Approved Private Native Forestry Monitoring, Evaluation and Reporting Framework November 2023

Natural Resources Commission

Acknowledgement of Country

The Natural Resources Commission acknowledges and pays respect to Traditional Owners and Aboriginal peoples. The Commission recognises and acknowledges that Traditional Owners have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. We value and respect their knowledge in natural resource management and the contributions of many generations, including Elders, to this understanding and connection.

The Commission pays its respects to the Traditional Owners past, present and future, as well as other Aboriginal peoples for whom these lands and forests are significant.

Enquiries

List of acronyms

CEO	Chief Executive Officer
DPI	NSW Department of Primary Industries
DPE	NSW Department of Planning and Environment
EPA	NSW Environment Protection Authority
LiDAR	light detection and ranging
LLS	Local Land Services
NRC	Natural Resources Commission, 'the Commission'
NSW	New South Wales
MER	Monitoring, Evaluation and Reporting
PNF	Private Native Forestry

Cover image: Private native forest near Coffs Harbour NSW, image courtesy NRC staff.

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Executive summary

This Framework for Private Native Forestry (PNF) Monitoring, Evaluation and Reporting (the PNF MER Framework) outlines strategies to improve the evidence base for PNF and decision making. Importantly, the Framework will improve understanding of how the PNF codes of practice (PNF codes) contribute to outcomes and, where possible, identify where rules, practices or approaches can be improved.

Local Land Services (LLS) will develop the implementation plan that will detail biophysical, socio-economic, and capacity building indicators and thresholds for adaptive management. Monitoring activities are funded to June 2024. Appropriate resources will be required to support ongoing delivery.

Primary stakeholders in sustainable PNF include the Ministers administering Part 5B of the *Local Land Services Act 2013*, their portfolio agencies, and private native forest managers with an approved PNF plan.

Private native forestry in NSW

More than 30 percent of native forest in NSW is on private land, with diverse biological, Aboriginal cultural heritage and multiple use values. Forest condition varies, reflecting its history of use and the capacity of forest managers.

In NSW, PNF is the ecologically sustainable management of native forests on private property to produce timber and other forest products. PNF generates social and economic benefits for landholders and regional communities. PNF plans have been approved on over 550,000 hectares. Historically there has been limited monitoring and research of PNF in NSW. As such accurate data on areas and volumes harvested are not available. Estimates for Northern NSW indicate that more than one third of annual wood production could be sourced from private native forests.

The rules for conducting native forestry on private land, including protections for threatened species, tree hollows, habitat for koalas and riparian areas are set out in PNF codes of practice. The need for this Framework is established by the PNF codes.

A foundation to improve over time

The Framework provides for cost effective and scalable monitoring. Landholder participation is voluntary, and as such is a key constraint in the design of the Framework at the outset. LLS will work closely with landholders to generate trust and increased participation over time. Monitoring strategies have been selected to manage issues such as statistical bias, available resources and the scattered distribution of PNF approvals across large areas.

Despite these constraints, the Framework will:

- generate data and information on a range of indicators across priority areas of the PNF estate, including the Northern NSW and River Red Gum Forests regions
- consider the feasibility and cost effectiveness of the monitoring strategies and the usefulness of the data generated for decision makers
- use targeted investigations, knowledge from other forest monitoring programs in NSW and surrogate measures to inform an understanding of how the PNF codes support all PNF code outcomes.

However, it is important to note the limitations of the Framework at this point in time. It will not:

▪ generate data and information that can be extrapolated across the entire private native forest estate or all PNF approvals

▪ collect sufficient on-ground biophysical data to report adequately on some attributes, specifically, maintaining the persistence of native species or maintaining water quality and soil health.

This means that the monitoring program may not provide comprehensive data and insights to address all stakeholders' interests.

Oversight to assure sound science and delivery

LLS will resource and deliver this PNF MER Framework. The Steering Committee, independently chaired by the Commission, will oversee implementation, conduct annual checks of the evidence base and undertake the formal five-yearly assessment as required under the PNF codes. The Commission will publish an annual report and advise relevant Ministers on delivery and progress.

1 PNF and scope of monitoring

This document sets out the approved PNF MER Framework following joint approval by the Chief Executive Officer (CEO) of Local Land Services (LLS) and the Secretary of the Department of Planning and Environment (DPE) in November 2023. The Framework design was overseen by the NSW Forest Monitoring Steering Committee (the Steering Committee),[1] independently chaired by the Natural Resources Commission (the Commission). Input from agency representatives and independent scientific experts informed the Framework.

1.1 Private native forests and forestry in NSW

Private native forests account for 31 percent of native forests in NSW, or around 7.4 million hectares.[2] These forests provide habitat for native species, including threatened flora and fauna such as the koala (*Phascolarctos cinereus*) and greater glider (*Petauroides volans*). They also contain protected areas of core koala habitat, rainforest and old growth forest, as well as objects and places of Aboriginal cultural heritage.

Landholders use and manage private native forests for multiple purposes and values, often generating environmental, social and economic benefits simultaneously.[3] These uses include grazing stock, beekeeping, camping and recreation, watching birds and wildlife, providing timber for on-property use, commercial timber production, firewood and other forest products, and hunting pest animals. Landholders also manage their forests for biodiversity, habitat, Aboriginal cultural heritage, carbon sequestration, weeds, pests, erosion and to reduce fire risk.

