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Forest inventory for private native forestry, farm forestry and Indigenous forestry

Private native forestry sector report

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Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands on which we live and work, their culture, and their Elders past and present.

Foreword

Demand for sustainably sourced forest and wood products is increasing, both globally and in Australia. There are opportunities to capitalise on this growth in demand and increase the economic and social benefits from utilisation of the wood resources of Australia's forests.

However, access by the Australian forestry sector to publicly managed native forest resources has progressively diminished since the 1990s. The area of commercial plantations is also declining in some regions. A better understanding of the area and commercial potential of other forest resources across Australia, including privately managed native forests, planted farm forestry, and forests managed by Indigenous peoples could help shed light on new sources of supply.

This report on the private native forestry sector is one of three reports developed as part of the project 'Forest inventory for private native forestry, farm forestry and Indigenous forestry', developed under the National Forest Industries Plan *Growing a better Australia—A billion trees for jobs and growth* (DAWR 2018), with separate reports for each of the planted farm forestry estate and Indigenous forestry[1].

The goal of the project is to improve the national description of Australia's forests in areas outside the publicly managed estate, and it delivers on one of the key actions identified in the plan, "*Working with state governments, private native forest owners and interested Indigenous communities to unlock potential timber supply, and to deliver economic returns to landowners"*.

The project was designed to increase understanding of Australia's forest resources by assessing existing available information on three components outside the publicly managed estate, namely privately managed native forests, planted farm forestry, and forests managed by Indigenous peoples. The results will provide a baseline of historical knowledge. Recommendations from the project will assist governments at all levels, industry, landowners, managers and other decision makers in deciding the next steps to developing a more coordinated processes for data collection and management that are required to determine the potential for such forests to produce commercial wood supplies.

The figures, areas and information presented in this report on the private native forestry sector are based on data and information supplied by a range of stakeholders to ABARES for the purposes of this project, as well as national spatial datasets held by ABARES, as at 2021. While every effort has been made to validate the data, including by use of satellite imagery and other independent datasets, the extent and location of the forest areas reported here are at a scale and accuracy best suited for national and regional reporting only. Updates in underlying datasets since 2021, especially areas under permit to harvest, have not been captured in this report. As such, this report gives a snapshot as at 2021 of private native forestry in Australia that is temporally consistent with the stakeholder feedback on the sector contained in this report, using a new methodology to characterise the commercial potential of the private native forest estate.

[1] Sector reports for the 'Forest inventory for private native forestry, farm forestry and Indigenous forestry' project are available at doi.org/10.25814/C7S6-Y452.

Contents

Tables

Figures

Acronyms

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFG	Australian Forest Growers (now Forestry Australia)
AFPA	Australian Forest Products Association
AFWPS	Australian Forest and Wood Products Statistics
DAF	Queensland Department of Agriculture and Fisheries
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DAWE	Australian Government Department of Agriculture, Water and the Environment
DAWR	Australian Government Department of Agriculture and Water Resources
DELWP	Victorian Department of Environment, Land, Water and Planning (now Department of Energy, Environment and Climate Action)
DJPR	Victorian Department of Jobs, Precincts and Regions (now Department of Jobs, Skills, Industry and Regions)
DNRME	Queensland Department of Natural Resources, Mines and Energy
DPI	New South Wales Department of Primary Industries
DWER	Western Australia Department of Water and Environmental Regulation
FWPA	Forest and Wood Products Australia
FWPRDC	Forest and Wood Products Research and Development Corporation
GIS	Geographic information system
IFA	Institute of Foresters of Australia (now Forestry Australia)
JVAP	Joint Venture Agroforestry Program
LLS	Local Land Services New South Wales
NFI	National Forest Inventory
NRM	Natural resource management
PFSQ	Private Forest Services Queensland
PFT	Private Forests Tasmania
PNF	Private native forestry
RIRDC	Rural Industries Research and Development Corporation (now AgriFutures Australia)
SOFR 2018	Australia's State of the Forests Report 2018

Key terms

See *Australia's forests and forestry glossary* (ABARES 2020)[2] for the meaning and usage of general forestry terms. In addition, the following terms used in this report have specific meanings as defined below. Usage of these terms in this report may differ from usage elsewhere.

Agency-assessed potential private native forestry	Privately managed native forest deemed by a state government agency to have some level of suitability for commercial forestry, based on remotely sensed data and forest productivity modelling. Landholders have not been, or have not been identified to have been, involved in the assessment process. Excludes areas identified as land-manager assessed private native forestry. Identified in this study as Private Native Forestry Category 2.
Commercial plantation	A National Forest Inventory forest category that comprises areas of hardwood or softwood plantations managed commercially to supply logs to wood-processing industries for the manufacture of wood products, with estates usually exceeding 1,000 hectares. Commercial plantations are reported through Australia's National Plantation Inventory[3]. 'Commercial plantation' does not include forest reported in the other two national forest categories – 'Native forest' and 'Other forest' – used in the National Forest Inventory.
Farm forestry	Establishment or management of *planted* trees, usually in rows and which meet the definition of forest, with wood production as a primary management intent, on individual private landholdings with a total area of plantings usually less than 1,000 hectares. Usage of native forests on individual private landholdings is described as private native forestry, and reported separately.
Forest	An area, incorporating all living and non-living components, that is dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding 2 metres and with existing or potential crown cover of overstorey strata about equal to or greater than 20%. This includes Australia's diverse native forests and plantations, regardless of age. It is also sufficiently broad to encompass areas of trees that are sometimes described as woodlands.
Indigenous forestry	Usage of areas of forest on land managed by Indigenous people and communities, in which wood production can occur. These areas include

[2]Also available in searchable online form at agriculture.gov.au/abares/forestsaustralia/glossary
[3] See agriculture.gov.au/abares/forestsaustralia/plantation-inventory-and-statistics

	land owned by Indigenous people as well as land managed but not owned by Indigenous people.
Land-manager assessed private native forestry	Privately managed native forest where there is known management intent for actual commercial forestry. Includes areas assessed as having approval to harvest or a management intent to harvest. Identified in this study as Private Native Forestry Category 1.
Landholder	A person or business who owns or leases an area of land. Includes farmers, businesses and other entities.
Leasehold forest	Crown land held under leasehold title and generally privately managed. One of six tenure classes used to classify land in the National Forest Inventory.
National Forest Inventory	Australia's system of integrated national forest data, compiled from state, territory and Australian government agencies, industry information, and independent, remotely sensed data, using national standards and protocols for collation and reporting. Used to meet national and international forest-related reporting requirements. Includes the categories 'Native forest', 'Commercial plantation' and 'Other forest'[4]. The National Plantation Inventory is a program of the National Forest Inventory.
Nationally assessed potential private native forestry	Privately managed native forest assessed by ABARES to have some level of suitability for commercial sawlog production based on national historical data. Excludes areas identified as land-manager assessed or agency-assessed potential private native forestry. Areas assessed as commercial are allocated to one of five commerciality classes (Very low, Low, Moderate, High and Very high). Identified in this study as Private Native Forestry Category 3.
Native forest	A National Forest Inventory forest category that comprises national forest types dominated by the suite of native tree species naturally associated with forest in that location and located within their natural range 'Native forest' does not include forest reported in the other two national forest categories used in the National Forest Inventory, 'Commercial plantation' and 'Other forest'.
Native forest type	Any one of eight broad national forest types (Acacia, Callitris, Casuarina, Eucalypt, Mangrove, Melaleuca, Rainforest, and Other native forest) into which Australia's native forests are classified in the National Forest Inventory.

Other forest	A National Forest Inventory forest category that principally comprises non-commercial plantations and planted forests that are not reported through the National Plantation Inventory but that satisfy the definition of forest. 'Other forest' includes agroforestry plantations (typically less than 1,000 hectares), sandalwood plantations, environmental plantings, plantations within the reserve system, and plantations regarded as not commercially viable. Non-planted forests dominated by introduced species are also included in this category. 'Other forest' does not include forest reported in the other two national forest categories used in the National Forest Inventory, 'Commercial plantation' and 'Native forest'.
Private forest	Land held under freehold title and typically under private ownership. It excludes leased Crown land, but includes land held under freehold title with special conditions attached for designated Indigenous communities. One of six tenure classes used to classify land in the National Forest Inventory.
Private native forestry land	Usage for wood production of areas of native forest on privately owned land and privately managed leasehold land where timber tights are held by the owner or manager. Includes areas of native forest on individual land holdings managed as part of farm enterprises.
Silvopastoralism	A land use that integrates livestock grazing and wood production for environmental and financial benefits. Silvopastoralism can occur in forest or in sparse woody vegetation (non-forest), and with either naturally occurring or planted trees.
Yield association	A grouping of forest types, based on floristic and structural information, that display similar commercial productivity and merchantability attributes.

[4] agriculture.gov.au/abares/forestsaustralia/australias-national-forest-inventory

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Executive summary

This investigation has identified forested areas of Australia on private and leasehold tenure that were managed for commercial native forestry as at 2021, as well as additional areas that may be potentially suitable for private native forestry. The actual and potential wood resources for which data were available have been characterised by region, forest type, rainfall zone, and distance to sawmills. The work has also identified key recommendations for improved data and knowledge that would benefit land managers in commercial development of private native forest resources and would benefit governments in establishing appropriate policy and regulatory frameworks for private native forestry. Finally, the work collates stakeholder feedback on opportunities to improve the regulatory environment and landholder access to information.

Rationale and approach

Demand for forest and wood products sourced from sustainably managed forests is increasing both globally and in Australia. Historically, wood production occurred in sustainably managed multiple-use public native forests and commercial plantations. However, access by the Australian forestry sector to public native forest resources has progressively diminished since the 1990s, and the area of commercial plantations is currently declining in some regions. A better understanding of the area and commercial potential of other forest resources across Australia could help shed light on new sources of supply.

Australia's 132 million hectares of native forests are distributed across both public and private land tenures, and are dominated by eucalypt species. Of this area, 88 million hectares (67%) is privately managed on either private freehold or leasehold land. However, most of the wood harvested in Australia from native forests continue to be sourced from multiple-use public native forests managed by government agencies, even though that tenure represents only 7% of the total area of native forest. This report identifies and compiles existing, available resource information on Australia's private native forest resource managed for, or potentially available for, commercial wood production, as collected by various programs over time.

A comprehensive nationwide stakeholder consultation process was undertaken between 2019 and 2021 to document existing knowledge and information describing Australia's private native forestry resource managed for wood production (as a sole objective or as one of several objectives), and to determine the status of historical inventory programs and datasets. Information describing private native forestry was sourced from 53 individuals and organisations with involvement in or knowledge of the private native forestry sector (landowners, forestry consultants, government departments and agencies, contractors, processors, exporters, traders and industry peak bodies). The datasets identified ranged from detailed on-ground forest inventory to remotely sensed data products. ABARES analysed and validated the datasets, resulting in a final set of nine externally sourced spatial datasets. These nine datasets, together with an ABARES spatial dataset on native forest sawlog commerciality, and ABARES datasets on forest type and land tenure, were then combined and used to describe private native forestry across Australia. Updates in datasets since 2021 for areas under permit to harvest or assessed by state agencies as having potential for private native forestry have not been captured in this report. As such, data in this report gives a snapshot in time of private native forestry in Australia that is temporally consistent with the stakeholder feedback on the sector contained in this report.

The private native forestry datasets were constrained to areas of native forest on private or leasehold land (except for leasehold land in Queensland where the Crown retains rights to the timber). Areas of mangrove forest and of rainforest outside Tasmania were also excluded, as were areas legally restricted from wood harvesting such as through conservation covenants, regulations or management prescriptions, and areas previously identified as planted farm forestry (Daian et al. 2022).

The area of actual or potential private native forestry land thus identified was attributed according to a hierarchy of three categories developed to describe forest as either managed for, or having the potential to meet, private native forestry objectives. The categories are ranked to reflect the level of knowledge of actual or potential private native forestry: Category 1 represents planned or actual private native forestry, while Categories 2 and 3 represent potential private native forestry with differing types of assessment and levels of confidence.

- Category 1 'Land-manager assessed' reports known or planned actual private native forestry activities, based on on-ground knowledge of approval to harvest or indicated land-management intent.
- Category 2 'Agency-assessed potential' reports regional-scale assessments of potentially commercial privately managed forests undertaken by state government agencies, based on remotely sensed data and forest productivity modelling but with no knowledge of management intent. Areas classified in Category 1 are excluded from Category 2.
- Category 3 'Nationally assessed potential' reports a national compilation by ABARES of historical productivity and merchantability assessments for commercial sawlog production, again with no knowledge of management intent. Areas classified in Category 1 or Category 2 are excluded from Category 3.

Further characterisation of forest areas in Categories 1, 2 and 3 was undertaken to describe their forest type, height category, structural cover (woodland, open forest, closed forest), rainfall zone, distance to a sawmill, and distribution in relation to eleven Regional Forestry Hubs. Data on standing wood volumes are not available, which means a full resource inventory could not be completed.

Private native forestry in Australia

A total of 17.5 million hectares of native forest was identified in this report using the existing inventory datasets of forest as either being managed for, or having the potential to be managed for, private native forestry.

