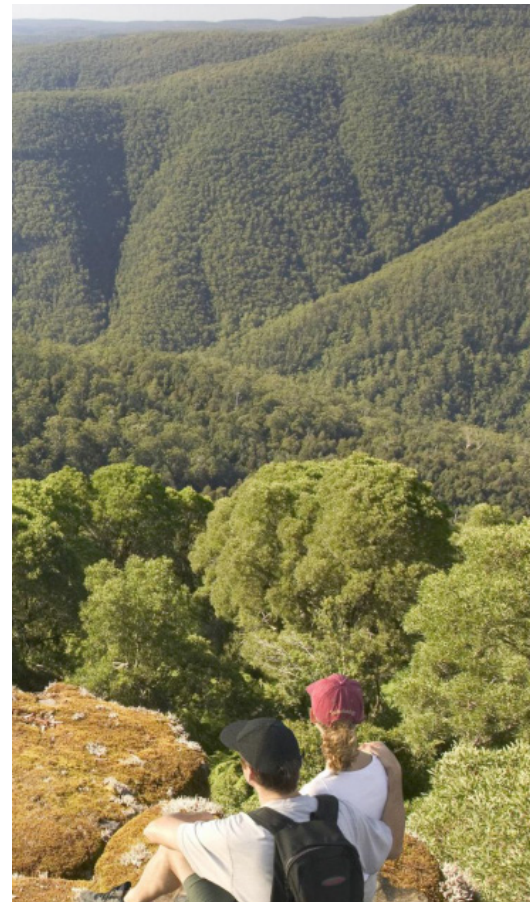




# NSW Forest Monitoring and Improvement Program

## Program Framework 2019-2024

NSW Forest Monitoring Steering Committee  
Prepared by the NSW Natural Resources Commission



## **Acknowledgment of Country**

The Natural Resource Commission acknowledges and pays respect to all the Traditional Owners and their Nations. The Commission recognises and acknowledges that the Traditional Owners have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. We value and respect their knowledge of natural resource management and their contributions of earlier generations, including the Elders.

This document has been prepared by the NSW Natural Resources Commission on behalf of the NSW Forest Monitoring and Improvement Steering Committee.

Enquiries about this Program Strategy should be directed to:

Natural Resources Commission - Phone (02) 9228 4844

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## Executive Summary

The NSW Government has committed to manage its forests in an ecologically sustainable manner. NSW has over 20 million hectares of forested land across private, leasehold and public tenures.<sup>1</sup> Forests are an important asset that protect biodiversity and provide clean air and water. They support many forest-based industries, for example nature-based tourism, forestry and apiary.

Forests provide connections to Country for Aboriginal people and economic opportunities. They provide space for people to enjoy nature and help to improve physical and mental health and well-being.

Like any valuable asset, such as roads and hospitals, we need reliable information to manage them properly so they can continue to deliver important services to the citizens of NSW.

The NSW Government has established a **Forest Monitoring and Improvement Program** (the Program) to support ecologically sustainable management of all NSW forests.

The Program will deliver information to support the strategic management of forests in NSW on both public and private land. Under the Program's terms of reference, all forests in NSW are within scope, including forests in national parks, state forests, plantation forests, private native forestry, forests on private and crown land.

### Community is demanding better evidence

The Program responds to community concerns about the ecological sustainability of NSW forests and whether there is sufficient reliable information available to track forest health, productivity, biodiversity and sustainability. Previous reviews of NSW forest agreements demonstrated there is strong community interest in tracking the maintenance of forest values, including cultural, environmental, social and economic values. While people's interests and information needs about NSW forests are diverse – ranging from forest biodiversity, sustainable timber production, and cultural connections – there is consensus and demand for reliable and transparent information to make better decisions about forest management in NSW.

### Aligning information to demand and value

Information needs to be useful and timely for decision making about forest management and policy direction. Land managers typically want to know whether management is working (or not) to achieve the outcomes they are seeking. Other decisions are based around understanding what is changing and at what rate. The answers to these questions typically end in – what do we do next?

However, generating new information is not free. Monitoring forests is expensive, and these expenses accrue over the long term. Consequently, the decision to invest in new information should be made with the knowledge of the associated opportunity cost. The opportunity cost might be other actions that could have resulted in greater improvement in management performance rather than investing in new information. Furthermore, targeted and effective monitoring can help identify the most cost-effective management actions.

The Program will focus on the needs of decision makers, stakeholders and the broader community in the ecologically sustainable management of NSW forests, including the need to adapt to changing circumstances, and explicitly link these needs to monitoring, evaluation and research. To avoid past mistakes of 'monitoring many things', the Program will adopt methods to prioritise information that is the most valuable and cost-effective in providing evidence for effective forest management.

### A framework to start the journey

Managing monitoring programs in an adaptive manner is good practice.<sup>2</sup> Programs need to be able to explore and evolve, and develop in response to new questions, or improve monitoring approaches and protocols. This Program will not set and forget. Evaluation, reflection and learning are key pillars of the Program.

