services' farm forestry extension services programs help to support Aboriginal community engagement in farm forestry across NSW empowering them to realise the cultural, economic, and environmental benefits of the Aboriginal owned, managed or co-managed estate.

To date, LLS has worked with 14 Local Aboriginal Land Councils to develop private native forestry plans in NSW, covering 4,161 hectares. To support these local Aboriginal land councils, their forest managers, and other councils who may be interested in farm forestry, Aboriginal forest managers are encouraged to attend the broad range of farm forestry extension activities including field days, webinars and TAFE courses. Extra courses have been offered exclusively to local Aboriginal land councils based on the interests of Aboriginal forest managers. These have included courses such as four-wheel driving, remote area first aid, chainsaw, chemical certification, and onsite specialist forest management assessment and training.

Natural Resources Commission

Under the Forestry Management and Improvement Program, the NSW NRC, commissioned three Aboriginal-led case studies to explore cultural values in northern and southern NSW forests before and after the 2019-20 bushfires. Work on these continued during 2021–22 with each case study facilitated by Firesticks Alliance Indigenous Corporation and guided by local working groups to ensure approaches are tailored to regions and involve relevant land management agencies, experts and knowledge holders.⁷⁴ Firesticks Alliance Indigenous Corporation will synthesise case study findings, and publish on the NRC website.

Protection of non-Aboriginal cultural values

Forests are also managed to protect and maintain non-Indigenous cultural values. These include sites of historic and aesthetic importance and areas with cultural or social significance to certain community groups. These sites may retain remnants of historic buildings, infrastructure or equipment that show connections to the past, or be valued for their beauty and the opportunities for recreational activities. SOFR 2018 has the most recently compiled data on the area of forest in NSW that have non-Indigenous heritage sites (ABARES 2018).

National Parks and Wildlife Service

Historic heritage overview

NPWS is responsible for the management of a wide variety of historic heritage sites across the national parks estate. Many of these represent one or more of the six 'Key Stories' that are communicated through the heritage items located in national parks. These key stories are:

- Creating and Experiencing National Parks – examples include national park infrastructure from various periods and reflecting different approaches, such as visitor centres, signage, seating, shelters and chalets
- Aboriginal Country, Shared History – examples include Aboriginal graves, missions and reserves, camping areas, Aboriginal resistance sites, massacre sites and whaling stations
- Arriving and settling – examples include landing sites, stone cairns, roads and tracks, huts, homesteads and farms, quarantine stations, migrant camps and construction towns
- Pastoral Lives – examples include shepherds' huts, homesteads, detached kitchens or cook houses, meat houses, sheep washes, woolsheds, river wharfs, stock routes and airstrips
- Defending and Protecting NSW – examples include lighthouses and lighthouse keepers' living quarters, gun emplacements, radar stations, fortifications and military camps

⁷⁴ <http://www.nrc.nsw.gov.au/fmip/aboriginal-ab1>

- Making a Living from Nature – examples include sites of work camps, logging trails, sawmills, timber tramways, mines, engine houses, tunnels, water wheels and hydro-electric schemes.

Historic heritage sites managed by NPWS that reflect these Key Stories at June 2022 include:

- one World Heritage site
- three National Heritage List sites
- ten Nationally significant sites not on the National Heritage List
- 55 State Heritage Register sites
- 56 State significant sites not on the State Heritage Register
- over 300 locally significant sites.

These sites, which include both forestry and non-forestry areas, represent nearly 3,500 individual items of heritage significance.

Historic heritage investment

Each year NPWS offers a special funding program to assist with the conservation, management and presentation of heritage sites and collections. In 2021–22, funding from this program was provided to a total of 17 heritage items and collections on national parks estate, which allowed a variety of important conservation planning activities and works to be successfully completed.

Historic heritage post-fire recovery

Some heritage structures were damaged or destroyed during the 2019–20 bushfires and subsequent flood events that affected significant areas of the national parks estate covered by the FAs. During 2021–22, following best practice International Council on Monuments and Sites heritage guidelines, NPWS completed the assessment process for each site to determine the appropriate post-fire recovery actions and started work where reconstruction was recommended (e.g. Kiandra Precinct). Works have also started on the replacement of destroyed timber log bridges with vehicle loading bridges constructed from non-flammable material.