This area is distributed across Australia, except in the Australian Capital Territory and South Australia as harvesting of native forests is not permitted in those jurisdictions. Most of the 17.5 million hectares is in the Northern Territory (6.1 million hectares), Queensland (5.7 million hectares) and New South Wales (4.4 million hectares). Smaller areas are in Tasmania (520 thousand hectares), Western Australia (490 thousand hectares) and Victoria (440 thousand hectares).

Of these 17.5 million hectares of native forest identified as actual or potential private native forestry:

- 1.4 million hectares (8%) was designated as Category 1 'Land-manager assessed', representing areas having approval to harvest or management intent to harvest. Data for these areas was only available for Queensland, New South Wales and Tasmania. Most (85%) of this area managed for wood production occurs within six of the 11 Regional Forestry Hubs, with none or effectively none in the other five hubs, and 15% occurring outside of the hubs.
- 6.6 million hectares (38%) was identified as Category 2 'Agency-assessed potential', representing areas assessed by state government agencies. The majority of this area is in Queensland and New South Wales. Almost all (94%) of the area designated as Category 2 occurs within six of the 11 Regional Forestry Hubs, with none in the other five hubs and 6% occurring outside of the hubs.
- 9.5 million hectares (54%) were identified as Category 3 'Nationally assessed potential', representing areas assessed by ABARES. Over half this area is in the Northern Territory, with other major areas in New South Wales. The areas of Moderate, High and Very high sawlog commerciality occur mostly in New South Wales, with smaller areas in Western Australia, Victoria and Queensland. The area is distributed across all 11 of the Regional Forestry Hubs, and 22% occurs outside the hubs.

Areas of private native forest in all these three categories have the potential to contribute to future national wood flows. However, it is only for Category 1 areas that management intent for private native forestry can be deduced: these areas have a higher likelihood to contribute to wood flow compared with areas in Categories 2 or 3. There is no information on management intent for areas in Categories 2 and 3, and they are described in this work as 'potentially commercial', based on state or national assessments of site productivity, species merchantability, or other factors: individual land manager intent will determine if commercial production of wood products will in fact occur from those areas of forest.

Actual or potential private native forestry land by Regional Forestry Hub

The eleven Regional Forestry Hubs contain 14.8 million hectares (85%) of the total area of actual or potential private native forestry land. Of this area within hubs:

- 1.2 million hectares (8%) is designated as Category 1 'Land-manager assessed',
- 6.2 million hectares (42%) is Category 2 'Agency-assessed potential'
- 7.4 million hectares (50%) is Category 3 'Nationally assessed potential'.

Most of the area within the Regional Forestry Hubs is in the Northern Territory and Ord Valley hub (5.9 million hectares, all Category 3), the South and Central Queensland hub (3.2 million hectares), the North East New South Wales hub (2.1 million hectares) and the North Queensland hub (1.9 million hectares). Detailed analyses, with maps, for individual hubs are presented in Section 2.4.

The hubs with the largest areas of privately managed native forest for which there is known management intent for commercial forestry (Category 1) are the South and Central Queensland hub (588 thousand hectares) and the North East New South Wales hub (404 thousand hectares).

These two hubs plus the Tasmania hub have relatively high proportions (18-20%) of their private native forestry land in Category 1 compared to other hubs, reflecting the existing private native forestry management activities in these regions. The areas identified in other hubs are completely (or almost completely) in Categories 2 and 3, representing land assessed as having potential for private native forestry, but not known to be actually managed for private native forestry.

The 2.7 million hectares of actual or potential private native forestry land identified outside Regional Forestry Hubs are predominantly in Category 3 'Nationally assessed potential' and are mostly in inland New South Wales. They include 0.79 million hectares of Callitris forest.

Distance to a sawmill

Distance to processing infrastructure is a major determinant of costs of haulage, and thus the overall commercial viability of a harvest operation. Most of the areas of actual or potential private native forestry land in Category 1 'Land-manager assessed' (84%) and Category 2 'Agency-assessed potential' (76%) are within 100 kilometres of an existing sawmill. Conversely, 28% of the area of potential private native forestry land in Category 3 ('Nationally assessed potential') is within 100 kilometres of a sawmill, with 53% of the area greater than 200 kilometres from a sawmill (all of which is in the Northern Territory and northern Queensland). These findings are unchanged from a more recent update to the sawmill database. This analysis characterises the distribution of the resource by distance to sawmills, however, a number of factors will determine the economic viability of the sector. Australia's wood processing industry is diverse and dynamic, driven by changing demands for wood products, both domestically and internationally. The results from the distance to sawmills by hubs for each of the commerciality categories therefore provide a context for regional sector opportunities.

Actual or potential private native forestry land by forest type, height and cover class, and rainfall zone

The Eucalypt national forest type comprises 15.3 million hectares (87%) of the total area of actual or potential private native forestry land, with approximately equal areas of open and woodland forest canopy cover classes. Most (14.0 million hectares) of this is of medium height class, but areas identified as Category 1 'Land-manager assessed' private native forestry have a higher proportion of tall forest. There are smaller areas of other forest types and height classes, including 0.94 million hectares of Callitris forest.

Areas of actual or potential private native forestry land (Categories 1, 2 and 3) occur in average annual rainfall zones from less than 400 mm to greater than 1800 mm, and there are extensive areas of actual or potential private native forestry land in areas of low to moderate annual rainfall in New South Wales, Tasmania and Western Australia.

In New South Wales, the majority of Category 1 ('Land-manager assessed') private native forestry land is in areas with annual rainfall exceeding 1000 mm, while the majority of the Category 3 ('Nationally assessed potential') private native forestry land is in areas with an annual rainfall of 700 mm or less and of lower sawlog commerciality rating. In contrast, all the area identified in the Northern Territory as potential private native forestry land is Category 3 ('Nationally assessed potential) and almost all (90%) of this area has an average annual rainfall exceeding 1000 mm; however, it has a lower sawlog commerciality rating due to rainfall seasonality, low stem density and height, and distance to sawmills.

Benefits, issues and opportunities identified by stakeholders for the private native forestry sector

Participation in, and arrangements for, private native forestry varies across the six jurisdictions in which private native forestry occurs. Stakeholder feedback identified a number of consistent themes.

Feedback from stakeholders as well as published reports identify the opportunities for income diversification from private native forestry, especially during difficult times such as drought or low commodity prices when wood production can provide an alternative income stream. Beyond the income from wood production, additional benefits identified for landholders from active private native forest management included improved access for fire management, improved weed management, integration with agricultural production for stock shelter, and the ability to address forest health issues. Active management also brought opportunities to improve forest condition for future wood production.

However, stakeholders identified challenges for landholders in accessing local forest management information, including markets, prices, silvicultural information. They also saw as a challenge a perception by land managers that private native forestry is separate to the agricultural sector, rather than a land management practice to be integrated with the agricultural sector. There is also uncertainty by many stakeholders with respect to the complexity of forest-related legislation, property rights or vegetation regulations, with the harvesting approval process perceived as too cumbersome to justify private native forestry. The efficiency of the Tasmanian forest practices system is an exception, as is the approach of Local Land Services in New South Wales. Concerns extended to possible future changes resulting from policy and code reviews that could preclude realisation of forecast commercial returns.

One particular impediment faced by landowners undertaking forest management activities is their lack of knowledge about best-practice and ecologically sustainable management strategies for their forest. Landholders largely identify as agricultural land managers and not forest managers, and therefore the requirements of forest management for wood production are typically not included in their business planning. Much of the private native forestry resource comprises either unmanaged regrowth forests from previously cleared land, or heavily disturbed forest arising from a succession of poorly managed wood harvests. Limited understanding of silviculture or best-practice harvest operations has resulted in these forests having a reduced productive and environmental condition with overstocked regrowth stands, a high proportion of non-merchantable trees, and poor wildlife habitat values. A well-directed extension program focussing on the ecological and economic benefits of increased forest management, and improving knowledge of potential economic returns from investment in private native forestry management, could ameliorate many of these challenges.

There is a clear opportunity to build confidence in the sector and deliver improved and shared sectoral understanding. The sector has a number of sub-sectors such as landowners and managers, harvesting and haulage contractors, and processors. Stakeholder feedback indicated each of these could benefit from a more coordinated engagement process both within their respective sub-sectors as well as across the supply chain, providing and sharing information on the regulatory environment, resource access and sector development.

Active forest management including for wood production offers potential opportunities for landholders to improve ecological values through thinning overstocked 'locked up' forests, undertaking weed control and improving access for fire management. Clear, specific, material and extension services will be key in realising value in the proposed nature market.

As such, there are clear opportunities for landholders, the forestry industry and regional economies to benefit from improved active forest management strategies, more readily available pricing and market information, more consistent forest management policies and transparent regulation, and meaningful and consistent terminology.

Recommendations

This work has identified the utility of an improved knowledge of the actual or potential private native forestry resource. These recommendations are given in full in Section 5.

Additional data
A number of other datasets potentially relevant to private native forestry were not accessed for this work, and could be included in any update.

- A national example is the Catchment-scale Land Use Mapping (CLUM) dataset (ABARES 2021), which can bring in data on current land use, especially to identify lands with potential suitability for silvopastoralism (the integration of grazing and wood production). This approach can occur both in forests and particularly in sparse woody vegetation.
- Relevant datasets could also be sourced from agencies in Victoria, New South Wales and Western Australia.

Commerciality datasets
Areas of private native forestry land classified as Category 3 'Nationally assessed potential' were identified from the ABARES national native forest commerciality dataset. It is recommended that this dataset be updated as follows:

- Updating Yield Association mapping, with validation from on-ground inventory data or actual harvest yield data. This would strengthen confidence in the applicability of the sawlog commerciality ratings.
- Expand the concept of commerciality to include all wood products removed from a site, not just sawlogs; and to allow for infrastructure, haulage costs, and other market variables.

Sparse woody vegetation
Further investigation is needed of areas of sparse woody vegetation to better understand their potential for commercial wood production and contribution to regional industry (sparse woody vegetation has a tree canopy cover, but cover is less than 20% so the vegetation is not classified as forest and as such has not been considered in this investigation).

Contribution to wood supply
The utility of this work is in identifying potential future commercial wood resources. As such, these results could be used as input to an analysis to estimate the potential extra supply of from private native forests. This will also allow a formal comparison of the abilities of private native forestry and multiple-use public native forestry to contribute to national wood flows.

Inventory data for regional development of the private native forestry sector

Inventory data is not just important for national policy considerations, but can also stimulate sector development at the regional level, provide confidence in the level of the resource to contractors, timber agents and processors, and support landholder participation in the sustainable management and use of private native forests. This could involve:

- establishment of regional or jurisdictional data systems for collection of harvest approval data, forest harvest notifications or similar permits
- establishment of a regional or jurisdictional data system that collates information on land manager interest or intent for private native forestry for commercial wood production, and on areas not available to harvest through covenanting or use as environmental offsets by private forestry companies
- inclusion in this regional resource information system of a process by which landholders can advise if wood harvests have or have not occurred, by updating their harvest activities. This would require a confidential reporting mechanism through which both landowners and other industry participants such as timber agents can supply property-level information
- development of a trusted national repository of private native forestry data for industry planning, and policy and program development, potentially as part of Australia's National Forest Inventory.

1 Introduction

There is increased global demand for sustainably sourced forest and wood products (FAO 2019), and Australia is part of this trend. However, access by the Australian forestry sector to publicly managed native forest resources has progressively diminished since the 1990s (MIG and NFISC 2018), and the area of commercial plantations is declining in some regions (ABARES 2023).

Other areas of forest that could potentially be used as sources of forest and wood products include planted farm forests, privately managed native forests, and forests on Indigenous-managed land. The increasing need to better understand the area and commercial potential of these other forest resources led to the development of the 'Forest inventory for private native forestry, farm forestry and Indigenous forestry' project, developed between ABARES and the Forest Policy Branch of the (now) Department of Agriculture, Fisheries and Forestry under the National Forest Industries Plan, *Growing a Better Australia—A Billion Trees for Jobs and Growth* (DAWR 2018). This report on the private native forestry sector is one of three reports developed as part of the project, with separate reports for farm forestry (Daian et. al. 2022) and for Indigenous-managed forests (in preparation).

Private native forests occur in every jurisdiction in Australia and comprise a range of vegetation types, structures and heights, and forest management histories. Over the last two decades, a variety of studies and reports, as well as survey and inventory work, have provided insight into the scope and commercial potential of private native forests for wood production, as well as social and economic benefits and environmental challenges. The sustainable management and harvesting of private native forests can help to provide financial and management incentives to landholders to value and conserve the native forest estate, and private native forestry can contribute to integrated management for fire prevention and forest health.

However, the majority of these studies have been regional in scope, rather than national, which has resulted in significant gaps and inconsistencies in inventory information for private native forestry.

1.1 Project framework, scope and geographical coverage

The purpose of the private native forestry component of the 'Forest inventory for private native forestry, farm forestry and Indigenous forestry' project is to identify and, where possible, source existing available area data and information describing privately managed native forest resources in Australia, and to characterise and quantify the areas managed or with the potential to be managed for private native forestry. The project does not include the harvest and wood processing stages of the private native forestry wood supply chain.