This Program Framework lays an early foundation for the Program and sets its broad direction. It outlines the expected outcomes and the actions to achieve these over the next five years.

Actions will include generating information to understand whether forest management is effective. Other work will focus on establishing the critical infrastructure for monitoring programs such as cross-tenure forest monitoring plots that are essential to generate reliable forest information over time and space. The Program will also explore and trial emerging technologies including remote sensing platforms to reduce costs and improve accuracy.

The Program will use a wide range of expertise both inside and outside of the NSW Government. Research organisations, land managers, community organisations and members, and industry all have valuable experience and expertise to share on how forest management can be improved across tenures in NSW.

NSW Agencies and other parties already apply the best science to monitor and report on forests across NSW. This Program does not seek to monitor and report on all tenure-specific forest management outcomes. Instead, this Program will build on the existing scientific knowledge base and create opportunities to bring tenure managers together to focus and coordinate effort over time on the highest information needs and value.

## Introduction

In February 2019, the NSW Government established a Forest Monitoring and Improvement Program ('the Program') to coordinate monitoring, evaluation, research and reporting for improved forest management in NSW.

This Program Framework describes:

1. What will the Program deliver?
2. How will the Program be governed?
3. How the program will be improved?

Under the Program's terms of reference, the Commission is responsible for independently overseeing the design, implementation and review of the Program. Chaired by the Commission, a NSW Forest Monitoring Steering Committee, including NSW government agency representatives and independent scientific experts, will guide the Program. NSW agencies are responsible for delivering monitoring, evaluation and research projects under the Program including through external partnerships, as well as reporting on relevant forest agreements.

The Program will deliver information to support the strategic management of forests in NSW on both public and private land. Under the Program's terms of reference, all forests in NSW are within scope, including forests in national parks, state forests, plantation forests, private native forestry, forests on private and crown land.

The Program is supported by \$7.2 million over four years for forest monitoring, announced by the Department of Industry in the 2018-19 budget. This investment will support the design, establishment and initial implementation of the Program.

Complementing this investment is further funding of at least \$2 million, over five years from 2019-20, for the design and initial implementation of the Coastal IFOA monitoring program, and is being provided by the Environment Protection Authority through the Waste and Environment Levy. Contributions from Forestry Corporation of NSW are also provided. Other Steering Committee agencies will also contribute resources to forest monitoring, evaluation, research and reporting, where feasible, to strengthen the overall evidence base for forest management.

## Ecologically sustainable forest management

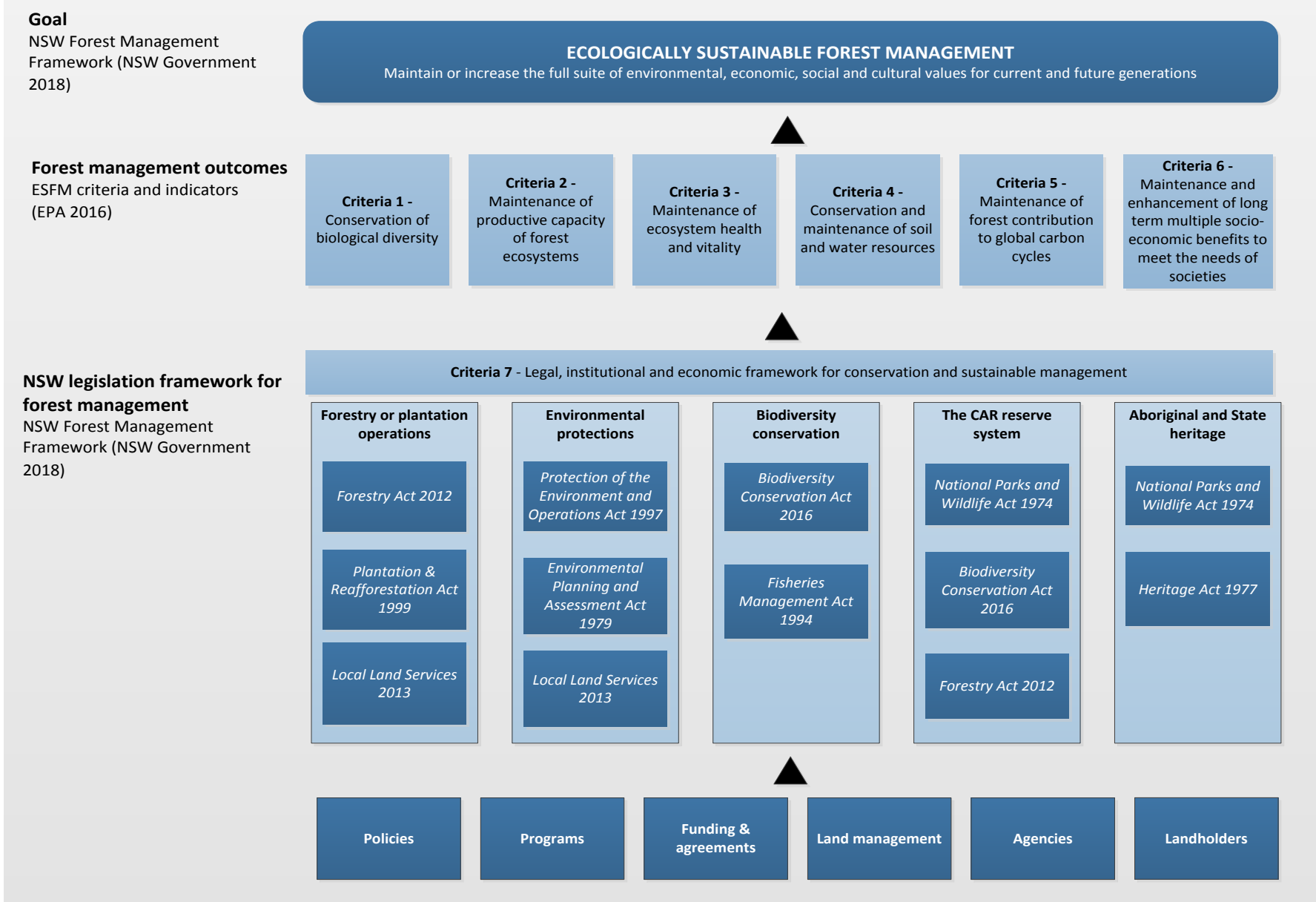
The NSW Government has committed to ecologically sustainable forest management ('ESFM') under the NSW Forest Management Framework ('the Framework')<sup>3</sup> and Regional Forest Agreements. The Framework also commits NSW to ongoing improvement of reporting and management through monitoring and research.