Landholders may use their forests as a primary source of income, to supplement on-farm businesses, or to diversify income during times of financial hardship as part of long-term business strategies. A survey of landholders managing private native forests found that financial return was only one of many considerations when managing their forest. Forest health, tree growth, and balancing harvesting with other farm and property management objectives were found to be equally important for landholders' long-term objectives.[4]

While the area of private native forest in NSW is extensive, the area approved for PNF over the 12 years from 2011-12 to 2022-23 was over 550,000 hectares.[5] Most PNF plan approvals are under the Northern NSW region (75 percent by area), followed by the River Red Gum region. In the River Red Gum region, 24 percent of private native forest has an approved PNF plan,[6] and in the Northern NSW region 13 percent has an approval. **Appendix 1** provides the area of private native forest areas by PNF code region, along with the area and number of approved PNF plans.

PNF plan approvals last for 15 years, and a landholder may choose to undertake a harvest at any point within this timeframe, to harvest only a portion of this area, or to not harvest at all. Only part of the PNF plan approved area can be harvested. Accurate data on the area and volume harvested from PNF is not currently available. However, there are some estimates from historic studies:

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[1]   NSW Forest Monitoring Steering Committee (2022) *Governance Charter*.
[2]   ABARES (2018) *Australia's State of the Forest Report 2018*, p55.
[3]   Dare, L., Schirmer, J. and Mylek, M. (2017) *Private native forest owner attitudinal survey – Northern NSW: Understanding forest owners value and use of their forest resource*. Report prepared for NSW DPI.
[4]   *Ibid.*
[5]   Local Land Services (2022) *Monitoring, evaluation and reporting*. Webpage accessed 11 August 2023.
[6]   Note: this is an estimate only as some PNF approvals under the River Red Gum Forest PNF Code may occur in river red gum forest types that occur in other PNF code regions.

- around 26 percent of private native forests on the NSW north coast would be excluded from PNF operations under the rules in effect in the previous PNF codes[7]

- satellite imagery has been used to estimate the average annual area of native forest harvested on private land, finding almost 3,000 hectares/year on average was harvested over 2017 to 2020 (compared with over 4,500 hectares per year on average in state forests)[8]

- wood production from private native forests on the NSW North Coast (Northern NSW region) has been estimated with indications that over one third of North Coast native forest production is from private land. Overall annual production from private native forests could be up to 360,000 cubic metres per year on the North Coast.[9] For comparison, nearly 630,000 cubic metres per year on average were harvested from North Coast state forests for the period July 2009 to June 2014.[10]

The rules for conducting native forestry on private land are set out in four PNF codes established under the *Local Land Services Act 2013* (NSW).[11] The codes cover Northern NSW, Southern NSW, River Red Gum Forests, and Cypress and Western Hardwood Forests (**Figure 1**),[12] and support long-term outcomes for PNF (**Box 1**).
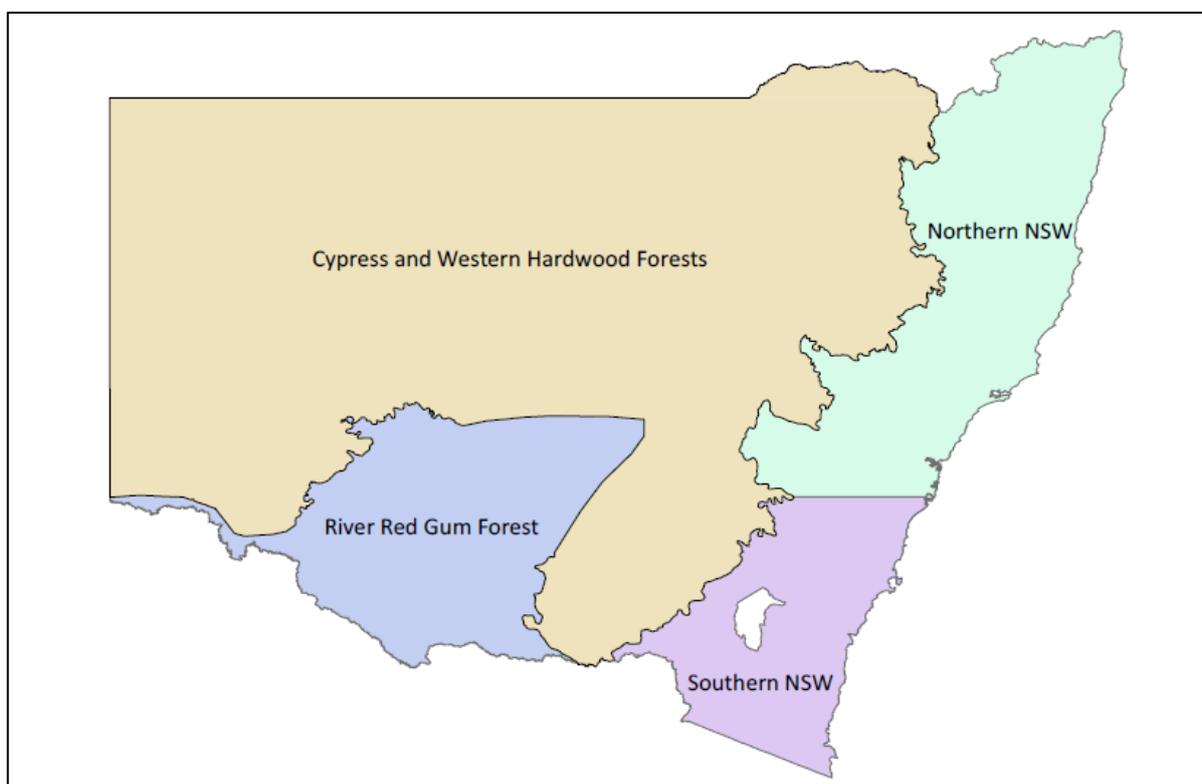
Figure 1: PNF code of practice regions in NSW

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7   The constraints and exclusions under the previous PNF codes were estimated to be 25.6% of the PNF estate in: DPI (2018) *North coast private native forest project - NSW planning and regulatory instruments that interact with private native forestry*. NSW Department of Primary Industries.