The area of interest for this work comprises private native forests actively managed for wood production or where there is known landholder intent for management for wood production, as well as native forests assessed to have the potential to be managed for wood production. Spatial data compiled during the project will be integrated into Australia's National Forest Inventory (NFI), which is housed in ABARES. Information on the areas of actual and of potential private native forestry is presented for each of Australia's eight jurisdictions, and in each of the eleven Regional Forestry Hubs.

The specific aims of this project are to:

- identify existing available private native forestry inventory data and programs in Australia, with a focus on private native forest resources with potential commercial value for wood production
- acquire, validate and analyse spatial datasets relating to these areas, and compile a description of actual and of potential areas of private native forestry
- make recommendations for future private native forestry inventory activities needed for sector development.

Stakeholder discussions for this project were undertaken before the Victorian Government[5] and the Western Australian Government[6] announced the cessation from 2024 of commercial harvesting of native forests on public land in their respective jurisdictions.

1.2 Terminology and definitions

There are a number of definitions of private native forestry in use in Australia. All refer to the growing, and usually the management for wood production, of native forest on private freehold or privately managed publicly owned land. This report defines private native forestry as:

> 'usage for wood production of areas of native forest on privately owned land and privately managed leasehold land where timber rights are held by the owner or manager. Includes areas of native forest on individual land holdings managed as part of farm enterprises'.

As applied in this work, this definition:

- covers native forests on private and leasehold tenure, but excludes leasehold land in Queensland on which the Queensland Government generally retains Crown timber rights[7]
- includes forests under active silvicultural management for wood production as well as forests managed less intensively for wood production
- generally excludes areas of forest managed solely for the production of firewood.

Except for the exclusion of firewood, the definition used in this project is similar to the definition used by Local Land Services New South Wales[8]:

> Private Native Forestry is the sustainable management of native forests on private property for timber production. This can include the harvesting of timber for a variety of products such as flooring, construction timber, power poles, furniture and firewood.

In Tasmania the privately managed native forest estate is described as including all native forests on private land and those on public land managed by private interests (Wilson and Tys 2020).

1.3 Previous private native forestry studies

A limited number of historic studies have been undertaken to describe private native forestry in the jurisdictions in which native forest harvesting is permitted (Table 1). A variety of research

[5] premier.vic.gov.au/delivering-certainty-timber-workers
[6] wa.gov.au/government/media-statements/Cook-Labor-Government/Historic-end-to-native-logging-a-step-closer-20231001
[7] daf.qld.gov.au/business-priorities/forestry/state-native/forest-management-plan
[8] lls.nsw.gov.au/help-and-advice/private-native-forestry

projects have focused on the private native forest sector, including analysis of potential development opportunities for local communities and for wood processors, however, few have been at the national scale. URS Forestry completed a Joint Venture Agroforestry Program (JVAP) project in 2008 that described the private native forest sector in Australia (URS Forestry 2008). Among the project findings was the following:

> Private native forests provide a considerable resource in Australia. However, data describing private native forests in Australia are generally very poor and the area of private native forest actively managed for forest production is uncertain; it was deemed not possible to determine areas of private native forestry actively managed by owners, or areas harvested.

A subsequent JVAP report (Parsons and Pritchard 2009) aimed to raise public awareness of private native forestry by estimating its contribution to regional wood supplies at the state level. The report summarised and analysed available data and information on private native forests, including landowner surveys, and provided state and regional area statements as well as state production figures. A synthesis of the findings at the national level was not available.

Table 1: Historical data on main private native forestry regions, areas, and volumes harvested

Jurisdiction	Region	Area ('000 ha)	Volume harvested (m^3/year)	Source / Inventory program / Project
New South Wales	All	8,523	~ 585,000 sawlog	URS Forestry (2008)
	Upper North Coast	512	-	
	Southern New England	157	-	
	North Coast	2,900	-	Media report, Paul Wells, DPI Forest Research and Policy, 2018[9]
	Upper North East	525.6	Provide 56% of hardwood sawmill throughput	Lewis et al 2020
Queensland	Southern Qld	1,900	Account for 58% of hardwood timber industry value	Lewis et al 2020
Northern Territory		15,511	mostly not suitable for commercial utilisation	URS Forestry (2008)
Queensland	All	10,213	~280,000 sawlog	
	SE Queensland	1,200	-	
Tasmania	All	922	~ 967,000 pulpwood	
Victoria	All	1,298	-	DEPI (2014)
	All	n/a	77,000 [1]	URS Forestry (2008)
	Gippsland	400	-	
	NE Victoria	308	-	
Western Australia	All	1,639	-	URS Forestry (2008)

[1] Product not specified

Native forest harvesting is not permitted in the Australian Capital Territory or South Australia

Some studies have concentrated on major native forestry regions (such as southern Queensland, northern New South Wales, or Western Australia) and others on specific wood species groups (such as cabinet and flooring timbers, or high-value eucalypts like blackbutt, spotted gum, jarrah, and karri). A study published in 2018 investigated the potential harvestable biomass for

[9] Pers comm. Previously published 14 February 2018, *News of the Area*. Webpage no longer accessible

bioenergy from private native forests in Southeast Queensland, concluding that silvicultural treatments integrated with sawlog harvesting had the potential to supply a large quantity of biomass for bioenergy (Ngugi et al, 2018). Furthermore, it could potentially promote restoration of degraded forests, ecological sustainability, and continued provision of wood products.

The most regionally thorough investigation most recently completed is an investigation into the extent and condition of private native resource across Queensland and northern New South Wales (Lewis et al, 2020) which led to the publication of a series of four information sheets: south-eastern Queensland, Wide Bay Burnett, Western Queensland, and North-eastern New South Wales[10]. Included for each of the four regions are descriptions of areas of potentially harvestable forest, common forest types, options for timber and grazing production, forest productivity, and ecological benefits and condition.

This investigation also summarised the recognised benefits of retaining trees on grazing properties, including improved soil condition, improved pasture quality, reduced runoff, erosion and transport of nutrients, and microclimatic changes that improve animal health and reproductive success. Five silvopastoral system field studies conducted in south-east Queensland between the 1970s and early 1990s examined the effect of tree stocking on pasture production, and all revealed opportunities for equivalent or increased cattle production with trees, relative to cleared land. When the benefits of timber production for farm income are considered, silvopastoral production systems can be promising for landholders. However, the study also revealed that most landholders are not well-informed about how to manage their forests for timber production, are not familiar with timber markets, and do not appreciate how active forest management can increase timber values; and that the primary concerns of landholders regarding forest management was government and regulatory requirements, particularly uncertainty around legislative and regulatory change.

The private native forestry sector in Victoria is described by a variety of reports and historical datasets. Most of the spatial data provided to ABARES for Victoria was collected and analysed as part of the State-wide Forest Resource Inventory (SFRI) (DELWP 2020), a programme of data collection and analysis that aided in the state-wide planning and management of Victoria's native forests. Established in 1994 to assist in the development of Regional Forest Agreements, the SFRI included analysis of imagery (firstly aerial imagery, then satellite imagery) in conjunction with a multi-stage ground inventory. While the SFRI programme was primarily focused on Crown land, it was occasionally applied to adjacent native forest on private property. Although models of merchantable timber for SFRI stand types were developed, ABARES and its associated forestry consultants were unable to locate anyone with the necessary expertise to discuss obtaining and applying those models to the SFRI spatial data.

Stakeholder discussions for this project revealed that a number of private native forest datasets reflecting historical (1970–2010) inventory programs have been produced by local New South Wales timber processors. These datasets, including operational harvest documents, were not available for this study. A list of reports and websites relevant to private native forestry can be found in Appendix A (Table A1).

[10] publications.qld.gov.au/dataset/private-native-forest-resource-extent-and-condition

1.3.1 *Australia's State of the Forests Report 2018*

The *Australia's State of the Forests Report* series (SOFR)[11] is the five-yearly national report on the status of Australia's forests, and a key source of comprehensive information on environmental, social and economic forest-related data from a range of government and non-government stakeholders.

SOFR 2018, the most recent report in the series at the time of the investigation, reports a total 132 million hectares of native forests in Australia (MIG and NFISC 2018)[12]. The area of native forest on private tenure comprises 41.0 million hectares, and the area on leasehold tenure is 47.2 million hectares.

SOFR 2018 also presents data on annual removal of wood products from native forests on private land in five states (Table 2). Wood volumes harvested over the five-year reporting periods from 1992–93 to 2015–16 ranged from a high of 2.92 million m^3 in the period 1996–97 to 2000–01, and a low of 0.42 million m^3 in the period 2012–13 to 2015–16. Reasons for this decline vary by state, but for all states include increasing regulatory restrictions on harvesting operations on private land, including for conservation and management of biodiversity and heritage, and protection of water supply (see SOFR 2018, Indicators 2.1c, 7.1a).

The sustainable yield for wood production from native forests on private land in Australia is not calculated, unlike the case for multiple-use public native forests. It is therefore not possible for actual harvest volumes to be compared to sustainable yield values as required for assessment of harvest sustainability (see SOFR 2018, Indicator 2.1c).

[11] agriculture.gov.au/abares/forestsaustralia/sofr

[12] The *Forests of Australia (2023)* and *Tenure of Australia's forests (2023)* datasets were published as this report was being completed. Preliminary investigation suggests that the 2018 and 2023 datasets give very similar areas of private native forestry.

Table 2: Average annual log volumes harvested from private native forests, by *Australia's State of the Forests Report* reporting period

		Average annual log volume ('000 m^3)				
Reporting period		**1992–93 to 1995–96**	**1996–97 to 2000–01**	**2001–02 to 2005–06**	**2006–07 to 2010–11**	**2011–12 to 2015–16**
New South Wales	Pulplog	45	72	45	51	13
	Sawlog	310	452	587	319	93
Queensland	Pulplog	n/a	0	0	0	0
	Sawlog	371	255	242	202	142
Tasmania	Pulplog	1,820	1,747	1,516	789	82
	Sawlog	186	173	101	49	26
Victoria	Pulplog	n/a	128	37	56	33
	Sawlog	n/a	45	8	8	11
Western Australia	Pulplog	8	41	10	12	12
	Sawlog	50	13	49	35	7
TOTAL	**Pulplog**	**1,873**	**1,987**	**1,608**	**909**	**141**
	Sawlog	**916**	**937**	**987**	**615**	**279**
	Total logs	**2,789**	**2,924**	**2,595**	**1,524**	**420**

Source: *Australia's State of the Forests Report 2018*, Figures 2.17 and 2.19.
n/a, data unavailable.
Sawlog harvest data are incomplete for Tasmania and Western Australia for the period 1992–3 to 1995–6, and limited data are available for pulpwood harvest for Western Australia for this period. Data on occasional harvests for the Northern Territory are not shown.

2 Private native forestry findings from this project

A range of information describing private native forests and private native forestry activities was provided either directly to ABARES, or through a consultancy arrangement between ABARES and Margules Groome that identified additional data and information. A national sawlog commerciality database, previously assembled by ABARES using historical merchantability and productivity data, provided valuable context for the areas of private native forest not covered by the more detailed information supplied for this project.

2.1 Areas included and excluded

2.1.1 Datasets used

An extensive consultation with stakeholders was undertaken to identify suitable national, regional, and local spatial datasets describing private native forestry. Nine spatial datasets were investigated and identified by ABARES as reliable sources of available private native forestry information in Australia. Eight of these datasets were supplied by state governments, and one was supplied by a private business on behalf of a state government.

There was a considerable variation in the methodologies used to create each of the private native forestry datasets, the dates that the datasets were developed, the scales of the datasets, and the attributes collected. Further detail on these nine private native forestry datasets used in the analysis is provided in Section 3.1, but in summary:

- Three of the datasets (two for Queensland, one for New South Wales) describe areas either approved for harvesting for wood production or with accepted development vegetation clearing code notifications which include wood harvesting, in specific regions.
- Five datasets (two for New South Wales, two for Queensland, one for Victoria) were developed by government agencies from assessments undertaken using remotely sensed data products and assessment of the resource in specific regions.
- One jurisdictional dataset from Tasmania included areas for which management plans for private native forestry had been developed, as well as areas assessed as having the potential for private native forestry but for which management plans for private native forestry had not been developed.

A national spatial dataset of native forest commerciality classes, the *Australian Sawlog Commerciality Database* (Davey and Dunn 2014), assembled by ABARES using historical merchantability and productivity data, was used for attribution of potentially commercial native forest outside the areas described by the above nine datasets.

2.1.2 Exclusions

The definition of forest used in this report is the national definition used in the NFI (MIG and NFISC 2018) — that is, single-stemmed trees with the potential to grow to a height of at least two metres and have a canopy cover of equal to or greater than 20%. However, the sourced datasets captured a range of forest categories, definitions and attributes; some datasets were mapped according to

different vegetation criteria; and some datasets reported entire property land parcels with a mix of both forest and non-forest. The *Forests of Australia (2018)* spatial dataset (ABARES 2018a) was therefore used to exclude areas other than native forest.