ESFM seeks to maintain the economic, social and ecological benefits and services provided by forests while maintaining cultural and environmental values, such as biodiversity and water quality, and sustaining the forest health and productivity for current and future generations. The NSW Government reports its commitment to ESFM in the Australian State of the Forest Reports and in Regional Forest Agreement reporting through the internationally established Montreal Criteria and Indicators.

Forest management in NSW is governed by a diverse set of legislation, policy, regulatory instruments and programs administered by different state government agencies and authorities, as noted in the Framework. The relevant legislation, policies, regulatory instruments and management plans establish specific forest management objectives and outcomes for each tenure (see Appendix 1).

The objectives of forest management are different for different tenures (e.g. national parks, state forests, private land and leasehold land) and each tenure has a role in the achievement of ESFM commitments. Not all ESFM criteria are applicable to every tenure.

For example, the *National Parks and Wildlife Act 1974* (NSW) establishes land set aside for the conservation of environment and heritage values, and public appreciation and enjoyment of those lands. The Montreal Criteria 'the conservation of biological diversity' primarily applies on national parks, and this tenure does not contribute to productive capacity. On the other hand, crown-timber land is the land set aside for the utilisation and management of wood production and other forest products, under the *Forestry Act 2012* (NSW).



## What will the Program deliver?

The Premier's terms of reference establishes five aims for the Program.

1. Focus on the information required to improve the adaptive management of NSW forests
2. Provide the public with transparent, independent, accessible, and robust evidence of forest management performance
3. Be adaptable to changes to both research priorities and forest monitoring methods
4. Be cost effective by employing efficient mechanisms to meet Program objectives
5. Satisfy NSW's obligations for national and international forest management reporting.

This section:

- establishes the foundational good practice<sup>4</sup> principles for each aim
- outlines the expected outcomes for each aim
- lists the actions to support achieving the aim, and an overview of roles and responsibilities.

## Aim 1 - Focus on priority information needs

### Good practice principles for design and delivery

#### The Program should meet both decision making needs and reporting requirements

- Monitoring, Evaluation and Reporting (MER) should address a variety of objectives of relevant land tenure managers and decision makers across different forest uses and at different scales (e.g. landscape and site scale)
- MER should be able to provide information that informs decision making at multiple operational levels; for example, for the information needs of Ministers, policy makers, regulators and tenure managers
- MER information should be readily available to meet reporting requirements, such as for RFAs, State of the Forests and State of the Environment reports

#### Evaluation questions should inform the Program design and focus monitoring

- A 'collect the data now, ask the evaluation questions later' approach may not always support improved management
- A proactive, inquiry-driven MER program will target decision makers' needs and make efficient use of scarce resources
- The design of the program needs to accommodate and allow for change in evaluation questions to accommodate future information needs

#### The Program should provide information at relevant spatial scales and timescales

- MER for forest management needs to be capable of accommodating spatial scales ranging from the forest stand to landscape - RFA, IFOA region and NSW
- There should be complementarity and scalability, where possible, between information provided at different spatial scales
- MER for forest management needs to be capable of accommodating relevant timescales for forest management, including potentially longer-term timescales for biophysical changes in forests.

#### Performance triggers, thresholds and baselines should be employed where possible

- Monitoring has a greater probability of informing management where documented thresholds are in place.
- While thresholds are difficult to identify in ecological and production systems, decision triggers can be used as a way to support evidence based adaptive management

### Focus on the information required to improve the adaptive management of NSW forests

#### Expected outcomes and ongoing benefits

1. Forest monitoring, evaluation and research answers priority evaluation questions related to forest management in NSW across tenures.
2. Uncertainties in forest management approaches are reduced systematically, through the provision of targeted evidence-based information.
3. Following the first four years of the Program, the NSW Government continues to invest in the Program, as it is providing valuable information for improving forest management in NSW.