8   DPE (2022). *Woody vegetation change Statewide Landcover and Tree Study. Summary report 2020*. NSW Department of Planning and Environment

9   Jamax Forest Solutions (2018) *Report on survey of NSW north coast private native forest harvesting contractors*. Report prepared for the NSW Department of Primary Industries.

10   EPA (2017) *NSW Regional Forest Agreements – A report on progress with implementation of the New South Wales Regional Forest Agreements – Second and third five-yearly reviews July 2004 to June 2014 – A report on the implementation of the North East, Eden and Southern Regional Forest Agreements*.

11   Part 5B of the *Local Land Services Act 2013* sets out the objects, definitions and requirements for PNF.

12   The PNF codes for the Northern NSW and Southern NSW regions apply to all forests in those regions except those that meet the definitions of river red gum forests, cypress forests or western hardwood forests.

Box 1: Outcomes Statement from the PNF codes
▪ Maintain forest health and regeneration at site and bioregional scales
▪ Maintain the productive capacity of the private native forest estate at site and bioregional scales
▪ Maintain the persistence of native species at site and bioregional scales
▪ Maintain water quality and soil health at site and bioregional scales
▪ Build landholder capacity to deliver best practice forest management
▪ Support the economic resilience of landholders and regional communities

The legislative and policy context for PNF in NSW is illustrated in **Figure 2**. LLS is the lead agency in NSW for PNF. They are responsible for approvals under the PNF codes, providing advice and support services to landholders, and implementation of this Framework, including data collection and management.
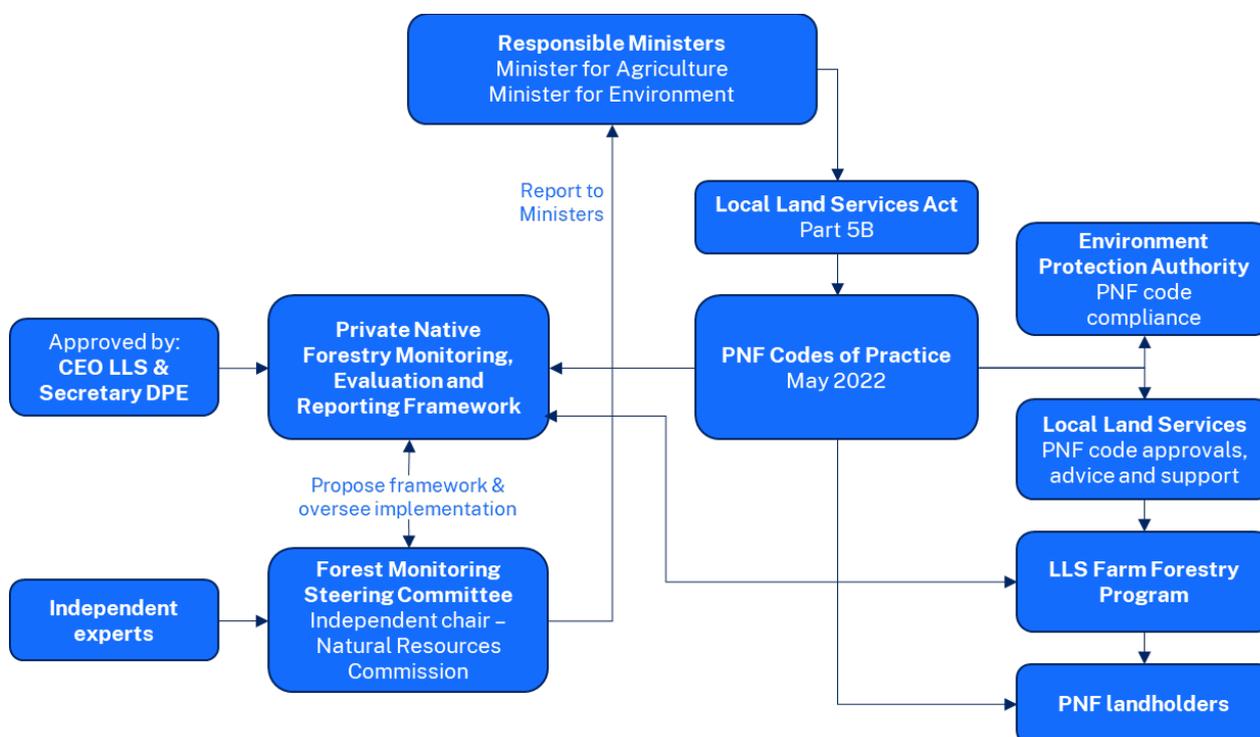
Figure 2: PNF legislative and policy context

1.2   Monitoring requirements in the PNF codes

The PNF codes released in May 2022 introduced new requirements for monitoring, assessment, and adaptive management. They task the Steering Committee, independently chaired by the Commission, to:

▪   propose and oversee a PNF MER Framework (the codes require joint approval of the Framework by the CEO of LLS and the Secretary of DPE)

▪   conduct annual checks to ensure the evidence base, including maps, is up to date, identify emerging evidence from monitoring and research, and opportunities for improvement

- formally assess the data and evidence every five years and advise relevant Ministers whether there is sufficient evidence to warrant a review of the codes

- oversee updates to the PNF Koala Prescription Map.[13]

The Steering Committee's oversight role will:

- ensure scientifically robust methods are used to address critical information needs

- ensure monitoring data collected and/or produced under the PNF MER Framework improves transparency and accountability while maintaining landholder privacy and confidentiality

- review the effectiveness of the PNF MER Framework as part of an annual check of the evidence base and, where necessary, inform necessary improvements based on best available information.