Ensuring public participation, provision of information, accountability and transparency in forestry operations

Public participation and reporting are important elements of ecologically sustainable forest management and are mechanisms to include the community, and promote greater public confidence, in the management of NSW forests. The various regulatory and policy instruments relevant to forestry management in NSW include requirements for public consultation, participation and involvement. A comprehensive list of public consultation requirements and mechanisms is provided in the *Overview of the New South Wales Forest Management Framework V1.1* (DPI 2021a).

Agencies and organisations involved in forestry management have also developed approaches to public and community involvement and consultation, and provision of information.

Forestry Corporation has community partnerships and engages with local communities around forest management and forestry operations. A range of information is made publicly available through its website including Forestry Corporation forest management plans which provide a summary of the forest management system and commitment to ecologically sustainable forest management.

A [Plan Portal](#) gives access to native forest harvesting and roading operational plans for coastal NSW, as well as hardwood plantation plans, showing active and planned operations on an interactive map. The portal includes up-to-date operations registers and access to operational plans, maps and other documents for each approved operational area under the Coastal IFOA. Harvest plans for the Western IFOA regions are available from Forestry Corporation on request.

The EPA engages with community and industry around forestry policy and regulation. A range of information is made publicly available through its [website](#), including IFOAs and supporting maps and datasets, investigation updates, compliance information, reports, research and updates to regulatory instruments. The EPA has regular meetings with key stakeholders to provide information on the

regulation of native forestry in NSW. The EPA also provides community input into regulatory reforms or improvements to IFOAs, via informal and formal consultation processes.

The NPWS engages with community through public consultation, digital engagement, local meetings and through representative groups, providing opportunities for community input into various aspects of management, policy and issues related to the national parks estate.

All NSW Government agencies involved in forestry management, regulation, compliance and research have comprehensive sections on their websites providing a range of information, data, registers, publications, and links to relevant legislation.

Regular meetings, reviews and reports are required under various pieces of NSW and Australian government legislation, and also under the NSW RFAs and IFOAs. A key focus of these activities is performance against ESFM principles and compliance requirements. The outcomes of meetings and reviews are generally made public to ensure transparency and to inform all stakeholders of their findings, recommendations and future actions. An example under the extended RFAs is the requirement for an annual meeting between relevant NSW Government and Australian Government agencies to monitor activities and discuss issues. Details of reviews and annual meetings can be found on the Australian Government Department of Agriculture, Fisheries and Forestry website⁷⁵

The NRC hosts community forums and webinars where the public can hear insights from researchers on their monitoring programs and ask questions. It also has a citizen science strategy to harness the power of the citizen science community to inform ecologically sustainable forest management.

The NRC reports annually on progress and provides access to information and data through the Forest Management and Improvement Program and associated monitoring programs for the Coastal IFOA and private native forestry, and the RFA monitoring plan. Relevant information, including annual progress reports, is made available on the NRC website. The Commission, with support from independent experts from the NSW Forest Monitoring Steering Committee, hosted an interactive group session with stakeholders at the 2021 Institute of Foresters Australia National Conference, held in October 2021. Program partners presented a range of work, including emerging findings from the Coastal IFOA monitoring program to date, to delegates from the government, industry, Aboriginal groups and the community.

Following the release of the updated private native forestry Codes in May 2022, the NRC and LLS started work to develop a private native forestry monitoring, evaluation and reporting framework, independently overseen by the NSW Forest Monitoring Steering Committee.

Forestry is included in broader reporting through the *NSW State of the Environment* report (three-yearly), the Australian Government *State of the Environment* report (five-yearly) and the Australian Government *State of the Forests* report (five-yearly). Other NSW legislation requires both Forestry Corporation and relevant NSW Government agencies to produce and table annual reports on their operations every year.

At times externally driven processes (formal and informal) lead to public participation and feedback and bring accountability and transparency to native forestry operations. Examples include NSW parliamentary committees and inquiries, performance audits by the NSW Audit Office, and special inquiries like the NSW Bushfire Inquiry in 2020.⁷⁶

Providing incentives for voluntary compliance, capacity building and adoption of best practice standards

Through the NSW Forest Management Framework (DPI 2021a), a combination of legislation, regulation, standards and codes are in place to deliver ecologically sustainable forest management.