#### Deliverables and roles (2019-20)

- 1.1 Priority information needs and evaluation questions are agreed by the Steering Committee to guide investment in forest monitoring, evaluation and research by early-2020.
  - Commission team to lead consultation with NSW forest management agencies and stakeholders on information needs; Steering Committee endorses priority information needs and evaluation questions.



1.2 Identify priority information needs for Aboriginal peoples in respect to forest management and monitoring by early-2020.	<ul style="list-style-type: none"> <li>▪ Commission engages Aboriginal researcher or consultant; Steering Committee endorses priority information needs and evaluation questions</li> </ul>
1.3 A strategic and peer-reviewed cross-tenure permanent forest monitoring plot network is designed to monitor key metrics, linked to remotely sensed information by mid-2020.	<ul style="list-style-type: none"> <li>▪ Co-designed by the State-wide Technical Working Group (TWG); peer review of the design by independent expert panel; Steering Committee endorsed.</li> </ul>
1.4 Foundational projects for monitoring, evaluation and research that provide early building blocks for the program established by end-2019.	<ul style="list-style-type: none"> <li>▪ Agencies collaborate to design forest monitoring, evaluation and research projects; independent expert panel assesses and ranks project proposals; the Steering Committee recommends projects to the Chair; Commission approves projects; Steering Committee agencies jointly implement the projects in collaboration with external research organisations.</li> </ul>
1.5 The Coastal IFOA monitoring program is designed and recommended by end-2019.	<ul style="list-style-type: none"> <li>▪ Co-designed by the Coastal IFOA TWG; peer reviewed by the independent expert panel, and Steering Committee to submit design to Department of Primary Industries (DPI) and Environment Protection Authority (EPA) for approval.</li> </ul>
1.6 Second tranche projects for monitoring, evaluation and research that align to priority information needs and evaluation questions are established, by mid-2020. These projects complement and potentially scale-up the early foundational projects.	<ul style="list-style-type: none"> <li>▪ Commission calls for proposals from agencies and other parties; independent expert panel assesses and ranks project proposals; the Steering Committee recommends projects to the Chair; Commission approves projects; projects implemented by successful proponents.</li> </ul>
1.7 The Regional Forest Agreement (RFA) monitoring, evaluation and research plan is designed, which identifies and prioritises monitoring and reporting obligations and commitments, and the extent of monitoring, evaluation and reporting required to satisfy each obligation and commitment by mid-2020.	<ul style="list-style-type: none"> <li>▪ Co-designed by the State-wide TWG; peer review of design by independent expert panel, Steering Committee endorsed.</li> </ul>

#### Deliverables and roles (2021-23)

1.8 At least two existing forest management plans or programs have been evaluated providing recommendations to enhance management by end-2021.	<ul style="list-style-type: none"> <li>▪ Commission leads independent evaluation of forest management plans or programs, and provides analysis and recommendations to the Steering Committee and the NSW Government.</li> </ul>
1.9 A cross-tenure network of permanent forest monitoring plots are established in RFA regions to report on priority ESFM indicators by end-2022.	<ul style="list-style-type: none"> <li>▪ Steering Committee agencies collaborate to implement the designed cross-tenure forest monitoring plot network, with oversight from the Commission. Relevant agencies and third parties will establish and monitor the plot network.</li> </ul>

## Aim 2 - Provide transparent and accessible evidence

### Good practice principles for design and implementation

- The Program should facilitate public engagement and improve public confidence**
- Effective public participation can improve management effectiveness, public confidence and legitimacy
  - The community and other stakeholders should have opportunities to be engaged in decision making in a timely manner
  - Relevant and timely MER information should be consistently published and accessible to the public

### Provide the public with transparent, independent, accessible and robust evidence of forest management performance

#### Expected outcomes and ongoing benefits

1. Stakeholders and the community trust the Program's processes and outputs.
2. Forest monitoring data, research and evaluations are made available to the public.

#### Deliverables and roles (2019-20)

- |  |   |
|--|---|
| <p>2.1 Forums for stakeholder consultation are established to draw in expertise of research organisations, forest managers, stakeholders and the community, in reviewing forest monitoring, research and evaluations starting in 2019.</p> | <ul style="list-style-type: none"> <li>▪ Commission to lead stakeholder consultation forums, with support from Steering Committee agencies and the independent expert panel.</li> </ul> |
| <p>2.2 Explore and document an approach to citizen science by mid-2020.</p>  | <ul style="list-style-type: none"> <li>▪ Commission team develops options; Steering Committee considers, agrees and adopts the approach; Commission approves.</li> </ul>                |