The Steering Committee established a cross-agency technical review team to inform the development of the PNF MER Framework and endorsed good practice principles for MER design and delivery (**Appendix 2**).

The PNF codes also define monitoring and reporting requirements for landholders. These include reporting to LLS prior to harvesting and after completion of forestry operations on the approximate volume of forest products harvested and the approximate number of hectares on which forestry operations have occurred. Landholders are also required to monitor regeneration of their forests, including at two-, six- and 10-years after harvesting. The codes note that landholder participation in any research or forest monitoring activities beyond these minimum requirements can only occur with the written consent of the landholder.

Historical reporting, monitoring or research for PNF in NSW is limited, and accurate data on the area or volume harvested over time is not available.

1.3 Voluntary participation in monitoring

Importantly for this Framework, any research or forest monitoring activities undertaken in PNF Plan areas beyond the requirements specified in the codes can only occur with the written consent of the landholder. This means that landholder participation in additional monitoring activities on their property is voluntary. As on-ground monitoring can only sample forest data from willing landholders, this will create a bias in the on-ground data collected. To address this bias, it is necessary to capture information more broadly across the PNF estate, such as through remote sensing.

Consistent with the principles of ecologically sustainable forest management (**Appendix 2**), the PNF MER Framework will seek to encourage voluntary participation through carefully designed approaches, working collaboratively with LLS extension, knowledge and skills building programs. Noting the historic relationship between landholders and government agencies has not always been positive, the approach will focus on careful engagement to build trust and encourage participation with the aim to build landholders' willingness to participate over time. Key to this will be to provide useful information from monitoring that meets the needs of landholders.

The monitoring program may also seek to obtain data from willing harvesting contractors or mill operators. For example, harvesting contractors may be able to supply more detailed information on the forest products, volume and area harvested, in addition to the

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[13] See clauses 4.3 (2) and (3) and Appendix A in the PNF codes.

information required to be reported by landholders. Once again, this would be on a voluntary basis.

During development, feedback was sought from stakeholders to inform the design of the MER program. In late 2022, LLS conducted seven interviews with landholders who have a PNF plan. While this is a limited sample, tailored advice on forest management was repeatedly cited as likely to encourage participation in an MER program, together with educational tools and information.

1.4 Priority information needs

Priority information needs for stakeholders of the PNF MER Framework are identified in **Table 1**, along with the key evaluation question that will guide the monitoring program to deliver the evidence needed.

Given 75 percent of PNF operations (by area) are in the Northern NSW region and the limited funds available, monitoring will be concentrated on the Northern NSW region.

The program logic to meet priority information needs is presented in **Figure 3**.

Table 1: Priority information needs and key evaluation questions

Stakeholder	Information need	Key evaluation question
Decision makers	These are the Ministers responsible for the PNF codes of practice. They will require advice by year 5 on whether there is sufficient evidence to warrant a review of the PNF codes. This recognises that responsible Ministers are supported by their portfolio agencies, including LLS and the EPA.	Do the PNF codes support PNF outcomes (**Box 1**) and effective implementation?
Forest managers	These are the private landholders (or their representative or contractors) who undertake PNF operations. Forest managers interact with their forests daily or periodically and are responsible for meeting the requirements of the codes.	How do landholders best meet obligations under the PNF codes and their property management objectives?
Other stakeholders	These include interested groups such as industry and environmental groups who are interested in the NSW native forest estate and need to know that it is being managed well for future generations.	Do the PNF codes address principles of ecologically sustainable forest management?

| PNF Codes of Practice: Outcomes Statement | Maintain forest health and regeneration at site and bioregional scales | Maintain the productive capacity of the private native forest estate at site and bioregional scales | Maintain the persistence of native species at site and bioregional scales |
| | Maintain water quality and soil health at site and bioregional scales | Build landholder capacity to deliver best practice forest management | Support the economic resilience of landholders and regional communities |

| Objective | To establish an evidence base for forestry operations on private land that will inform decision making, long-term reviews and adaptive management | |
| | | |

| Long-term PNF MER outcomes | Landholders value PNF MER participation | Monitoring program provides comprehensive data to inform decisions and monitor change | PNF codes are refined to achieve Outcomes Statement (if required) |

| Intermediate outcomes (5+ years) | Enough landholders participate to enable purposeful sampling across all PNF code regions to be maintained | Monitoring program expanded to enable ongoing, pragmatic monitoring of important and feasible metrics |

| Immediate outcomes (2-5 years) | PNF code outcomes monitored | Information needs for decision-makers and forest managers met |
| | Ongoing collaboration with LLS | Knowledge sharing and access is improved |

| Outputs | Biophysical, socio-economic and capacity building data collected | Targeted investigations, assessments and analysis |

| Foundational activities (What we need now) | Long-term funding arrangements for MER secured | Strong collaboration and partnership approach with LLS |
| | Remote sensing feasibility study and monitoring implementation plans developed | Opportunities for landholder participation in PNF MER identified |