This process excluded areas of sparse woody vegetation, which contain trees but have a canopy cover of less than 20% and as such are not classified as forest. While these areas might be used for commercial production of wood products, they were outside the scope of this project. This process also excluded other non-forest areas, as well as areas of commercial plantation or other forest that might be in the provided datasets. Areas previously identified as farm forestry by Daian et al. (2022) were also excluded.

Some forest areas supplied as private native forestry for this project were identified by the data custodian as in need of 'restorative forest management' before being suitable for commercial wood production. These areas were also excluded from the analysis.

By regulation, commercial wood production in native forests is not permitted in South Australia (*Native Vegetation Act 1991*) and the Australian Capital Territory (*Nature Conservation Act 2014*) and as such these jurisdictions were excluded from the study.

Native forest on private freehold tenure or on leasehold land where the lessee retains rights to the timber was retained in the analysis to identify actual or potential private native forestry. Native forest on leasehold land in Queensland was excluded from the analysis as the Crown generally retains timber rights on areas of leasehold land[13]. The *Tenure of Australia's forests (2018)* spatial dataset (ABARES 2018b) was used to exclude all other tenures[14].

Rainforest is restricted from harvesting under codes of practice in New South Wales (LLS 2022a,b) and Victoria (DEPI 2014). In Queensland, harvesting of rainforest species is restricted on land where the state does not hold rights to the timber (DNRM 2014). There are no areas of rainforest on private or leasehold land in Western Australia. In Tasmania, the partial harvest of special species in rainforest communities is permitted under legislation and strict silvicultural prescriptions, with the requirement for a special species management plan to be created (Tasmanian Government 2017). Areas for rainforest were therefore excluded for this study in all jurisdictions except Tasmania.

Mangrove forest was also excluded from the analysis. Commercial harvesting of mangrove forest for wood production is restricted in New South Wales[15], Queensland[16] and Western Australia[17], and limited in other jurisdictions due, in part, to their important role stabilising coastal systems, nutrient cycling and provision of wildlife habitat (Department of Environment and Science 2019).

Wood harvesting in native forest is regulated through varying legislative instruments and mechanisms at the federal, state, territory and local government levels (MIG and NFISC 2018),

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[13] daf.qld.gov.au/business-priorities/forestry/state-native/forest-management-plan
[14] The *Tenure of Australia's forests (2023)* dataset was published as this report was completed. Preliminary investigation suggests that the 2018 and 2023 datasets give very similar areas of private native forestry.
[15] *Fisheries Management Act 1994 No. 38* (NSW), as at 24 March 2022: classic.austlii.edu.au/au/legis/nsw/consol_act/fma1994193/
[16] legislation.qld.gov.au/view/html/inforce/current/act-1994-037
[17] *Biodiversity Conservation Act 2016* (WA): legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_13811_homepage.html

supported by codes of practice and harvesting plans that guide land management, protect environmental values and promote sustainable forest management. Areas legally restricted from wood harvesting were excluded from the analysis, including areas regulated or reserved by mechanisms such as private conservation covenants, codes of practice, riparian zones, buffer zones and other management prescriptions. These are many, and vary by jurisdiction, and have been applied in this project consistent with spatial analysis undertaken for other national forest reporting such as in Table 2.2, Criterion 2, SOFR 2018 (MIG and NFISC 2018).

In addition to the above exclusions, application of codes of practice during development of individual harvesting plans would result in additional restrictions and prescriptions at a finer scale, such as habitat zones for threatened species. These have not been modelled for this study.

2.2 Categories of private native forestry

Three private native forestry categories were developed to characterise the native forest area described in Section 2.1, on the basis of management for, or the potential to meet, private native forestry objectives. These three categories were based respectively on landholder engagement, state agency assessment, and national assessment, and reflected the level of on-ground knowledge, the purpose for which data had been collected and the scale of data collection (local, state or national). The three categories are:

Category 1 Land-manager assessed
Privately managed native forest where there is known management intent for commercial forestry. Includes areas assessed as having approval to harvest or a management intent to harvest. Category 1 is referred to in this work as 'actual' private native forestry.

Category 2 Agency-assessed potential
Privately managed native forest deemed by a state government agency to have some level of suitability for commercial forestry, based on remotely sensed data and forest productivity modelling, without landholders necessarily involved in the assessment process. Excludes areas reported in Category 1.

Category 3 Nationally assessed potential
Privately managed native forest assessed by ABARES to have some level of suitability for commercial sawlog production based on national historical data, and assembled in the ABARES Sawlog Commerciality Database (Davey and Dunn 2014; see also MIG and NFISC 2018). This coverage is compiled from a wide range of sources, and covers regions not considered in the above state-based assessment processes. Areas assessed as commercial are allocated to one of five sawlog commerciality classes (Very low, Low, Moderate, High and Very high). Excludes areas reported in Categories 1 and 2.

Category 1 is the only category where management intent for private native forestry can be deduced. There is no information on management intent in Categories 2 and 3, which instead comprise datasets describing forest that is potentially commercial. Category 2 and Category 3 are thus referred to in this work as 'potential' private native forestry: the allocation of areas of forest into Category 2 or Category 3 does not imply that commercial production of wood products will occur from those areas of forest, or that the land manager intends to manage the forest for commercial wood production. Rather, it means that these areas are considered as having the potential for commercial forestry, in terms of site productivity, species merchantability, or other

factors; additional assessment, and consideration of economic factors, would need to be undertaken to determine whether or not these forest areas could or will in fact produce commercial products.

There is no overlap between areas identified in the three categories. Areas identified as land-manager assessed (Category 1) private native forestry land are excluded from reporting in Categories 2 or 3, and private native forestry land identified by agency assessment (Category 2) are excluded from reporting in Category 3.

Taken together, the three categories were used to describe the components of the native forest area described in Section 2.1 on the basis of management for, or the potential to meet, private native forestry objectives.

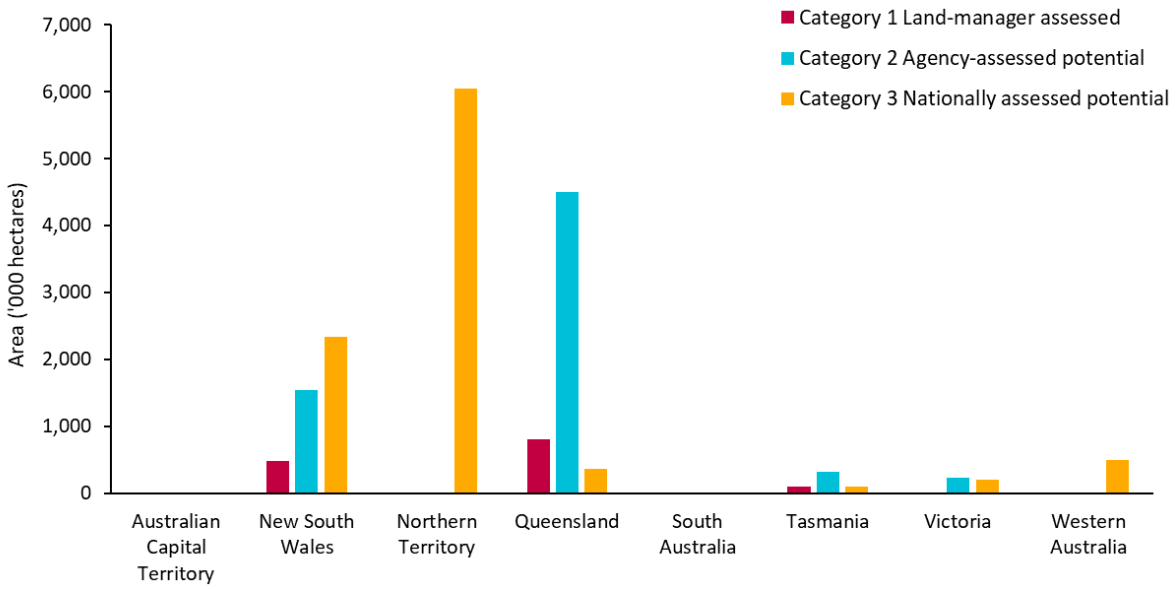
2.3 Areas of actual and potential private native forestry land

A total of 17.5 million hectares of forest in Australia was identified through this project as being managed for (actual), or having the potential to be managed for, private native forestry across the three categories described above.

2.3.1 Private native forestry by category, and state and territory

The 17.5 million hectares of actual or potential private native forestry land are shown by jurisdiction and category in Table 4 and Figure 1, and mapped in Figure 2.

Figure 1: Actual or potential private native forestry area by category and jurisdiction



The largest areas identified as actual, or having the potential to be managed for, private native forestry are in Northern Territory (6.1 million hectares), Queensland (5.7 million hectares) and New South Wales (4.4 million hectares). Smaller areas are in Tasmania (0.52 million hectares), Western Australia (0.49 million hectares) and Victoria (0.44 million hectares). Harvesting of native forests is prohibited in the Australian Capital Territory and South Australia, so no area of private native forestry is recorded for these jurisdictions.

Of this total area of 17.5 million hectares, 1.4 million hectares (8%) were designated as Category 1 'Land-manager assessed', representing areas known to have been issued with a harvesting permit or for which a management intent to harvest has been expressed. Queensland (58%), New South Wales (35%), and Tasmania (7%) have the largest areas of actual private native forestry.

A further 6.6 million hectares (38%) were identified as Category 2 'Agency-assessed potential', with the forest deemed by the relevant state government agency as having the potential to be managed for wood production but not reported in Category 1. Most of this area is in Queensland (68%) and New South Wales (23%), with the remainder in Tasmania (5%) and Victoria (4%). This reflects the jurisdictions in which agencies have undertaken private native forestry assessments.

The final 9.5 million hectares (54%) were identified as Category 3 'Nationally assessed potential', which represent forest areas not in Category 1 or Category 2 that were assessed by ABARES as having potential sawlog commerciality. Almost two-thirds of this area is in the Northern Territory (63%), with another major component in New South Wales (24%) and smaller areas in Western Australia (5%), Queensland (4%) and Victoria (2%). All of the area identified as potential private native forestry land in the Northern Territory (6.05 million hectares) and Western Australia (0.49 million hectares) are Category 3.

Forest in Category 3, with nationally assessed potential for private native forestry, was allocated a sawlog commerciality rating in the ABARES Sawlog Commerciality Database (Davey and Dunn 2014). As shown in Table 4, most of this area (8.3 million hectares, 87%) is rated as Low commerciality, almost all (6.1 million hectares, 73%) of which is in the Northern Territory. A further 763 thousand hectares (8%) is of Moderate commerciality, 404 thousand hectares (4%) of High commerciality, and only 113 thousand hectares (1%) of Very high commerciality (the classification corresponding to productive ash eucalypt forest). The areas of Moderate, High and Very high sawlog commerciality were found mostly in New South Wales, Western Australia, Victoria and Queensland.

Table 3: Nationally assessed potential private native forestry area (Category 3) by sawlog commerciality rating and jurisdiction

	Area ('000 ha)					
	Commerciality rating					Total commercial forest
Jurisdiction	Very low	Low	Moderate	High	Very high	
Australian Capital Territory	0	0	0	0	0	0
New South Wales	0	1,524	470	253	86	2,334
Northern Territory	0	6,050	0	0	0	6,050
Queensland	0	311	44	11	0	366
South Australia	0	0	0	0	0	0
Tasmania	0	56	19	23	1	99
Victoria	0	90	50	45	17	201
Western Australia	0	229	180	72	9	490
Total Area	**0**	**8,259**	**763**	**404**	**113**	**9,540**

Totals may not tally due to rounding

'Commercial forest' is forest with a commerciality rating from 'Very low' to 'Very high'. Non-commercial forest is forest with a commerciality rating of 'No', 'Possible', 'Unknown' or 'Limited' (Davey & Dunn 2014).