#### Deliverables and roles (2021-23)

- |   |   |
|---|---|
| <p>2.3 Forest agreement reporting commitments, including for RFAs and IFOAs, are met and publically available.</p>  | <ul style="list-style-type: none"> <li>▪ DPI is responsible for reporting on RFAs, in collaboration with the Steering Committee. The next five-yearly report is due in 2023.</li> <li>▪ Forestry Corporation of NSW is responsible for annual reporting on IFOAs; the Steering Committee will review and endorses the Coastal IFOA monitoring program; the Commission, as independent chair of the Steering Committee recommends to EPA and DPI on any updates to the IFOA conditions and protocols.</li> </ul> |
| <p>2.4 Annual independent insights reports, including independent recommendations to the NSW Government on potential improvements to forest management.</p> | <ul style="list-style-type: none"> <li>▪ The Commission is responsible for the independent annual reports to the NSW Government. These reports will be reviewed by the Steering Committee (including the expert panel) and draw on the monitoring evaluation and research agreed and commissioned under the Program, as well as the existing knowledge base of NSW agencies.</li> </ul>   |
| <p>2.5 Monitoring data and information is provided through the NSW's Sharing and Enabling Environmental Data portal by end-2021 (see also 5.2 below).</p>   | <ul style="list-style-type: none"> <li>▪ The Steering Committee is responsible for delivering the commitment to open government; the Commission tracks reporting commitments and obligations, including on data availability.</li> </ul>  |

## Aim 3 - Adapt to changes in research and monitoring priorities

### Good practice principles for design and implementation

#### The Program should evolve to respond to priority questions and risks

- Monitoring and evaluation should be regularly reviewed and adjusted to meet the evolving information needs of decision makers
- An iterative process will enable the Program to accommodate changes in context and circumstances, and adapt to respond to new information requirements of decision makers.

#### The Program will continue to use best practice monitoring and research methods

- Best practice monitoring and research methods will be adopted to ensure the best, most scientifically robust approach, is applied to answer the evaluation questions at hand.

### Be adaptable to changes to both research priorities and forest monitoring methods

#### Expected outcomes and ongoing benefits

1. Monitoring, evaluation and research activities adopt and adapt to new or evolving priority evaluation questions and decision needs.
2. Best-practice research, evaluation and monitoring methods are adopted where appropriate and affordable.
3. NSW agencies demonstrate how research has informed their on-ground monitoring and evaluation of forest management practices.

### Deliverables and roles (2019-20)

- |  |  |
|--|--|
| 3.1 The application of emerging research and technology is piloted or adopted by the Program in the implementation of foundational projects starting 2019. | <ul style="list-style-type: none"> <li>▪ Steering Committee agencies jointly implement foundational and other projects in collaboration with external research organisations.</li> <li>▪ The State-wide TWG oversees the implementation of foundational projects.</li> </ul> |
| 3.2 Research opportunities and partnerships are established in the implementation of foundational projects by end-2020.                                    | <ul style="list-style-type: none"> <li>▪ Steering Committee agencies jointly implement the foundational projects in collaboration with external research organisations.</li> <li>▪ The State-wide TWG oversees the implementation of foundational projects.</li> </ul>       |
| 3.3 Annual forums for researchers, land managers and stakeholders to review data, findings and implications from monitoring and research.                  | <ul style="list-style-type: none"> <li>▪ Commission to lead forums, with support from Steering Committee agencies, external research partners and the independent expert panel.</li> </ul>   |

### Deliverables and roles (2021-23)

- |  |  |
|--|--|
| 3.4 New technologies and monitoring methods, such as advances in remote sensing, are adopted and implemented by the Program where they are cost-effective by end-2022. | <ul style="list-style-type: none"> <li>▪ Steering Committee agencies jointly implement foundational and second tranche monitoring, evaluation and research projects.</li> <li>▪ The State-wide TWG oversees the implementation of foundational and second tranche projects.</li> </ul> |
|--|--|

## Aim 4 - Employ cost-effective mechanisms

### Good practice principles for design and implementation

#### Program priorities should be determined through an analysis of risks, opportunities and value for money

- Risk, opportunities and value for money analysis will support decision-makers to prioritise information needs. A risk-based approach assesses the need to monitor or evaluate condition and threats based on economic, social and environmental impacts
- Opportunities assessment enables the Program to evaluate the economic, social and environmental benefits that may accrue from investment in monitoring, evaluation and research, as part of the prioritisation process. MER should balance precision and cost effectiveness, while ensuring that reporting criteria and indicators are reported with sufficient quality of data
- Analysis of the opportunity cost of information will be undertaken to ensure that generating new, and potentially unnecessary, information is not at the cost of investing in improved management performance.

#### The Program should facilitate coordination and collaboration between agencies and data sharing

- The Program creates an opportunity to bring tenure managers together (for example, from national parks, state forest, Crown land reserves, private landholders) to address management issues across tenures (such as pests and weeds)
- Establishing data collection and sharing arrangements between agencies and across tenures, will enhance transparency of information and cooperation. The Program will draw on existing data and information where possible.