The current situation (What we have)	PNF MER Framework	New PNF codes of practice and LLS Farm Forestry Program
	$1.54 million funding over 2 years	Complex private land regulatory framework
	Diverse landholder interest and willingness to participate in monitoring	

Figure 3: PNF MER program logic

2   The MER Framework

The objective of this Framework is to improve the evidence base for PNF and to inform decision making, longer-term reviews and adaptive management. The monitoring strategies presented in this chapter will drive an improved understanding of how the PNF codes contribute to long-term outcomes (**Box 1**). The monitoring will inform annual checks of the evidence base and formal five yearly assessments. Insights from these processes will be used to identify opportunities for adaptive management and continual improvement in the PNF MER Framework and the PNF codes, noting the review process is five yearly (**Chapter 4**). Where possible, findings will be used to identify where rules, practices or approaches can be improved.

The monitoring strategies and reporting processes aim to promote a shared understanding and agreement between stakeholders on the fundamental information and data to be collected over time. The Framework recognises that resources are limited and should be directed to priority information needs.

The Framework has been designed to collect useful data to inform priority needs, recognising the challenges for implementing a monitoring program on private property. Monitoring will build on the current evidence base. However, within the available resources the Framework will not provide statistically significant results across all forest types, PNF code regions, PNF landholders or the entire private native forest estate.

The establishment of the PNF MER Framework, and emphasis on adaptive management to support evidence based ecologically sustainable forest management, is consistent with broader obligations under the NSW Regional Forest Agreements.

2.1   Monitoring strategies

The monitoring strategies are structured around three areas of evaluation interest designed to address the identified needs of decision makers, forest managers and other stakeholders (**Table 1**). Scalability of the program will be achieved primarily through the areas targeted for remote sensing data collection and the extent of on-ground plots surveyed. This will be subject to available funds and detailed in the implementation plan.

Table 2 presents the key evaluation questions, sub-questions and monitoring strategies to address priority information needs. The monitoring strategies presented assume that key datasets such as the spatial layer of PNF approved areas and from historic studies in PNF will be made available for use in the program under strict confidentiality requirements.

Table 2: Key evaluation questions and monitoring strategies

Key stakeholder	Evaluation questions	Monitoring strategies	Indicative timing and frequency	Responsibility	Indicative outputs
Decision makers	*Key evaluation question 1.* Do the PNF codes support PNF outcomes and effective implementation?				
	▪ To what extent do agreed biophysical indicators indicate PNF outcomes are being maintained or supported?	**Remote sensing** biophysical variables, supplemented with on ground measurements; landscape focus **Landholder reporting** obligations under PNF codes (area and volume of harvest) **Targeted investigations** Support landholders to conduct regeneration assessments required under the PNF codes and use opportunity to gather data on regeneration outcomes (at 2, 6 and 10 years) **Track** area PNF plan approved each year, track information from compliance activities	**Remote sensing**: conduct feasibility study in 2023. Data collection frequency to be outlined in implementation plan **Landholder reporting** on area and volume harvested is new under the PNF codes and it may take time for landholders to understand the value of, and have the right tools to meet their, new obligations **LLS annual reporting** of PNF plan approved area, and area of forest management plans, by PNF code region and use to inform priority areas for remote sensing works	Remote sensing feasibility study: NRC Other: LLS	Data used to generate dashboard style report against each indicator
		Targeted research or investigations on identified priority areas	As resources allow	LLS	As required
	▪ To what extent do capacity building and socio-economic indicators associated with PNF indicate outcomes are being maintained?	**Targeted investigations** working with key industry stakeholders and willing landholders	Data collection frequency to be outlined in implementation plan	LLS	Annual summative report

Key stakeholder	Evaluation questions	Monitoring strategies	Indicative timing and frequency	Responsibility	Indicative outputs
	▪ To what extent do landholders (and contractors) understand their obligations under the PNF codes? Are they able to meet their obligations in economically and environmentally feasible ways?	**Targeted investigations** working with key industry stakeholders and willing landholders (and contractors) **Compliance activities** reported annually by the Environment Protection Authority (EPA) **Targeted investigation** to support and evaluate landholders conducting regeneration assessments required under the PNF codes	Monitor understanding of obligations and issues / concerns annually; input to the formal five-yearly assessment	LLS EPA (compliance report)	Annual summative report
	▪ Can PNF code conditions or the Framework be improved to better meet outcomes?	Annual check of the evidence base identifies improvements to PNF MER Formal five yearly assessment identifies improvements to PNF codes	Collect data annually through the annual check of the evidence base	Now: NRC Future: NRC	Annual report and 5-yearly assessment
Forest managers	*Key evaluation question 2.* How do landholders best meet obligations under the PNF codes and their property management objectives?				
	▪ How can landholders maintain or improve the productive capacity of their forest while also managing and protecting forest health and biodiversity?	**Onground assessment:** Support landholders to conduct productive capacity and/or regeneration assessments and with willing landholders use opportunity to gather data on regeneration outcomes (at 2, 6 and 10 years) **Targeted investigation** working with key industry stakeholders and willing landholders	Collect data annually	LLS	Report for participating landholders Annual report summarising deidentified data