⁷⁵ www.agriculture.gov.au/agriculture-land/forestry/policies/rfa/regions/nsw (DAFF was previously the Department of Agriculture, Water and the Environment)

⁷⁶ www.nsw.gov.au/nsw-government/projects-and-initiatives/nsw-bushfire-inquiry

These mechanisms allow for shared administration and management of the native forest estate, public and private, recognising the interests of private landholders and the customary and traditional rights of Aboriginal people.

The framework includes continuous review, improvement and implementation of instruments such as the IFOAs and private native forestry Codes of Practice and best practice standards and mechanisms for voluntary compliance, compliance monitoring and enforcement.

Applying best-available knowledge and adaptive management processes for best practice forest management

The NRC continued to oversee a comprehensive suite of research and monitoring through the Forest Management and Improvement Program and associated programs during 2021–22.⁷⁷

As well as the NRC's monitoring and research programs, NSW Government agencies and organisations involved with ecologically sustainable forest management of NSW forests also have dedicated research and monitoring programs. These programs support efforts to ensure continuous improvement and adaptive management practices based on current science and best-available knowledge (see sections above in this report for examples).

During this reporting period research, monitoring and reporting efforts of the NRC and Government agencies focused on identifying knowledge gaps, analysing trends and better understanding the impacts of the 2019–20 bushfires and subsequent storm events on NSW forest regions. Information from these activities continued to inform adaptive management practices and the application of the precautionary principle to NSW forestry activities, in particular in the Coastal IFOA regions.

To support adaptive management in private forestry, as well as a requirement for the development of the private native forestry monitoring, evaluation and reporting framework, the updated private native forestry codes commit to annual checks of the private native forestry evidence base, and a 5-year review to determine if a formal review of the private native forestry codes is warranted. The outcome of the annual checks will be released on the [NRC website](#).

Applying the precautionary principle in preventing environmental harm

The Forestry Act and Part 5B of the Local Land Services Act both embed the principles of ecologically sustainable forest management, including using the precautionary principle, into the objectives of these Acts. In making or amending IFOAs or the private native forestry Codes of Practice, the relevant agencies and ministers are required to consider these principles.

In this reporting period, the EPA and Forestry Corporation of NSW continued to discuss how to manage operations to reduce the environmental impacts resulting from the 2019–20 bushfires and subsequent extreme weather events and flooding. This included considering the precautionary principle in assessing potential risks associated with operations in affected areas.

The inclusion in the new private native forestry Codes for the relevant minister to request harvest operations be reviewed where an unforeseen event has caused, or has the potential risk of causing, serious or irreversible environmental damage on private land at a bioregional scale also speaks to the precautionary principle in forest management.

Acting according to the precautionary principle ensures forestry activities include practical measures to protect wildlife, soil and water, and the environment in general during operations. In extreme circumstances — drought, bushfire, extreme weather and floods — applying special operating conditions and setting up extra environmental protection measures to forestry operations can address or mitigate potentially harmful impacts.

⁷⁷ www.nrc.nsw.gov.au/fmip/index ; www.nrc.nsw.gov.au/publications-current

Section 2: Compliance



Compliance with IFOAs and other requirements

IFOAs provide the regulatory and operational framework for the conduct of native forestry operations in State forests and on Crown-timber land. An IFOA enables an integrated environmental regulatory regime for native forest harvesting operations in NSW forest regions.

At 30 June 2022 there was one IFOA for the coastal region, the Coastal IFOA, and three covering the Brigalow–Nandewar, South Western Cypress and Riverina Red Gum regions, the Western IFOAs, (see Appendix B).

IFOAs authorise the carrying out of forestry operations in accordance with principles of ecologically sustainable forest management. Each IFOA integrates the regulatory regimes for environmental planning and assessment, the protection of the environment, and threatened species conservation.