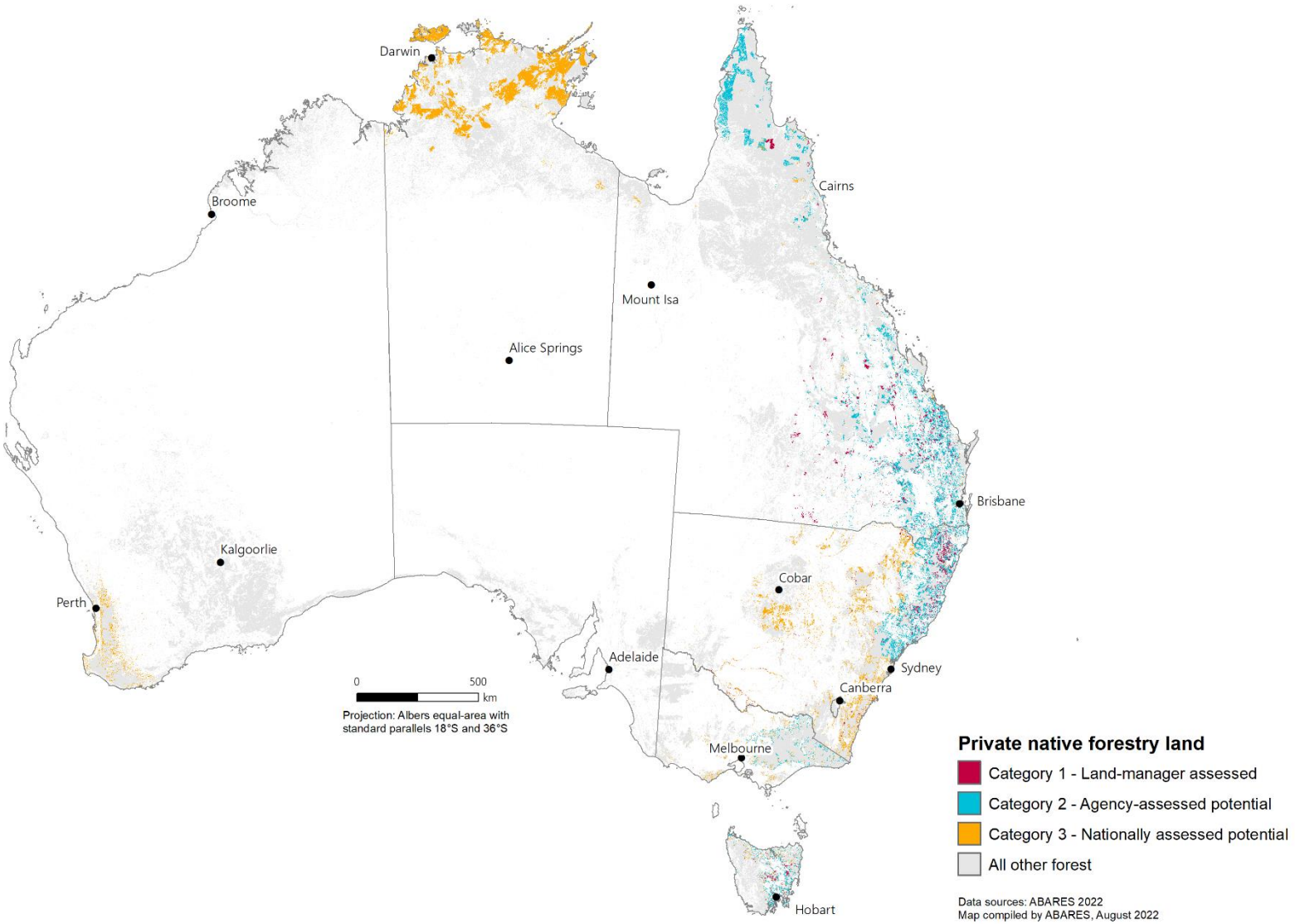
Table 4: Area and proportion of actual and potential private native forestry land by category and jurisdiction

Jurisdiction	Category 1 Land-manager assessed			Category 2 Agency-assessed potential			Category 3 Nationally assessed potential			Total
	Area ('000 ha)	*% of total PNF in jurisdiction*	*% of total Cat 1 PNF area*	Area ('000 ha)	*% of total PNF in jurisdiction*	*% of total Cat 2 PNF area*	Area ('000 ha)	*% of total PNF in jurisdiction*	*% of total Cat 3 PNF area*	Area ('000 ha)
Australian Capital Territory	0	-	*0*	0	-	*0*	0	-	*0*	**0**
New South Wales	487	*11*	*35*	1,545	*35*	*23*	2,334	*53*	*24*	**4,365**
Northern Territory	0	*0*	*0*	0	*0*	*0*	6,050	*100*	*63*	**6,050**
Queensland	812	*14*	*58*	4,498	*79*	*68*	366	*6*	*4*	**5,676**
South Australia	0	-	*0*	0	-	*0*	0	-	*0*	**0**
Tasmania	95	*18*	*7*	325	*63*	*5*	99	*19*	*1*	**518**
Victoria	0	*0*	*0*	234	*54*	*4*	201	*46*	*2*	**435**
Western Australia	0	*0*	*0*	0	*0*	*0*	490	*100*	*5*	**490**
Australia	**1,393**	***8***	***100***	**6,601**	***38***	***100***	**9,540**	***54***	***100***	**17,533**

-, not applicable; PNF, private native forestry land

Totals may not tally due to rounding.

Figure 2: Distribution of actual and potential private native forestry land by category



2.3.2 Actual or potential private native forestry land by native forest type, height and cover class

Analysis using the *Forests of Australia 2018* national forest cover dataset (ABARES 2018a) reveals that the commercially favoured Eucalypt national forest type comprises 15.3 million hectares (87%) of the total 17.5 million hectares of actual or potential private native forestry land identified in Australia, and dominates similarly across each of the categories: Category 1 (79%), Category 2 (88%) and Category 3 (88%) (Table 5).

Most of the total area is Eucalypt medium forest[18] (80%, 14.0 million hectares), with much smaller areas of Eucalypt tall forest (7%), Callitris (5%), Other native forest (4%), and Melaleuca (2%). There are negligible areas (<1%) of Eucalypt mallee forest, Eucalypt low forest, Casuarina and Rainforest.

Of the 1.4 million hectares of actual private native forestry land (Category 1), 796 thousand hectares (57%) are Eucalypt medium forest and 301 thousand hectares (22%) are Eucalypt tall forest, with the forest types Acacia (137 thousand hectares, 10%) and Other native forest (105 hectares, 8%) comprising the balance of the area. Category 2 (agency-assessed potential private native forestry land) with an area of 6.6 million hectares is dominated by Eucalypt medium forest (77%) with a smaller proportion of Eucalypt tall forest (10%) and Other native forest (9%). Of the 9.5 million hectares identified as Category 3 (nationally assessed potential private native forestry land), almost all is Eucalypt medium forest (85%) with a smaller proportion of Callitris forest (8%) and a negligible area (1%) of Eucalypt mallee forest.

Table 5: Area and proportion of actual and potential private native forestry land by category and forest type

	Area ('000 ha) and *proportion* (%)							
Forest type	**Category 1 Land-manager assessed**		**Category 2 Agency-assessed potential**		**Category 3 Nationally assessed potential**		**Total**	
Acacia	137	*10*	18	*0*	23	*0*	**178**	*1*
Callitris	32	*2*	154	*2*	750	*8*	**935**	*5*
Casuarina	5	*0*	11	*0*	26	*0*	**42**	*0*
Eucalypt	1,107	*79*	5,780	*88*	8,403	*88*	**15,290**	*87*
Eucalypt mallee	0	*0*	0	*0*	63	*1*	64	*0*
Eucalypt low	9	*1*	21	*0*	26	*0*	56	*0*
Eucalypt medium	796	*57*	5,070	*77*	8,145	*85*	14,011	*80*
Eucalypt tall	301	*22*	690	*10*	169	*2*	1,160	*7*
Melaleuca	6	*0*	69	*1*	258	*3*	**333**	*2*
Rainforest	2	*0*	3	*0*	7	*0*	**11**	*0*
Other native forest	105	*8*	566	*9*	73	*1*	**743**	*4*
Total	**1,393**	***100***	**6,601**	***100***	**9,540**	***100***	**17,533**	***100***

Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; medium, >10–30 metres; tall, >30 metres. Mangrove is excluded from the analysis. Rainforest is only reported for Tasmania.
Totals may not tally due to rounding.

[18] In the National Forest Inventory, forests are allocated to one of three height classes (low, 2-10 metres; medium, >10–30 metres; tall, >30 metres) and crown cover class (woodland, 20–50%; forest, >50–80%; closed, >80%). See agriculture.gov.au/abares/forestsaustralia/sofr/criterion-1/indicator-1.1a.i-forest-area-by-type#native-forest-area-by-crown-cover-height-and-form.

Table 7 provides a more detailed breakdown by jurisdiction. The areas of Eucalypt forest on private native forestry land in Category 1 are in Queensland (567 thousand hectares), New South Wales (450 thousand hectares) and Tasmania (90 thousand hectares). Similarly, for private native forestry land in Category 2 the largest area of Eucalypt forest is in Queensland (3.9 million hectares), with other areas in New South Wales (1.3 million hectares), Tasmania (309 thousand hectares) and Victoria (232 thousand hectares). Areas of Eucalypt forest also occur on private native forestry land in Category 3 in all jurisdictions in which wood harvesting on private native forestry land is permitted.

Smaller areas of other forest types desirable for wood production occur across the three private native forestry categories, such as Acacia forest (178 thousand hectares) and Callitris forest (935 thousand hectares). Most of the total area of Acacia forest classified as actual or potential private native forestry land is in Category 1 (77%), almost all of which is in Queensland. Most of the area of Callitris forest is Category 3 (80%), almost all of which is in New South Wales.

Appendix B, Table B1, presents analyses by height class of the area of Eucalypt non-mallee forest by private native forestry category, jurisdiction and Regional Forestry Hub. Similar analyses by cover class are given in Appendix B, Table B2.

The areas of Eucalypt forest assessed as actual or potential private native forestry land can be classified into Eucalypt mallee forest (64 thousand hectares, 0.4%) and Eucalypt non-mallee forest (15.2 million hectares, 99.6%). The Eucalypt non-mallee forest can be further classified by height class (low 2-10 metres; medium >10–30 metres; tall >30 metres) and by crown cover class (woodland forest 20–50%; open forest >50–80%; closed forest >80%) (Table 6). Of the 15.2 million hectares of Eucalypt non-mallee forest identified as actual or potential private native forestry land, most is either woodland forest (7.9 million hectares, 52%) or open forest (7.3 million hectares, 48%), and almost all (14.0 million hectares, 92%) is of medium height (Table 6).

Table 6: Area of Eucalypt non-mallee forest by private native forestry category and height and cover class

		Area ('000 hectares)			
Private native forestry category	Height class	Crown cover class			
		Woodland	Open	Closed	Total
Category 1	Low	8	2	0	**9**
	Medium	449	346	1	**796**
	Tall	37	264	0	**301**
	Total	**494**	**612**	**1**	**1,106**
Category 2	Low	10	10	0	**21**
	Medium	3,222	1,838	9	**5,070**
	Tall	67	622	1	**690**
	Total	**3,300**	**2,470**	**10**	**5,780**
Category 3	Low	8	17	0	**26**
	Medium	4,007	4,089	49	**8,145**
	Tall	37	132	0	**169**
	Total	**4,052**	**4,238**	**49**	**8,340**
Total		**7,846**	**7,321**	**60**	**15,226**

Totals may not tally due to rounding.

Table 7: Area of actual or potential private native forestry land by category, jurisdiction and forest type

	Area ('000 hectares)																		
	Category 1						Category 2						Category 3						Total
Forest type	NSW	NT	Qld	Tas.	Vic.	WA	NSW	NT	Qld	Tas.	Vic.	WA	NSW	NT	Qld	Tas.	Vic.	WA	
Acacia	1	0	133	2	0	0	4	0	5	9	0	0	14	2	2	5	0	0	**178**
Callitris	13	0	19	0	0	0	61	0	92	0	0	0	737	0	13	0	0	0	**935**
Casuarina	3	0	3	0	0	0	4	0	7	0	0	0	24	0	3	0	0	0	**42**
Eucalypt	450	0	567	90	0	0	1,316	0	3,922	309	233	0	1,517	5,795	316	84	201	489	**15,290**
Eucalypt mallee	0	0	0	0	0	0	0	0	0	0	0	0	50	0	0	0	0	13	64
Eucalypt low	2	0	7	0	0	0	11	0	6	3	0	0	3	4	17	1	0	0	56
Eucalypt medium	202	0	549	45	0	0	751	0	3,850	243	226	0	1,357	5,791	290	52	196	460	14,011
Eucalypt tall	246	0	10	45	0	0	554	0	66	63	6	0	108	0	10	31	5	15	1,160
Melaleuca	1	0	5	0	0	0	22	0	45	2	0	0	4	236	17	1	0	0	**333**
Rainforest	0	0	0	2	0	0	0	0	0	3	0	0	0	0	0	7	0	0	**11**
Other native forest	19	0	86	0	0	0	138	0	426	1	1	0	38	16	17	1	0	0	**743**
Total	**487**	**0**	**812**	**95**	**0**	**0**	**1,545**	**0**	**4,498**	**325**	**234**	**0**	**2,334**	**6,050**	**366**	**99**	**201**	**490**	**17,533**

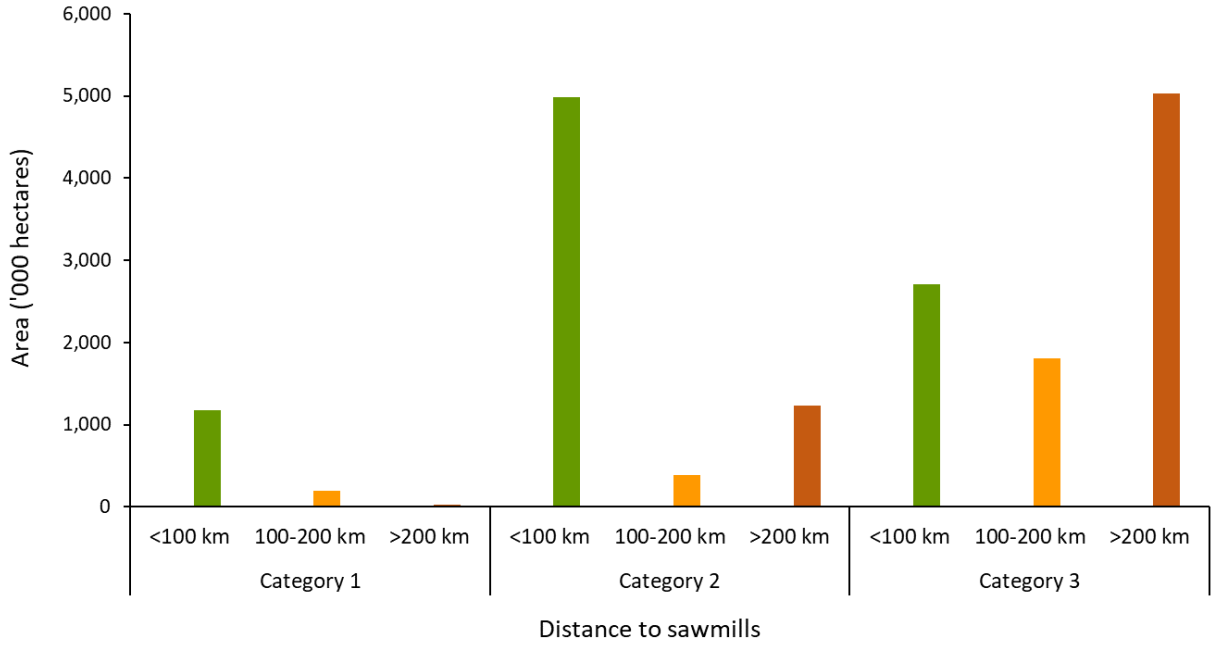
There is no private native forestry in the Australian Capital Territory or South Australia.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
Mangrove is excluded from the analysis. Rainforest is only reported for Tasmania.
Totals may not tally due to rounding.