### Be cost effective by employing efficient mechanisms to meet Program objectives

#### Expected outcomes and ongoing benefits

1. Unit cost of data collection is lowered, for example through technological improvements and collaboration
2. The Program enhances synergies between NSW agencies, and enables cost sharing and improved consistency in data collection; duplication is reduced and reporting aligned.
3. Use of existing monitoring data is maximised for evaluation and research into enhanced forest

#### Deliverables and roles (2019-20)

- |   |   |
|---|---|
| <p>4.1 Efficiency measures are introduced by foundational projects that reduce duplication in data collection and optimise existing forest monitoring programs by end-2019.</p>         | <ul style="list-style-type: none"> <li>▪ Steering Committee agencies jointly implement foundational monitoring, evaluation and research projects. The State-wide TWG oversees the implementation of foundational projects.</li> </ul> |
| <p>4.2 Identify opportunities to improve how existing NSW agency monitoring, evaluation and research data programs can better inform adaptive forest management in NSW by mid-2020.</p> | <ul style="list-style-type: none"> <li>▪ Commission leads an independent review with support from the expert panel and report to the Steering Committee.</li> </ul>   |

#### Deliverables and roles (2021-23)

- |   |   |
|---|---|
| <p>4.3 The unit costs of site-based sampling approaches can be demonstrated by end-2021.</p>  | <ul style="list-style-type: none"> <li>▪ Steering Committee agencies jointly implement foundational and second tranche projects.</li> <li>▪ The State-wide TWG oversees the implementation of foundational and second tranche projects and their utility and cost-effectiveness in meeting the Program's objectives.</li> </ul> |
| <p>4.4 Data management plans are established, providing efficiencies by standardising existing or new monitoring and sampling protocols, datasets and data formats by early-2021.</p> | <ul style="list-style-type: none"> <li>▪ Co-designed by the State-wide TWG; Steering Committee endorsed.</li> </ul>   |

## Aim 5 - Satisfy reporting obligations

### Good practice principles for design and implementation

#### Review periods should be frequent enough to inform management and decision-making

- Evaluation of forest management programs and monitoring data on a regular basis will drive better outcomes and value for money
- Performance and accountability will be improved through more consistent monitoring and evaluation, occurring at least annually for RFAs and IFOAs.

#### The Program should meet both decision-making needs and reporting requirements

- MER should address a variety of objectives of relevant tenure managers and decision-makers across different forest uses and at different scales (e.g. landscape and site scale)
- MER should be able to provide information that informs decision-making at multiple operational levels; for example, for the information needs of Ministers, policy makers, regulators and tenure managers
- MER information should be readily available to meet reporting requirements, such as for RFAs, State of the Forests and State of the Environment reports

### Satisfy NSW's obligations to national and international forest management reporting

#### Expected outcomes and ongoing benefits

1. Reporting commitments are met on time, and are publicly accessible.
2. RFAs reports and for national State of the Forests reports, track progress against the commitments to ESFM, including an improvement in the full suite of forest values in NSW.

#### Deliverables and roles (2019-20)

5.1 Foundational evaluation questions and projects are designed to provide useful and practical information for reporting on ecologically sustainable forest management by 2019.

- Steering Committee agencies will design the foundational projects to align with the Montreal process criteria and indicators for ESFM.
- DPI is responsible for leading the RFA and national State of the Forest Reporting, in collaboration with the Steering Committee agencies.

#### Deliverables and roles (2021-23)

5.2 Reporting commitments for forest agreements are being met on time and reporting information and monitoring data on ESFM is available on NSW's Sharing and Enabling Environmental Data portal by end-2021.

- The Steering Committee is responsible for delivering the commitment to open government; the Commission tracks reporting commitments and obligations.
- DPI is responsible for leading the RFA and State of the Forest Reports, in collaboration with the Steering Committee agencies.

## How will the Program be governed?

The Premier's [terms of reference](#) establishes the roles and responsibilities of the Commission and NSW agencies.

The Commission is responsible for independently overseeing and advising on the design, implementation, review and continuous improvement of the Program.

### NSW Forest Monitoring Steering Committee

The Commission independently chairs the NSW Forest Monitoring Steering Committee. The Steering Committee consists of NSW agencies with responsibilities for natural resource and environmental policy, regulation, delivery and science, as well as agencies with a direct role in forest management.

- Department of Planning, Industry and Environment (including Department of Primary Industries - Forestry; Energy, Environment and Science, and Department of Industry, Lands and Water)
- Environment Protection Authority
- Department of Premier and Cabinet (including Aboriginal Affairs and Heritage)
- Local Land Services
- Forestry Corporation of NSW.

The Steering Committee is required to establish the Program Framework, ensure the Program is efficiently implemented, provide strategic direction, and coordinate periodic and major strategic reviews of the Program.

NSW agencies will be funded through the Program to implement the Program's monitoring, evaluation, and research projects, including the collection, procurement, analysis and sharing of data and reports for forests on all tenures. NSW agency scientists will lead the implementation of the Program's monitoring projects and lead scientific research projects that answer evaluation questions. NSW agencies remain responsible for the ongoing implementation, reporting on, and adaptive management of forest agreements, including the RFAs and IFOAs.