Key stakeholder	Evaluation questions	Monitoring strategies	Indicative timing and frequency	Responsibility	Indicative outputs
Other stakeholders	*Key evaluation question 3:* Do the PNF codes address principles of ecologically sustainable forest management?				
	▪ To what extent do the PNF codes satisfy the principles of ecologically sustainable forest management (ESFM)? Can they be improved to better address ESFM?	**Targeted investigations and public reporting** (noting requirements for privacy of landholders) on results of PNF MER implementation	Formal 5-yearly assessment Other obligations (Australia's State of the Forest Report and Regional Forest Agreements)	NRC	Report to inform 5-yearly assessment and other reporting requirements
	▪ To what extent do the PNF codes provide adequate protection for threatened species?	**Targeted investigation:** Risk-based review of threatened species protections in the code for species listed Appendix A of the PNF codes **Targeted investigation:** Process to verify and improve the PNF koala prescription map and underlying models	Risk based review being conducted in year 1 Process to verify and improve the PNF koala prescription map and underlying models being conducted in year 1 and 2	NRC	Report and input to the annual check of the evidence base

2.2 Monitoring and evaluation schedule

The timeline for key elements of the PNF MER Framework, including implementation of the monitoring strategies, reporting and review points, is provided in **Table 3**.

Table 3: PNF MER Framework activity schedule and key responsible agency

Year	PNF MER Framework activity	Responsible
2023	Remote sensing feasibility study	NRC
	Prepare implementation plan	LLS
	Annual check of evidence base	NRC
2024 to 2026	Commence (or continue) targeted investigations and monitoring	LLS
	Annual check of evidence base	NRC
	Initiate new monitoring or investigations if required	LLS
2027	Continue targeted investigations and monitoring	LLS
	Annual check of evidence base	NRC
	Five-year formal assessment of data and evidence	NRC
	Revise and approve PNF MER Framework for next 5 years	LLS and DPE

2.3 Collaboration between programs

The PNF MER Framework will seek opportunities to work with and draw upon knowledge and information generated by the LLS Farm Forestry program and the EPA compliance program. Information from these agencies will help to inform an understanding of how the PNF codes contribute to the PNF code outcome 'Build landholder capacity to deliver best practice forest management'.

LLS provides the principal government interface with landholders and is the preferred pathway to engage with landholders. A strong collaborative relationship between Framework implementation and the LLS Farm Forestry program is critical. The focus of this relationship will be to build strong engagement pathways and to understand landholder capacity (knowledge, skills and motivation) to implement the PNF codes as intended, rather than compliance.

3   Roles and responsibilities

3.1   NSW Forest Monitoring Steering Committee

The PNF codes task the Steering Committee to propose and oversee a PNF MER Framework, including undertaking annual checks of the evidence base and five-yearly formal assessments.

The Steering Committee includes agency representatives from Aboriginal Affairs NSW, DPE, Department of Primary Industries, EPA, Forestry Corporation of NSW, LLS, National Parks and Wildlife Services, and the Commission, and independent experts.

The Steering Committee is independently chaired by the Commission. The Commission, as a statutory independent agency provides advice or recommendations to NSW Government in respect to functions set out in the Steering Committee's governance charter.[14] These functions include final decisions being made by the Commission, as independent chair within the Committee.

The Steering Committee's oversight role for implementation of the PNF MER Framework includes to:

- report critical information to decision makers to support annual and five-yearly processes

- oversee delivery of scientifically valid approaches within available resources considering the practicalities of delivering MER on private land

- build on significant forest monitoring knowledge in NSW and identify opportunities to increase PNF monitoring program reach through collaboration with other relevant monitoring programs

- ensure monitoring data collected and/or produced under the PNF MER Framework is used to improve transparency and accountability while maintaining landholder privacy and confidentiality

- review the effectiveness of the PNF MER Framework and, where necessary, recommend improvements based on monitoring program results and other lines of evidence.

- ensure data is collected, synthesised and presented in a way that facilitates opportunities to improve on-ground forest management activities by forest managers

3.2   Agencies

The PNF codes identify specific agency and departmental roles in the approval of the PNF MER Framework. The PNF MER is to be jointly approved by the CEO of LLS and Secretary of DPE.

In brief, the principle agencies involved in implementing this MER framework are:

- **Local Land Services** – responsible for PNF approvals, helping landholders understand their obligations under the PNF codes, and promoting voluntary adoption of best practice forest management through their extension function;

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[14]   Natural Resources Commission (2022) *NSW Forest Monitoring and Improvement Program Governance Charter*, version 2.0.

responsible for public registers reporting annual area and number of approved PNF and forest management plans, along with areas and volumes harvested; CEO responsible for jointly approving PNF MER Framework with Secretary of DPE; implementation of PNF MER Framework including identifying landholders willing to participate and facilitating access to private properties. Responsible for overall management of monitoring and evaluation data collected, appropriate data storage arrangements (either in-house or with a service provider), including to maintain the privacy of landholders who participate in the monitoring program. LLS will prepare the MER implementation plan.

▪ **Natural Resources Commission** – responsible for independently chairing the Steering Committee, as outlined in the governance charter,[15] and oversight of implementation of the PNF MER Framework and ongoing monitoring plans. Facilitates the annual check of the evidence base and is responsible for the remote sensing feasibility study that will inform implementation plan development.

▪ **NSW Environment Protection Authority** – responsible for compliance with the PNF codes of practice and providing deidentified data on compliance activities.

▪ **Department of Planning and Environment** – Secretary of DPE responsible for jointly approving the PNF MER Framework with CEO of LLS.