2.3.3 Private native forestry and distance from sawmills

An analysis of the distribution of the private native forestry estate by proximity to hardwood sawmills and cypress (native pine, *Callitris*) sawmills provides an insight into the economic opportunities and factors that may need to be considered as part of regional decision-making regarding private native forestry. ABARES maintains a database of sawmills, including their geographic location, which is collated through, and supports, national wood processing surveys conducted by ABARES (see Downham et al, 2019 and Wong et al, 2024 for details,) and the *Australian Forest and Wood Products Statistics*[19]. A national overview of the private native forestry estate by proximity to these sawmills is provided in Figure 3.

Most of the areas of private native forestry land in Category 1 ('Land-manager assessed') (84%) and Category 2 ('Agency-assessed potential') (76%) are within 100 kilometres of an existing sawmill. However, only 28% of the area of potential private native forestry land in Category 3 ('Nationally assessed potential') is within 100 kilometres of a hardwood mill (with most of this area in New South Wales and Western Australia) and 53% is more than 200 kilometres from a sawmill (almost all of which area is in the Northern Territory, reflecting the extensive area of private native forestry land classified as Category 3 in the Northern Territory and the paucity of sawmills in that jurisdiction). When the Northern Territory areas are excluded from the 'distance from sawmill' analysis, more than two-thirds (68%) of the area of potential native forestry land classified as Category 3 is within 100 kilometres of a sawmill.

Figure 3: Area of private native forestry by category and distance to sawmills



Australia's wood processing industry is diverse and dynamic, driven by demand for products. An update to the sawmills dataset using the most recent national wood processing surveys[20] indicates a shift of 63 thousand hectares of Category 1 forest from less than 100 kilometres from a sawmill, with 7 thousand hectares reallocated to 100-200 kilometres, and 56 thousand hectares reallocated to more than 200 kilometres from a sawmill, due to sawmill closures in central New

[19] agriculture.gov.au/abares/research-topics/forests/forest-economics/forest-wood-products-statistics
[20] agriculture.gov.au/abares/research-topics/forests/forest-economics/national-wood-processing-survey

South Wales and central Queensland. Further analysis resulting from changes to the sawmill dataset was outside the scope of this report.

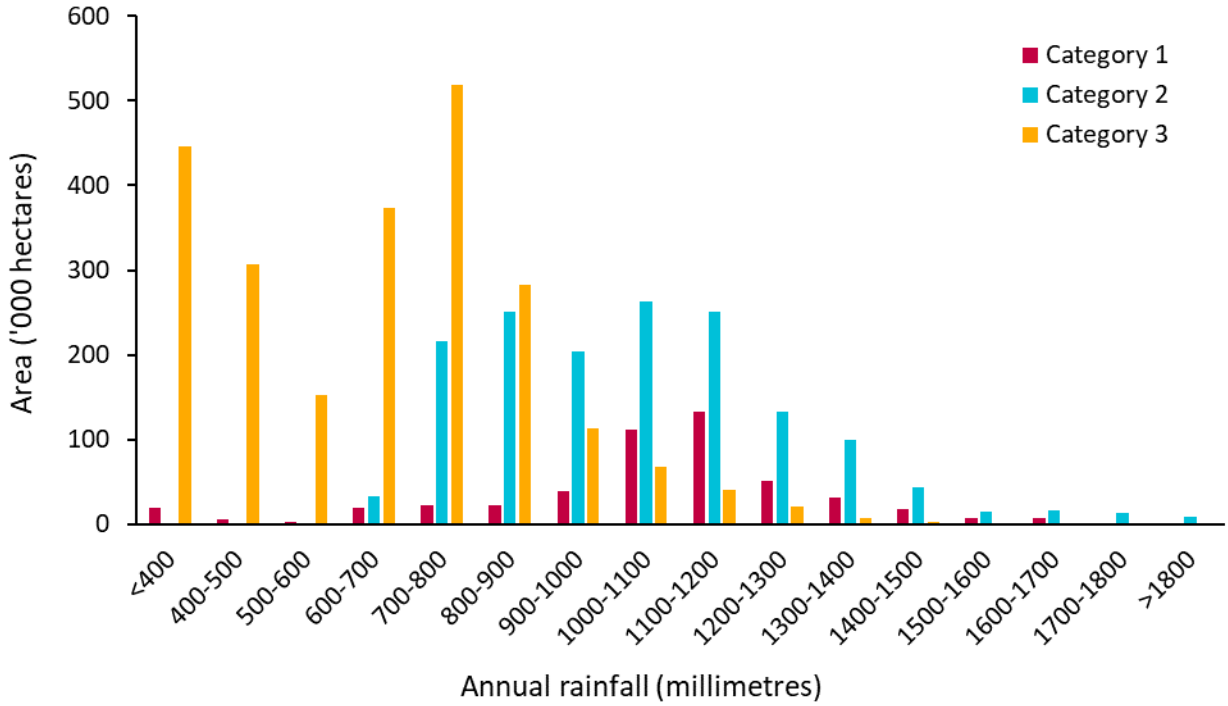
2.3.4 Private native forestry and annual rainfall

Areas of actual and potential private native forestry land (Categories 1, 2 and 3) occur in average annual rainfall zones (annual rainfall) from less than 400 mm to greater than 1800 mm (Figures 3-8).

Forest growth productivity generally increases with rainfall. However, there are extensive areas of actual or potential private native forestry in areas of low to moderate annual rainfall in New South Wales, Tasmania and Western Australia.

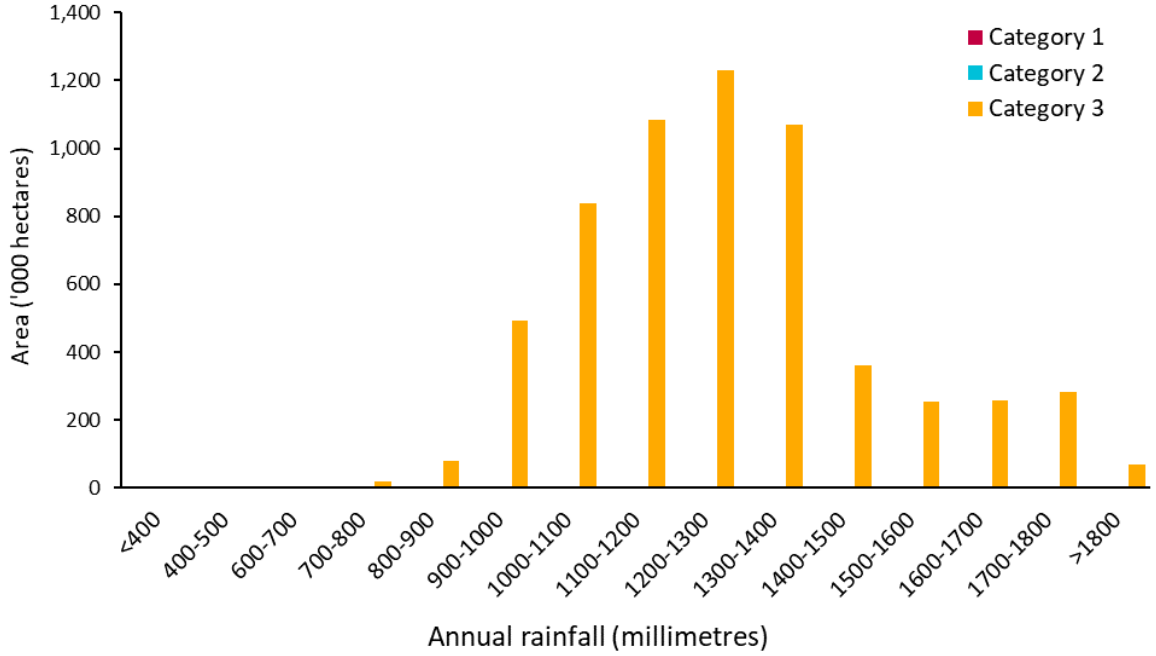
In New South Wales (Figure 4), 81% of the 487 thousand hectares of land-manager assessed private native forestry land (Category 1) is in zones with annual rainfall exceeding 1000 mm, and 77% of the 1.54 million hectares of agency-assessed potential private native forestry land (Category 2) is in zones of moderate annual rainfall (700-1200 mm). However, most (55%) of the 2.3 million hectares of nationally assessed potential private native forestry land (Category 3) is in zones with an annual rainfall of 700 mm or less. This is consistent with much of the areas in Category 3 having a low or moderate commerciality (Table 4).

Figure 4: Area of actual or potential private native forestry land in New South Wales by category and annual rainfall



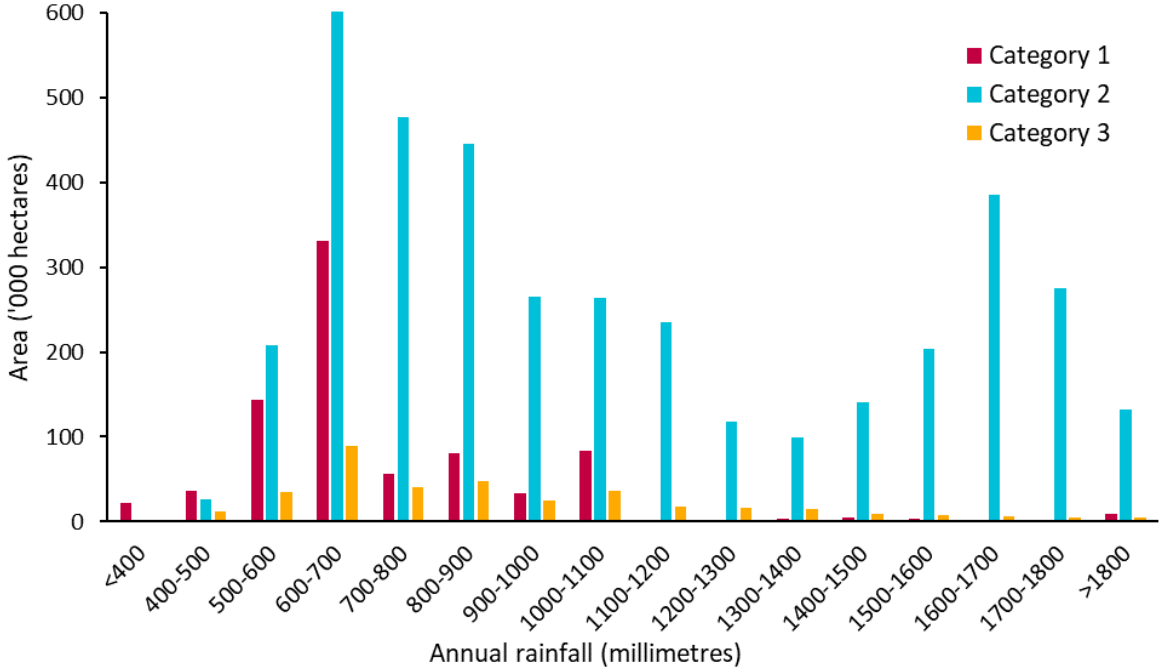
All of the 6.1 million hectares of private native forestry land in the Northern Territory is identified as Category 3 'Nationally assessed potential'. In contrast to other jurisdictions, almost all (91%) this forest occurs in zones where the average annual rainfall exceeds 1000 mm (Figure 5). However, all of this area is rated as having a low commerciality likely due to extreme seasonality of this rainfall, low stem density (hence classification as woodland forest) and height, and distance to sawmills.