They set out conditions for forestry operations covered by the approval, including conditions that may be imposed by a biodiversity conservation licence under the *Biodiversity Conservation Act 2016*, a licence under *Part 7A of the Fisheries Management Act 1994* or an environment protection licence under the *Protection of the Environment Operations Act 1997*. Conditions can include the allowable timber yields and environmental protection settings for native plants, animals, habitat, soils, and water.

The responsibilities for administration, regulation, compliance and enforcement of private native forestry are outlined in Part 5B of the *Local Land Services Act 2013*. A person carrying out forestry activities on private land must have a private native forestry plan and comply with the relevant private native forestry Code which generally includes having a forest management plan approved by LLS.

The private native forestry plan approvals and the application of relevant private native forestry codes ensure ecologically sustainable forest management is being implemented and measures put in place to mitigate impacts on plants, animals, soil and water.

EPA compliance program

The EPA is responsible for regulating native forestry operations on private and public (Crown) land in NSW. This is to ensure that impacts on soil and water, threatened species and their habitat are mitigated in accordance with an IFOA or a private native forestry code.

As with previous years, in 2021–22, the EPA carried out a strategic compliance and enforcement program focusing on native forestry operations. The compliance program comprised proactive risk-based assessments and inspections and actions responding to concerns raised by the community.

Proactive compliance activities

The EPA focuses its regulatory efforts on operations where there are higher environmental or regulatory risks. To determine the risk levels of forestry operations, the EPA assesses each planned harvesting operation against environmental risk criteria shown in Table 7.

Environmental risk criteria are intended to be adaptable and responsive to emerging environmental issues and trends in environmental compliance.

The EPA also considers the public interest when assessing risk. This includes predicted or actual elevated community concern about a proposed harvesting operation and the proximity of proposed forestry operations to protected and environmentally sensitive areas and rural and residential areas. This risk assessment enables the EPA to focus its proactive regulatory efforts on operations that pose the highest level of risk. This approach is supplemented by other local and regional priorities.

Responsive compliance activities

The EPA investigates all reports of alleged non-compliance. Responsive activities include investigating public complaints or notifications. They can also include self-reported incidents by Forestry Corporation.

Forestry Corporation reviewed its compliance framework during 2020–21. It recalibrated its compliance practice by establishing a specialised compliance team, increased staff on the ground, retrained staff and contractors in the regulations, and improved equipment and technology.

Table 7 Crown forestry and private native forestry environmental risk and prioritisation assessment criteria

Environmental risk criteria	Crown forestry	Private native forestry
Hollow-bearing and recruitment trees – planned retention rates	Yes	No
Threatened species – proximity to operation and density of records	Yes	Yes
Koalas – proximity to operation and density of records	Yes	Yes
Soil erosion and water pollution hazard – including connectivity of logging, roads and tracks to sensitive waterways	Yes	Yes
Streams and drainage features – the quantity and ordering of streams	Yes	Yes
Exclusion zones – types and proportion of sensitive areas	Yes	Yes
Threatened ecological communities – actual or potential occurrence	Yes	Yes
Forest structure – planned intensity of operations	Yes	No

Note: Compliance priorities differ across tenures due to different rules that apply and other factors. Issues are still checked even if not identified as priorities.

Regulatory tools and actions to achieve compliance

The EPA actively monitors and enforces compliance at forestry operations and uses a range of regulatory tools and actions to ensure compliance with the IFOA or PNF Code and reduce potential environmental harm. Tools include education, audits, field inspections, investigations and desktop assessment. Compliance actions may include clean-up notices, stop-work orders, advisory letters, formal warnings, official cautions, penalty notices and legal action.

The EPA's regulatory approach, tools and actions are explained in more detail in its Regulatory Policy⁷⁸. Public registers are maintained by the EPA to provide information on investigations and compliance audit reports for specific operations. The EPA Regulatory Policy and registers can be accessed on the [EPA website](#)⁷⁹

Crown native forestry compliance and enforcement activities

This section shows the EPA's native forestry compliance and enforcement activities on State forests and other Crown-timber lands.

In 2021–22, the EPA carried out 52 inspections related to 32 forestry operations in Coastal IFOA regions as part of its compliance program (see Table 8). These inspections were conducted either in response to reports from the public of alleged non-compliance, to support investigations, or as part of proactive compliance activities.