▪ **Department of Primary Industries** – the Forest Science Unit provides evidence-based forest research services that underpin sustainable use of NSW's native forests, including private native forests.

3.3 Landholder and stakeholder engagement

The participation of landholders is critical to the success of an ongoing PNF MER Framework. Informed consideration of practical and logistical constraints, opportunities to add value to on-ground management, and landholder priorities, needs and concerns will help ensure the longevity and effectiveness of the PNF MER Framework.

The monitoring program will work collaboratively with LLS Farm Forestry program to build a strong partnership approach and look for opportunities relating to complementary activities.

3.4 Sharing information

The PNF MER Framework will release public communications for community and stakeholder information, outlining progress and outputs. The timing and detail of these is outlined in **Table 4.**

Table 4: Public release of information

Frequency	Details	Timing	Responsible agency
Ongoing	Public registers Monitoring / research reports	Following the end of each financial year	LLS
Annual	Online reporting	Following the end of each financial year	NRC
Five-yearly	Online reporting	2027	NRC

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15 Natural Resources Commission (2022) *NSW Forest Monitoring and Improvement Program Governance Charter*, version 2.0.

4 Framework reporting and implementation

The PNF MER Annual Report will be prepared by the Commission on behalf of the Steering Committee, and publicly released on the Commission's webpage in July of each year, reporting on the progress and findings over the preceding financial year. Information generated through the MER program and the annual check of the evidence base will support adaptive management and continual improvement processes.

4.1 Annual check of the evidence base

The PNF codes task the Steering Committee, independently chaired by the Commission, to conduct an annual check that the evidence base is up to date (including relevant maps), identify emerging evidence from monitoring and research, as well as opportunities for improvement.

The annual check will be coordinated by the Commission with input from key agency stakeholders nominated by the Steering Committee.

Matters to be considered during annual checks include:

- PNF MER Framework implementation progress and results
- review and refinement of monitoring strategies and priorities
- an assessment of the adequacy of the PNF MER Framework
- opportunities for improvement.

The annual check of the evidence base will occur by July of each year, with the first annual check due in July 2023. A summary of findings from the annual check will be included in the PNF MER Annual Report.

4.2 Formal five yearly assessment process

The PNF codes task the Steering Committee, independently chaired by the Commission, to formally assess the data and evidence from the PNF MER Framework (and any other lines of evidence) every five years and advise the Minister administering the *Forestry Act 2012*, the Minister administering the *Local Land Services Act 2013* and the Minister administering the *Biodiversity Conservation Act 2016*, whether there is sufficient evidence to warrant a review of the PNF codes.

The five-yearly assessment will be coordinated by the Commission with input from relevant agencies and stakeholders as appropriate. As independent chair of the Steering Committee, the Commission has responsibility to advise relevant ministers regarding whether there is sufficient evidence to warrant a review of the PNF codes.

Matters to be considered in the five-year assessment will include:

- detailed reporting of monitoring program progress and results, along with other lines of evidence
- analysis of the contribution of the PNF codes in supporting the outcomes (**Box 1**)
- recommendation of whether there is sufficient evidence to warrant a review of the PNF codes.

The first assessment is due in 2027.

4.3 Adaptive management for PNF codes and MER Framework

Data collected through the PNF MER Framework will inform adaptive management and identify potential opportunities for improvements to the MER program and PNF codes. Where possible, findings will be used identify where rules, practices or approaches can be improved. Monitoring strategies will be redesigned if monitoring results or evaluation indicates change is required, or if information needs change. Formal five-year assessments will draw on findings of the monitoring program, annual checks of the evidence base, and complementary reviews where available. A culture of learning and adaptive management will be embedded and supported.

Table 5 outlines the adaptive management process for the PNF codes and MER Framework.

Table 5: Key adaptive management processes

Timing	Opportunity	Responsibility
Ongoing	Design landholder advice and support services to encourage forest management at a site level to respond to relevant evidence	LLS
Annual	Annual check of the evidence base identifies opportunities for improvement	Forest Monitoring Steering Committee
Five-yearly	Formally assess the data and evidence from the MER program (and any other lines of evidence) and provide advice to relevant Ministers	Forest Monitoring Steering Committee

4.4 MER implementation plan

Development of a MER implementation plan will follow approval of the PNF MER Framework to detail how the Framework will be implemented. LLS will develop the implementation plan with endorsement by the Steering Committee, independently chaired by the Commission.

A key objective of the implementation plan will be to identify agreed indicators for biophysical, capacity building, and socio-economic monitoring, along with thresholds for when adaptive management actions need to be considered.

The implementation plan will describe the principles, requirements and standards that need to be met to achieve useful monitoring, providing a clear annual work plan. Key matters for the implementation plan to consider include:

- spatial scale over which the metric needs to measured to be meaningful
- time scale over which the metric needs to be measured before change can be assessed
- feasibility of detecting trends at the spatial and temporal scales of sampling
- value/importance of the asset/metric being considered for monitoring
- cost of monitoring it properly
- technical feasibility of monitoring it properly.

The implementation plan will outline how monitoring results will be communicated, including the confidence in results and any limitations. Transparent reporting will acknowledge that best available information has been used, and where results have high uncertainty.

Key inputs to the implementation plan will include but not be limited to the remote sensing feasibility study, and learnings from the LLS Farm Forestry program. Detailed design (beyond this Framework) and implementation of the monitoring program will require consultation and should consider what value the program can provide for landholders' long-term management, to meet their information and data needs. This will take time and is a high priority for early stages of implementation. Findings from the annual checks of the evidence base will be used to adapt the implementation plan as required.