Figure 5: Area of actual and potential private native forestry land in Northern Territory by category and annual rainfall



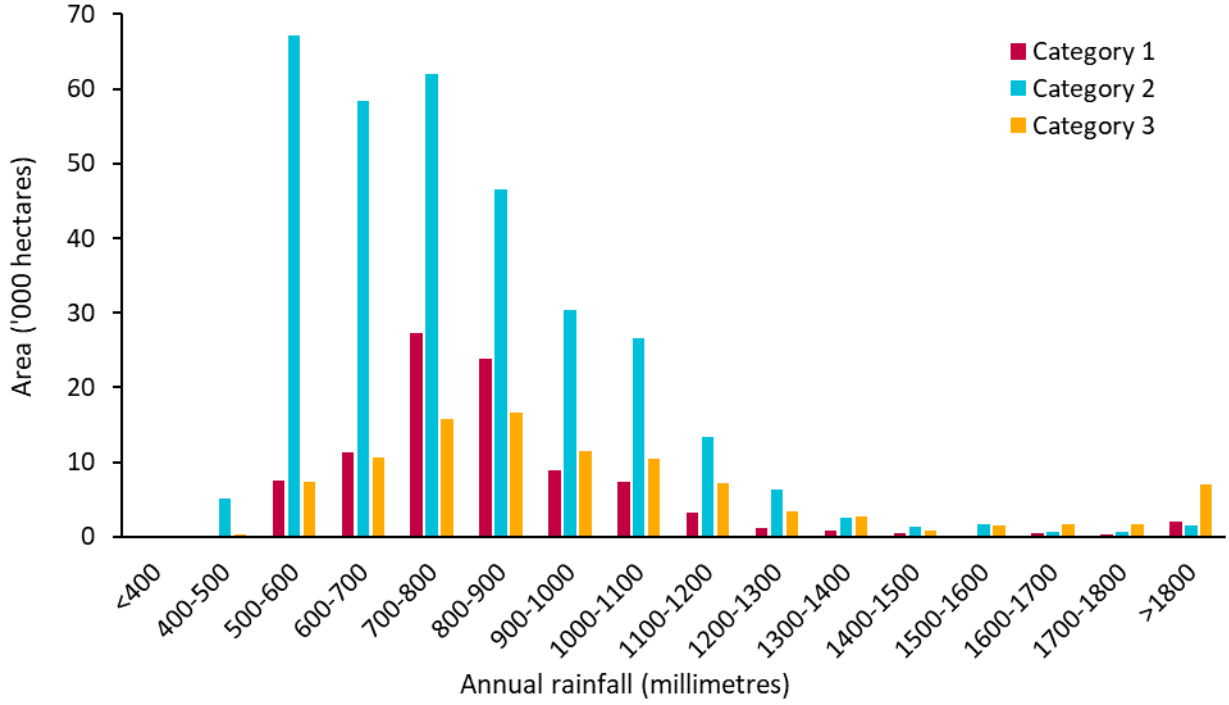
In contrast to the other jurisdictions, most (83%) of the 812 thousand hectares of actual (Category 1) private native forestry land in Queensland occurs in zones with an average annual rainfall of 900 mm or less (Figure 6). The 4.5 million hectares of agency-assessed potential (Category 2) private native forestry land is more evenly distributed across annual rainfall zones from 400 mm to greater than 1800 mm. The area of nationally assessed potential (Category 3) private native forestry land is the smallest of the three categories in Queensland, with most (75%) in the 500-1100 mm annual rainfall range.

Figure 6: Area of actual and potential private native forestry land in Queensland by category and annual rainfall



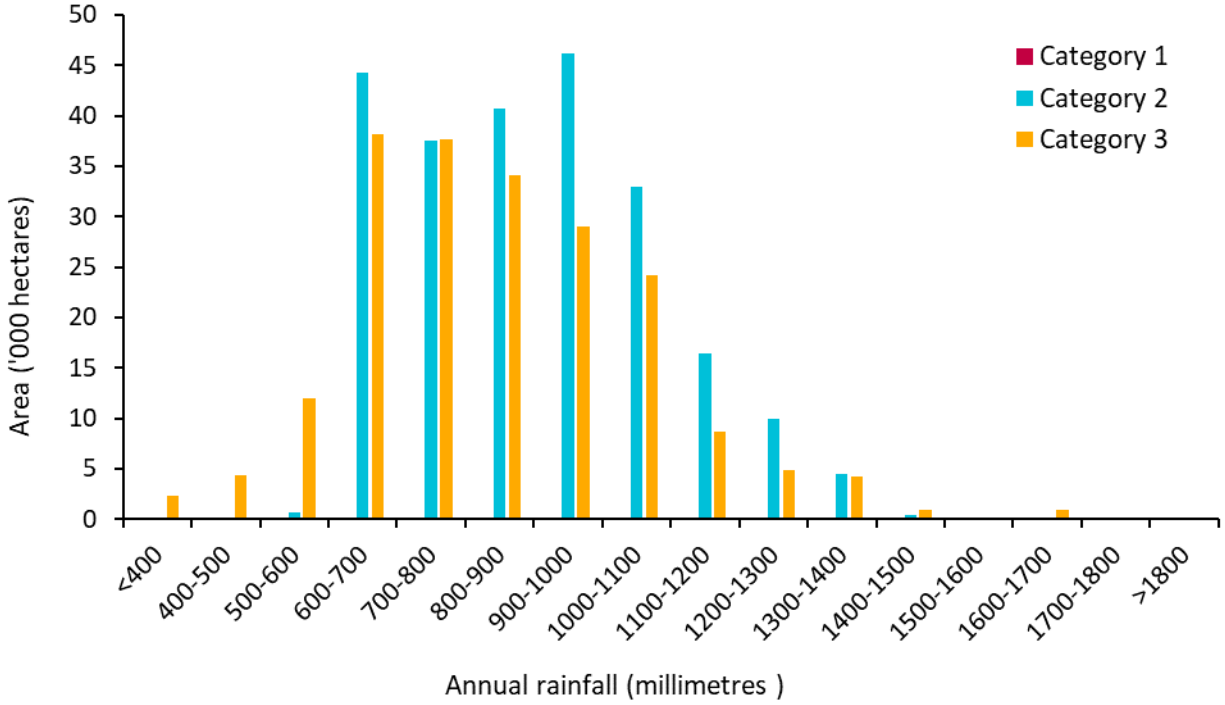
Of the 518 thousand hectares of actual or potential private native forestry land in Tasmania, most (87%) is in zones with an average annual rainfall 500-1100 mm (Figure 7). Most (72%) of the agency-assessed potential (Category 2) private native forestry land in Tasmania is in the drier regions (500-900 mm), compared with the other areas of private native forestry land in Tasmania which are in zones with higher average annual rainfall totals.

Figure 7: Area of actual and potential private native forestry land in Tasmania by category and annual rainfall



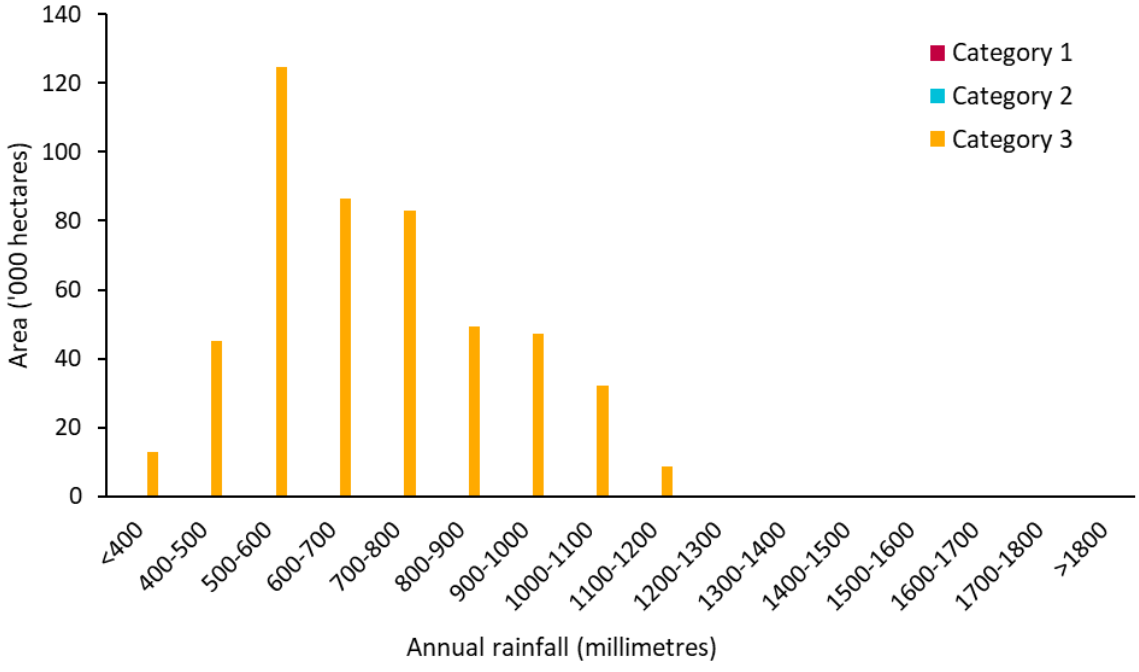
In Victoria, the areas of potential private native forestry land both in Category 2 and in Category 3 mostly have average annual rainfall of 600-1100 mm (Figure 8).

Figure 8: Area of actual and potential private native forestry land in Victoria by category and annual rainfall



Most of the 490 thousand hectares of potential private native forestry land in Western Australia, all of which is nationally assessed (Category 3), is in zones with average annual rainfall of 400-1000 mm (Figure 9). Nevertheless, a little over half of this area (53%) has a sawlog commerciality rating of Moderate or higher (Table 4).

Figure 9: Area of actual and potential private native forestry land in Western Australia by category and annual rainfall



2.4 Private native forestry and Regional Forestry Hubs

Eleven Regional Forestry Hubs were established under the National Forest Industries Plan. They work with industry, state and local governments, and other key stakeholders to prepare and provide the Government with strategic planning, technical assessments and analyses that aim to support growth in the forest industries in their region. Hub regions are established forestry regions with existing concentrations of wood supply resources, processing and/or manufacturing operations, established transport links, and strong potential for growth (DAWR 2018). One or more hubs are located in each of the states and territories (Figure 10).

Each of the eleven hubs have areas of native forest that are either managed (actual), or have the potential to be managed, for private native forestry objectives (Table 8). A total of 14.8 million hectares of actual or potential private native forestry land (85% of the total 17.5 million hectares) occurs within the Regional Forestry Hubs, compared with 2.7 million hectares (15% of the total) that is outside the hubs.

Of the 14.8 million hectares of identified actual or potential private native forestry land occurring within the Regional Forestry Hubs, 1.2 million hectares (8%) are identified as having known land manager intent for wood production (Category 1); this represents 85% of the total area designated as Category 1. A further 6.2 million hectares of the area of actual or potential private native forestry land within the hubs (42%) are areas identified from agency-assessment as having the potential for wood production (Category 2); this represents 94% of the total area designated as Category 2. The remaining 50% of the area of actual or potential private native forestry land within the hubs (7.4 million ha) is identified from national assessment as having the potential for commercial forestry (Category 3); this represents 78% of the total area of Category 3.

The hub with the largest area of privately managed native forest for which there is known management intent for actual commercial forestry (Category 1) is the South and Central Queensland hub (588 thousand hectares), followed by the North East New South Wales hub (404 thousand hectares). The South and Central Queensland hub also has the largest area of agency-assessed potential (Category 2) private native forestry land (2.5 million hectares), followed by the North Queensland hub (1.7 million hectares) and the North East New South Wales hub (1.5 million hectares). The Northern Territory and Ord Valley hub has the largest area of nationally assessed potential (Category 3) private native forestry land (5.9 million hectares) which is also the largest area of actual or potential private native forestry of the 11 hubs.