### Independent experts

The Commission has appointed four independent experts to advise the Steering Committee:

- Professor Patrick Baker, former Australian Research Council Future Fellow and School of Ecosystem and Forest Sciences, The University of Melbourne.
- Associate Professor Phillip Gibbons, Fenner School of Environment and Society, Australian National University.
- Associate Professor Jacki Schirmer, Institute for Applied Ecology & Health Research Institute, University of Canberra.
- Dr Peter Hairsine, Centre for Water and Landscape Dynamics at the Fenner School of Environment and Society, Australian National University

The Steering Committee can engage additional experts to support the design and implementation components of the Program as needed, for example, economists will be engaged to undertake economic analysis for the Program if required.

### Stakeholder engagement

The community, environment and industry stakeholders will be engaged on the Program's design, implementation, annual reviews and major reviews. Opportunities to be involved in the Program through consultation meetings and forums, will be published in the Stakeholder Engagement and Communications Plan on the Commission's website. The Program will develop a specific Aboriginal Engagement Strategy.

Stakeholders will contribute to information needs assessments, and the prioritisation of evaluation questions and monitoring needs, under the Program. Research organisations and community organisations are expected to be partners in specific monitoring and research projects, for example, through citizen science and university partnerships. Stakeholders will be invited to annual forums to jointly review the findings and the implications for forest management in NSW.

## Reporting

The Commission, on behalf of the Steering Committee, will provide progress reports at least annually to the NSW Government. Independent advice, recommendations and answers to priority evaluation questions will be provided by the Commission to NSW Ministers and NSW agencies. These reports will be made publically available

## How will the program be improved?

'Adaptive monitoring' is good practice. Programs need space to explore and evolve, and develop in response to new questions, or improve monitoring approaches and protocols.<sup>5</sup> This Program will not set and forget. Evaluation, reflection and learning are key pillars of the Program.

The Steering Committee will develop an evaluation plan for Program and review the Program annually.

An independent review will occur mid-term and at the end of the Program.

The following three questions will guide the evaluation:

**1. Are we achieving what we said we would?**

For example, against the aims, deliverable and expected outcomes for the Program.

**2. Are we achieving it in a way we said we would?**

For example, against the governance, principles and community engagement for the Program.

**3. Are we learning and improving the Program?**

The answer to these questions will help the Steering Committee to:

- demonstrate our impact and value
- ensure accountability and transparency
- identify opportunities for improvement and innovation.

## Appendix 1 – NSW land tenures – legislation, objectives and land managers<sup>6</sup>

Tenure	Primary Legislation	Primary outcome and purpose	Land manager	How ESFM criteria align
Crown-timber land, including State forest, flora reserves or land affected by a profit à prendre	<i>Forestry Act 2012 (NSW)</i>	Land set aside for the utilisation and management of wood production and other forest products; and in the case of flora reserves for the preservation of native flora.  Multiple use public native forests in NSW also provide for recreational uses and for the conservation of environment and heritage values. As well as flora reserves, special management zones can be declared to protect special conservation values and prohibit forestry operations.	Forestry Corporation of NSW National Parks and Wildlife Service manages some flora reserves	Maintenance of productive capacity of forest ecosystems Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies Maintenance of ecosystem health and vitality Conservation and maintenance of soil and water resources
Conservation reserves <ul style="list-style-type: none"> <li>• National Parks</li> <li>• Historic sites</li> <li>• State conservation areas</li> <li>• Regional parks</li> <li>• Karst conservation reserves</li> <li>• Nature reserves</li> <li>• Aboriginal areas</li> </ul>	<i>National Parks and Wildlife Act 1974 (NSW)</i>	Land set aside for the conservation of environment and heritage values, and public appreciation and enjoyment of those lands	National Parks and Wildlife Service	Conservation of biological diversity Maintenance of ecosystem health and vitality Conservation and maintenance of soil and water resources
Crown reserves including (but not limited to): <ul style="list-style-type: none"> <li>• Nature reserves</li> <li>• Coastal lands</li> <li>• Travelling stock routes</li> <li>• State heritage sites</li> <li>• Waterway corridors</li> <li>• commons</li> </ul>	<i>Crown Land Management Act 2016 (NSW)</i>	Land set aside for public purposes including environmental and heritage protection, recreation and sport, open space, community halls, special events and government services.	Department of Planning, Industry and Environment – Crown Land	Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies Maintenance of ecosystem health and vitality Conservation and maintenance of soil and water resources
Leasehold including Western Land Leases	<i>Crown Land Management Act 2016 (NSW)</i>	Land leases from the Crown for grazing, agriculture, forestry, residences and businesses	Department of Planning, Industry and Environment – Crown Land and the Lessee Forestry Corporation of NSW (for the duration of the	Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies Conservation and maintenance of soil and water resources



Tenure	Primary Legislation	Primary outcome and purpose	Land manager	How ESFM criteria align
Freehold land	<i>Local Land Services Act 2013</i> (NSW)	Private use at landowner's discretion, including sustainable forestry, land management, and conservation (subject to legislative constraints)	forestry operations) Land owner	<p>Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies</p> <p>Conservation of biological diversity</p> <p>Maintenance of ecosystem health and vitality</p> <p>Conservation and maintenance of soil and water resources</p>