⁷⁸ The EPA Regulatory Policy replaced its Compliance Policy in December 2021

⁷⁹ www.epa.nsw.gov.au/your-environment/native-forestry/regulating

During this reporting period, no inspections were carried out in the Western IFOA regions due to a combination of factors including low numbers of harvest operations and the nature of harvest operations being low risk.

Table 8 Number of Crown native forest operations inspected in 2021–22

IFOA	Number of operations inspected
Coastal IFOA	32
Brigalow–Nandewar	0
Riverina Red Gum	0
South West Cypress	0
Total	32

During the 2021–22 reporting period the EPA also finalised compliance actions and investigations for several operations in IFOA regions with eight actions and seven prosecutions finalised in the Coastal IFOA regions (see Table 9). The compliance actions and prosecutions noted in the table may be linked to inspections and investigations that commenced in prior years or under the former IFOAs.

No compliance actions were taken in relation to operations in the Western IFOA regions.

Table 9 Number of Crown native forest operations for which compliance action was taken in 2021–22

IFOA regions	Type of compliance action ¹						Prosecutions ²
	Advisory letters	Formal warnings	Official cautions	Clean-up notices	Penalty notices	Stop work orders	Convictions
Coastal	2	2	1	0	3	0	7
Total	2	2	1	0	3	0	7

1. The table shows the number of operations that were issued with a compliance action in 2021–22, not the total number of actions issued. An explanation of compliance action types can be found in the EPA Regulatory Policy. The compliance actions noted were taken in response to a range of matters including retained trees, protection of riparian zones and threatened species.
2. The number of prosecutions reflects the number of convictions. In 2021–22, two prosecutions resulted in convictions for seven charges and a total of \$523,600 payable in fines and costs. These convictions related to investigations that commenced in prior years. See the EPA's register of Crown forestry investigations for further details of ongoing and completed investigations.⁸⁰

⁸⁰ www.epa.nsw.gov.au/your-environment/native-forestry/regulating/register-of-crown-forestry-investigations

Private native forestry compliance and enforcement activities

The EPA carries out inspections and investigations into private native forestry operations. During 2021–22, EPA officers visited 35 planned or active private native forestry operations in the field and conducted a total of 45 inspections as part of compliance activities or as a part of ongoing investigations.

The EPA also finalised compliance actions for eight operations (see Table 10).

Table 10 Number of private native forestry operations for which compliance action was taken in 2021–22

Type of compliance action	Number of compliance actions issued
Advisory letter	3
Formal warnings	2
Official cautions	3
Clean-up notices	0
Stop work orders	0
Penalty notices	0
Prosecutions	0

The numbers in the table represent the number of operations that were issued with a compliance action, not the total number of actions issued. For example, if several penalty notices were issued for an operation this is recorded as one in this table. Updates on compliance actions can be found on the [EPA website](#)⁸¹.

Fisheries

The *Forestry Legislation Amendment Act 2018* came into force on 9 November 2018, and nine days later the Coastal IFOA commenced. This had the effect of turning off the deemed fisheries threatened species licence in the former IFOAs. Instead, the Coastal IFOA operates as a standalone regulatory instrument under the Forestry Act.

The EPA is now the responsible authority for regulating compliance with the conditions of the IFOA, and NSW Fisheries retains the ability to also enforce non-compliances that potentially impact on threatened fish habitat and ecosystems under the *Fisheries Management Act 1994*.

As such, DPI Fisheries has not carried out routine compliance audits or investigations of the IFOA since that time. There have been no formal referrals under the IFOAs for review of fish passage requirements. All other referrals are the subject of provisions under the *Fisheries Management Act 1994* and therefore not subject to reporting requirements under the IFOA.