Glossary

- **Landholders** are the owners of private native forests who have a PNF Plan.

- **Forest managers** are the people who make the day-to-day decisions managing private native forests. This includes landholders and other individuals or contractors who make and implement management decisions on behalf of landholders.

- **Monitoring:** In the context of this PNF MER Framework 'monitoring' is the systematic collection of data to inform our understanding of how the PNF codes contribute to long-term outcomes (Box 1). The data need to be adequate in terms of spatial representativeness and with the power to detect changes over time frames relevant to the monitoring program's and PNF code evaluation needs. Monitoring includes:

  - **Biophysical monitoring:** Collection of qualitative and quantitative data to inform the understanding of the condition of private native forests and how they respond to forest management under the PNF codes.

  - **Remote sensing:** Refers to technologies that collect data remotely via sensors mounted on a satellite, plane, drone, vehicle, stationary object or other (e.g. a backpack carried by a person). Remote sensing generally does not require or only requires minimal onground access. Remote sensing data can include visible, infrared, multispectral or hyperspectral imagery, light detection and ranging (LiDAR), photography, acoustic and ultrasound recordings.

  - **Targeted investigations:** Collation, analysis, and/or synthesis of information available from research studies, desktop assessment, published sources or collected through interviewing stakeholders or experts.

- **Evaluation:** Evaluation is the periodic assessment of the merit and worth of the program against selected criteria, potentially including effectiveness, value for money and appropriateness. Evaluation will likely use existing monitoring data (the evidence base) and appropriate new data to inform judgements.

Appendix 1: PNF plan areas by code region

Table A1.1 provides area and proportion information for private native forests and forestry in the four PNF code regions.

Table A1.1: Private native forest attributes including PNF Plans approved 2011-12 to 2022-23

Attribute	PNF code region				TOTAL
	Northern NSW	Southern NSW	River Red Gum	Cypress and Western Hardwood	
Area of private native forest (ha)[a]	3.3 million	1.2 million	0.3 million	2.6 million	**7.4 million**
No. approved PNF Plans[b]	3,132	184	162	88	**3,566**
Area PNF Plans (ha)[b]	416,768	24,747	75,306	38,894	**555,715**
% private native forest with approved PNF Plan[c]	13%	2%	24%	1.5%	**7.5%**
Average approved area (ha/plan)	133	134	465	442	**156**
% total approved area by region	75%	4.5%	14%	7%	**100%**

Table notes: (a) area of private native forest by PNF code region estimated using Australia's State of the Forest Report 2018 forest and tenure spatial layer ('aus_forten18_geotiff'), analysis by 2Rog Consulting for the PNF MER program; (b) PNF Plan approved numbers and areas for the period 2011-12 to 2022-23 inclusive from Local Land Services webpage: *Monitoring, Evaluation and Reporting*; (c) the % private native forest with an approved PNF plan by region is an estimate only, noting that approvals under the River Red Gum, and Cypress and Western Hardwood codes are for specific forest types that may occur outside of the defined regions.

Appendix 2: Developing the Framework

The Steering Committee established a cross-agency technical review team to input to the development of the PNF MER Framework, with representatives from the Commission, LLS, DPE, EPA, DPI, and Forestry Corporation of NSW. The Steering Committee endorsed an approach that would demonstrate commitment to the principles of ecologically sustainable forest management, and the application of good practice principles for MER design and delivery for PNF.

Principles of ecologically sustainable forest management[16]
(a) maintaining forest values for future and present generations, including: (i) forest biological diversity (ii) the productive capacity and sustainability of forest ecosystems (iii) the health and vitality of native forest ecosystems (iv) soil and water quality (v) the contribution of native forests to global geochemical cycles (vi) the long term social and economic benefits of native forests (vii) natural heritage values (b) ensuring public participation, provision of information, accountability and transparency in relation to the carrying out of forestry operations (c) providing incentives for voluntary compliance, capacity building and adoption of best-practice standards (d) applying best-available knowledge and adaptive management processes to deliver best-practice forest management (e) applying the precautionary principle (as referred to in section 6 (2) (a) of the *Protection of the Environment Administration Act 1991*) in preventing environmental harm.

Good practice principles for MER design and delivery for PNF
▪ **targeted and specific** – use evaluation questions to inform program design and focus monitoring to ensure that critical information for management and decision-making is collected ▪ **risk-based and value-driven** – determine priorities through an analysis of risks, opportunities and value for money; risks can be prioritised by ranking according to the potential reduction in risk, or by the cost-effectiveness of monitoring that mitigate multiple risks concurrently ▪ **credible and appropriate** – use robust metrics and thresholds that are based on best available evidence, and generate information using best practice monitoring approaches at relevant spatial scales and time periods ▪ **strategic and cost-effective** – seek to maximise the information generated given the available budget, and ensure the proposed activities are not overly onerous or costly for landholders ▪ **collaborative and transparent** – facilitate landholder engagement and report publicly on MER activities in findings to improve landholder confidence and encourage participation, considering the needs, rights and management objectives of landholders ▪ **adaptable** – ensure the Framework can evolve in response to new priority questions and risks; review frequently enough to drive better outcomes and improvement while also allowing landholders to keep pace with change

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[16]   Section 60ZQ (1) under the NSW *Local Land Services Act 2013*.