## Appendix 2 – Montreal Criteria and Indicators for ESFM

<p><u>Ecologically sustainable forest management framework</u></p> <p>The Australian Sustainable Forest Management Criteria and Indicators (2008) includes seven criteria and 44 indicators for Australia’s State of the Forest Report.</p> <p>The NSW <a href="#">‘Ecologically Sustainable Forest Management Criteria and Indicators for the NSW Forest Agreement Regions’</a> (2016) includes seven criteria and 36 indicators. The Australian Government is responsible for monitoring and reporting on 8 indicators highlighted in <b>blue text</b>.</p>	
Criteria	Indicator
<b>1. Conservation of biological diversity</b>	<p><u>1.1 Ecosystem diversity:</u></p> <p>a. Area of forest by forest type and tenure</p> <p>b. Area of forest by growth stage</p> <p>c. Area of forest in protected area categories</p> <p>d. Fragmentation of forest cover</p>
	<p><u>1.2 Species diversity:</u></p> <p>a. Forest-dwelling species for which ecological information is available</p> <p>b. The status of forest-dwelling species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment</p> <p>c. Representative species from a range of habitats monitored at scales relevant to regional forest management</p>
	<p><u>1.3 Genetic diversity:</u></p> <p>a. <b>Forest associated species at risk from isolation</b></p> <p>b. b. Native forest and plantations of indigenous timber species that have genetic resource conservation mechanisms in place</p>
<b>2. Maintenance of productive capacity of forest ecosystems</b>	<p><u>2.1 Maintenance of productive capacity of forest ecosystems</u></p> <p>a. Native forest available for wood production, area harvested and growing stock of merchantable and non-merchantable tree species</p> <p>b. Age class and growing stock of plantations</p> <p>c. Annual removal of wood products compared to the volume determined to be sustainable for native forests, and the future yields for plantations</p> <p>d. Annual removal of non-wood forest products compared to the level determined to be sustainable</p> <p>e. The proportion of the total area of native forest harvested that has been effectively regenerated, and the area of plantation clearfell harvested and the proportion of that effectively re-established</p>
<b>3. Maintenance of ecosystem health and vitality</b>	<p><u>3.1 Maintenance of ecosystem health and vitality</u></p> <p>a. Scale and impact of agents and processes affecting forest health and vitality</p> <p>b. Area of forest burnt by planned and unplanned fire</p>
<b>4. Conservation and maintenance of soil and water resources</b>	<p><u>4.1 Conservation and maintenance of soil and water resources</u></p> <p>a. Area of forest land managed primarily for protective functions Protective</p> <p>b. Management of the risk of soil erosion in forests</p> <p>c. Management of the risks to soil physical properties in forests</p> <p>d. Management of the risks to water quantity in forests</p> <p>e. Management of the risks to water quality in forests</p>
<b>5. Maintenance of forest contribution to global carbon cycles</b>	<p><u>5.1 Maintenance of forest contribution to global carbon cycles</u></p> <p>a. Contribution of forest ecosystems and forest industries to the global greenhouse gas balance</p>
	<p><u>6.1 Production and consumption:</u></p> <p>a. a. Value and volume of wood and wood products</p>

<b>6. Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies</b>	b. b. Values, quantities and use of non-wood forest products c. c. Value of forest-based services d. <b>Production and consumption, and import/export of wood, wood products and non-wood products</b> e. <b>Degree of recycling of forest products</b>
	<u>6.2 Investment in the forest sector:</u> a. Investment and expenditure in forest management services b. b. Investment in research, development, extension and use of new and improved technologies
	<u>6.3 Recreation and tourism:</u> a. Area of forest available for public recreation/tourism and the use and type of facilities and activities on offer <b>b. Range and use of recreation/tourism activities available</b>
	<u>6.4 Cultural, social and spiritual needs and values;</u> a. Area of forest to which Indigenous people have use and rights that protect their special values and are recognised through formal and informal management regimes b. Registered places of non-Indigenous cultural value in forests that are formally managed to protect those values c. The extent to which Indigenous values are protected, maintained and enhanced through Indigenous participation in forest management <b>d. The importance of forests to people</b>
	<u>6.5 Employment and community needs;</u> a. Direct and indirect employment in the forest sector <b>b. Wage rates and injury rates within the forest sector</b> <b>c. Resilience of forest dependent communities to changing social and economic conditions</b> <b>d. Resilience of forest dependent Indigenous communities to changing social and economic conditions</b>
<b>7. Legal, institutional and economic framework for forest conservation and sustainable management</b>	<u>7.1 Legal, Institutional and economic framework for forest conservation and sustainable management</u> a. Extent to which the legal framework supports the conservation and sustainable management of forests b. Extent to which the institutional framework supports the conservation and sustainable management of forests c. Extent to which the economic framework supports the conservation and sustainable management of forests d. Capacity to measure and monitor changes in the conservation and sustainable management of forests e. Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services

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