⁸¹ www.epa.nsw.gov.au/your-environment/native-forestry/regulating/compliance-update

Appendix A: Principles of ecologically sustainable forest management

Section 69L (2) of the NSW Forestry Act 2012	NSW Regional Forest Agreements (Variations) Nov 2018
Principles of ecologically sustainable forest management means the following –	ESFM principle
a. maintaining forest values for future and present generations including:	1
i. forest biological diversity	A
ii. the productive capacity and sustainability of forest ecosystems	B
iii. the health and vitality of native forest ecosystems	C
iv. soil and water quality	D
v. the contribution of native forests to global geochemical cycles	E
vi. the long term social and economic benefits of native forests	F
vii. natural (and cultural) heritage values	G ¹
b. ensuring public participation, provision of information, accountability and transparency in carrying out forestry operations	2
c. providing incentives for voluntary compliance, capacity building and adoption of best practice standards	3
d. applying best-available knowledge and adaptive management processes to deliver best practice forest management	5
e. applying the precautionary principle (refer <i>Protection of the Environment Administration Act 1991</i> , section 6(2)(a) in preventing environmental harm)	4

1. The Forestry Act has 'Natural heritage values'; NSW Regional Forest Agreements have 'Natural & Cultural heritage values'

Appendix B: NSW IFOAs, FAs and RFAs

Current RFAs between the Australian Government and the NSW Government

RFA	Start date	Variation	In place until ¹
Eden RFA	26 August 1999	28 November 2018	2039
North East RFA	31 March 2000	28 November 2018	2039
Southern RFA	24 April 2001	28 November 2018	2039

1. In place until 2039 subject to satisfactory completion of five-yearly reviews

Current IFOAs – all regions at June 2022

NSW IFOA	Start date	In place until
Coastal regions		
Coastal IFOA	15 November 2018	November 2038
Western regions		
Brigalow–Nandewar IFOA (EPA 2010a)	23 October 2010	31 December 2025
Riverina Red Gum IFOA (EPA 2010b)	1 January 2011	31 December 2030
South Western Cypress IFOA (EPA 2011)	1 July 2011	31 December 2025

Previous FAs¹ and IFOAs² for coastal regions

NSW FA/IFOA	Start date	In place until
Southern Region Forest Agreement	3 May 2002	3 May 2022
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
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

1. The four NSW Forest Agreements under the *Forestry Act 2012* have now expired.

2. The four previous coastal Integrated Forestry Operations Approvals were replaced by a single Coastal IFOA in November 2018

Shortened forms

Acronym	Full description
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AHIMS	Aboriginal Heritage Information Management System
BIP	Biodiversity Indicator Program
BIS	Biosecurity Information System managed by DPI
BPASS	NSW Government portal for beekeepers
CAR	comprehensive, adequate and representative
cl.	Clause (from an Act or other legislation)
Cwlth	Commonwealth
DAFF	Department of Agriculture, Fisheries and Forestry (Cwlth)
DCCEEW	Department of Climate Change, Energy, Environment and Water (Cwlth)
DPE	Department of Planning and Environment (NSW) - was DPIE
DPI	Department of Primary Industries (NSW)
DPIE	Department of Planning, Industry and Environment (NSW) – was DPE
DRNSW	Department of Regional New South Wales (NSW)
EES	Environment, Energy and Science - part of DPIE
EHG	Environment and Heritage Group (NSW) –part of DPE
EPA	Environment Protection Authority
ESFM	ecologically sustainable forest management
FA	NSW Forest Agreement
FCNSW	Forestry Corporation of NSW
FESM	fire extent and severity mapping
FMIP	NSW Forest Monitoring and Improvement Program
FMZ	Forest Management Zone
Forestry Corporation	Forestry Corporation of NSW
ha	hectares
IFOA	integrated forestry operations approval granted under the <i>Forestry Act 2012</i>
ILUA	Indigenous Land Use Agreement
LGA	Local Government Area
LNE	Lower North East region
LLS	Local Land Services
m	metres
m ³	cubic metres
NPWS	National Parks and Wildlife Service
NRC	NSW Natural Resources Commission
OEH	Office of Environment and Heritage
PNF	private native forestry

RFA	Regional Forest Agreement
RFA MER Plan	NSW RFA Monitoring, Evaluation and Reporting Plan
SEED	Sharing and Enabling Environmental Data (NSW Government portal)
SLATS	Statewide landcover and tree study
SOFR 2018	State of the Forests Report 2018
SoS	Save our Species Program
t	tonnes
UNE	Upper North East region

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