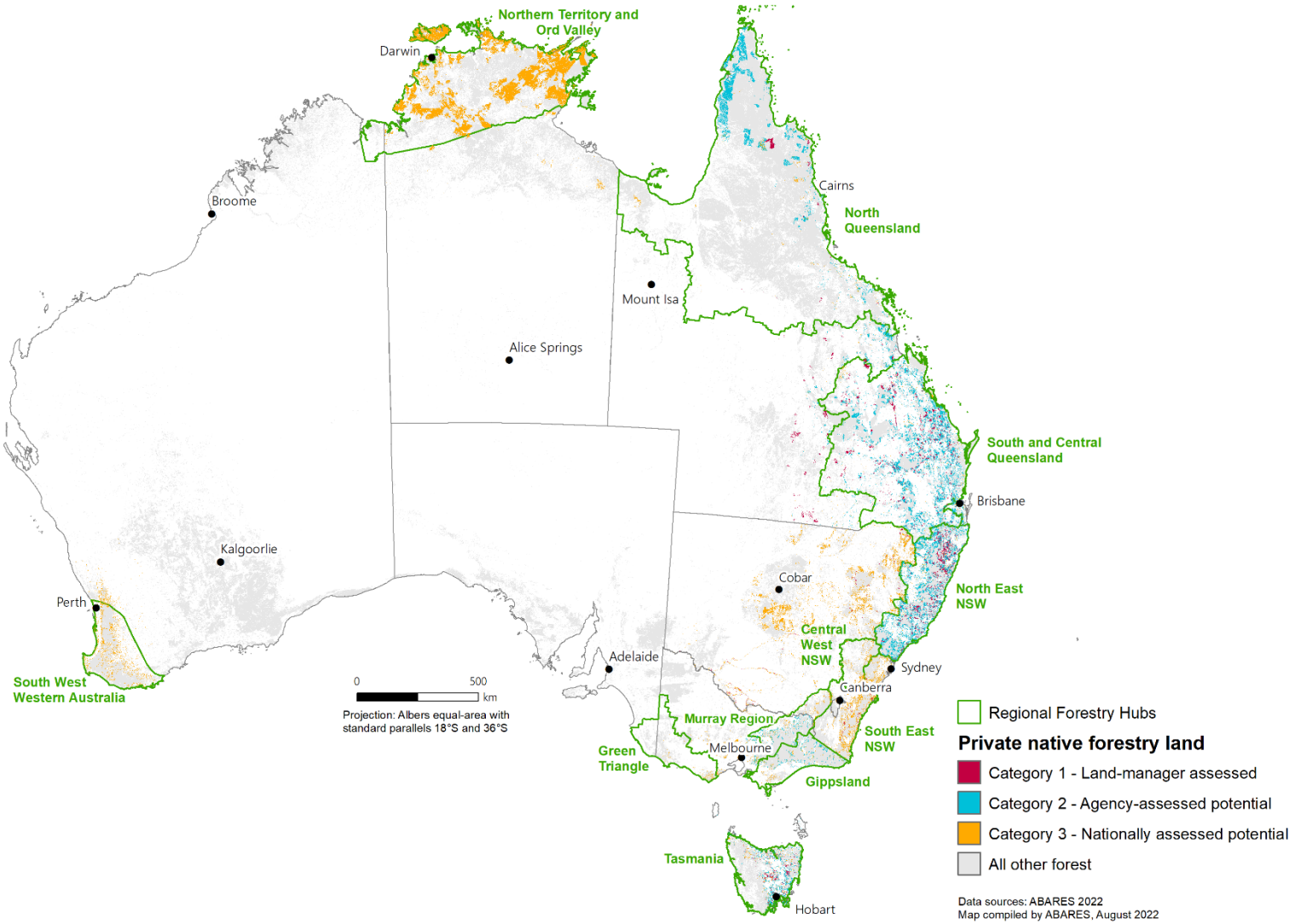
The hubs differ substantially in the areas of the three categories for which private native forestry is identified. Three hubs have relatively high proportions of their private native forestry land areas in Category 1, representing forest known, or with intent, to be managed for wood production. These are the North East New South Wales (20% of the total area of private native forestry in that hub), South and Central Queensland (18%) and Tasmania (18%) hubs. This reflects the existing private native forestry management activities in these three regions. Six hubs have high proportions of their private native forestry land area classed as Category 2, representing forest identified by state agencies as having potential for commercial wood production. These are the North Queensland (87%), South and Central Queensland (77%), North East New South Wales (75%), Gippsland (71%), Tasmania (62%) and Murray Region (54%) hubs. This reflects the regions in which agency-led regional or state-wide private native forestry assessments have been completed.

Table 8: Area and proportion of actual or potential private native forestry land by category and Regional Forestry Hub

Regional Forestry Hub	Area ('000 ha) and *proportion* of total actual or potential private native forestry land *(%)*		Area ('000 ha) and *proportion* of hub actual or potential private native forestry land *(%)*							
			Category 1		Category 2		Category 3		Total	
North Queensland	1,907	*13*	83	*4*	1,664	*87*	160	*8*	1,907	*100*
South and Central Queensland	3,234	*22*	588	*18*	2,497	*77*	149	*5*	3,234	*100*
North East New South Wales	2,057	*14*	404	*20*	1,544	*75*	109	*5*	2,057	*100*
Central West New South Wales	111	*1*	0	*0*	0	*0*	110	*100*	111	*100*
South East New South Wales	387	*3*	18	*5*	0	*0*	370	*95*	387	*100*
Murray Region	150	*1*	1	*1*	81	*54*	68	*45*	150	*100*
Gippsland	148	*1*	0	*0*	105	*71*	43	*29*	148	*100*
Green Triangle	23	*0*	0	*0*	0	*0*	23	*100*	23	*100*
Tasmania	514	*3*	95	*18*	320	*62*	99	*19*	514	*100*
South West Western Australia	382	*3*	0	*0*	0	*0*	382	*100*	382	*100*
Northern Territory and Ord Valley	5,924	*40*	0	*0*	0	*0*	5,924	*100*	5,924	*100*
Total Hubs	**14,835**	***85***	**1,188**	***8***	**6,210**	***42***	**7,436**	***50***	**14,835**	***100***
External to Hubs	**2,698**	***15***	**204**	***8***	**391**	***14***	**2,103**	***78***	**2,698**	***100***
Total	**17,533**	***100***	**1,393**		**6,601**		**9,540**		**17,533**	

Totals may not tally due to rounding.

Figure 10: Distribution of actual and potential private native forestry land by category and Regional Forestry Hub



Four hubs have all their private native forestry land classified as nationally assessed potential (Category 3) private native forestry land. These are the Central West New South Wales, Green Triangle, South West Western Australia and the Northern Territory and Ord Valley. South East New South Wales has 95% of its private native forestry land classed as Category 3. This reflects the regions in which there are no areas actively managed for private native forestry, and where agencies for various reasons have not undertaken private native forestry assessments.

Forest in Category 3 can be further evaluated according to sawlog commerciality ratings (Davey and Dunn, 2014, and also described in section 2.2) (Table 9). The Northern Territory and Ord Valley hub has the most extensive area of Category 3 potential private native forestry land (5.9 million hectares), all of which is rated as having Low sawlog commerciality. Other hubs with a relatively high proportion of Category 3 areas with a higher sawlog commerciality rating (Moderate, High and Very high) include the South West Western Australia hub (67%) and the South East New South Wales hub (62%), as well as hubs with a relatively small total area of forest classified as Category 3: Green Triangle (92%), Gippsland (77%), and North East New South Wales (55%).

Table 9: Area of Category 3 potential private native forestry land by sawlog commerciality rating and Regional Forestry Hub

	Area ('000 ha)					
	Sawlog commerciality rating					Total commercial forest
Regional Forestry Hub	Very low	Low	Moderate	High	Very high	
North Queensland	0	156	2	2	0	160
South and Central Queensland	0	113	29	7	0	149
North East New South Wales	0	49	27	18	15	109
Central West New South Wales	0	81	11	11	8	110
South East New South Wales	0	139	105	69	56	370
Murray Region	0	42	24	2	0	68
Gippsland	0	10	11	11	11	43
Green Triangle	0	2	12	5	4	23
Tasmania	0	56	19	23	1	99
South West Western Australia	0	127	173	72	9	382
Northern Territory and Ord Valley	0	5,924	0	0	0	5,924
Total Hubs	**0**	**6,699**	**412**	**221**	**105**	**7,436**
External to Hubs	**0**	**1,561**	**352**	**183**	**9**	**2,103**
Total	**0**	**8,259**	**763**	**404**	**113**	**9,540**

Totals may not tally due to rounding.
'Commercial forest' is forest with a commerciality rating from 'Very low' to 'Very high'. Non-commercial forest is forest with a commerciality rating of 'No', 'Possible', 'Unknown' or 'Limited' (Davey & Dunn 2014).

The 14.8 million hectares of actual or potential private native forestry land across the Regional Forest Hubs is predominantly Eucalypt forest of medium height, and either open or woodland canopy cover. The 2.7 million hectares of actual or potential private native forestry land outside the Regional Forest Hubs is mostly Eucalypt forest of medium height and woodland canopy cover, but just under one-third is Callitris forest (see Table 22).

2.4.1 North Queensland Regional Forestry Hub

Agency-assessed potential (Category 2) private native forestry land accounts for most (87% of the total area) of the actual or potential private native forestry land in the North Queensland Regional Forestry Hub (Table 10). A further 8% is nationally assessed potential (Category 3) private native forestry land, while only 4% is land-manager assessed (Category 1) private native forestry land. Most of the Category 2 area is located on the Cape York peninsula, while the areas in Categories 1 and 3 are distributed mainly along the coast from Cooktown to Mackay (Figure 11).

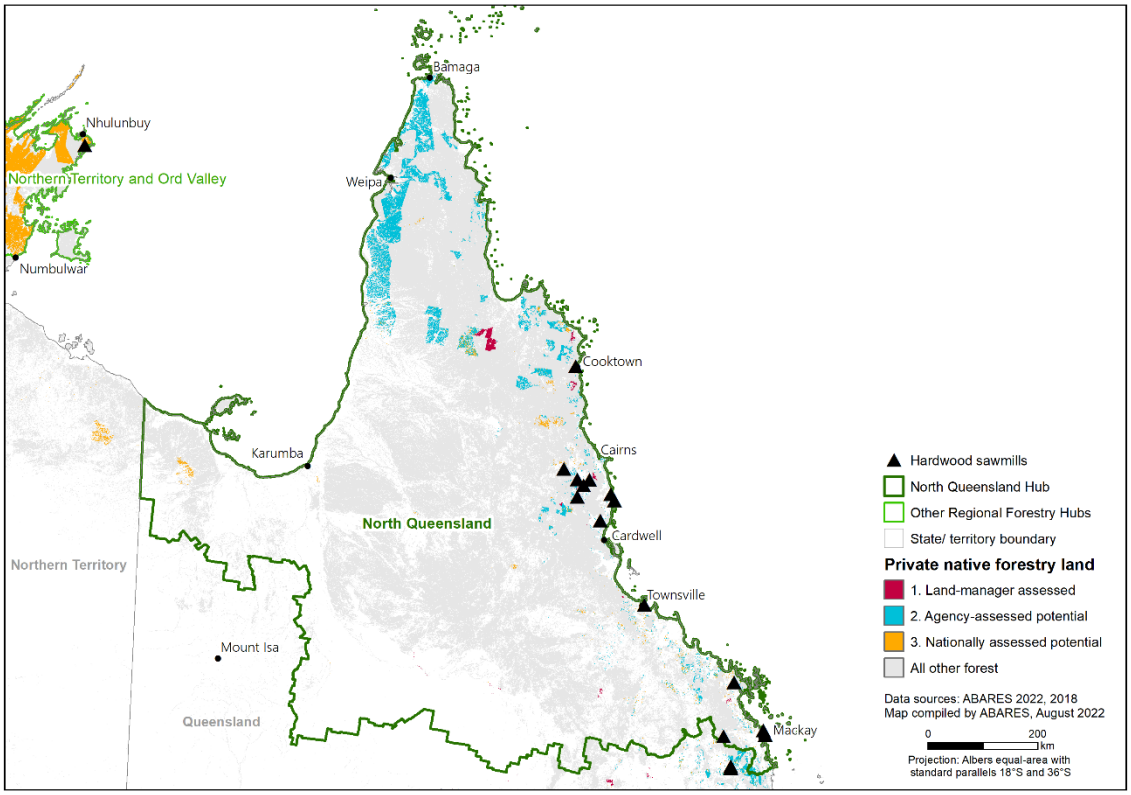
Actual or potential private native forestry land in this hub is dominated by Eucalypt medium height forest (92%) (Table 10, Table B1), and is predominantly woodland forest (94%, Table B2). The northernmost sawmill is at Cooktown. Consequently, most (67%) of the actual or potential private native forestry land on Cape York is more than 200 km from a sawmill (Table 24).

Table 10: Area of actual or potential private native forestry land in the North Queensland Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**2**	1	0	1	1	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**3**	0	3	0	0	0	0	0
Eucalypt	**1,792**	64	1,600	128	123	2	2	0
Eucalypt mallee	0	0	0	0	0	0	0	0
Eucalypt low	22	0	6	16	16	0	0	0
Eucalypt medium	1,764	64	1,592	108	104	2	2	0
Eucalypt tall	6	0	3	3	3	0	0	0
Melaleuca	**58**	5	39	15	15	0	0	0
Other native forest	**52**	13	22	17	17	0	0	0
Total	**1,907**	**83**	**1,664**	**160**	**156**	**2**	**2**	**0**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 11: Actual or potential private native forestry land in the North Queensland Regional Forestry Hub



2.4.2 South and Central Queensland Regional Forestry Hub

Just over three-quarters (77%) of the total area of actual or potential private native forestry land in the South and Central Queensland Regional Forestry Hub is agency-assessed potential (Category 2). A further 18% is land-manager assessed (Category 1), with only a small proportion of the total area (5%) identified as nationally assessed potential (Category 3) (Table 11). The three categories of private native forestry are distributed throughout the hub, although the Category 2 area is predominantly in the east, between the New South Wales border and Gladstone (Figure 12).

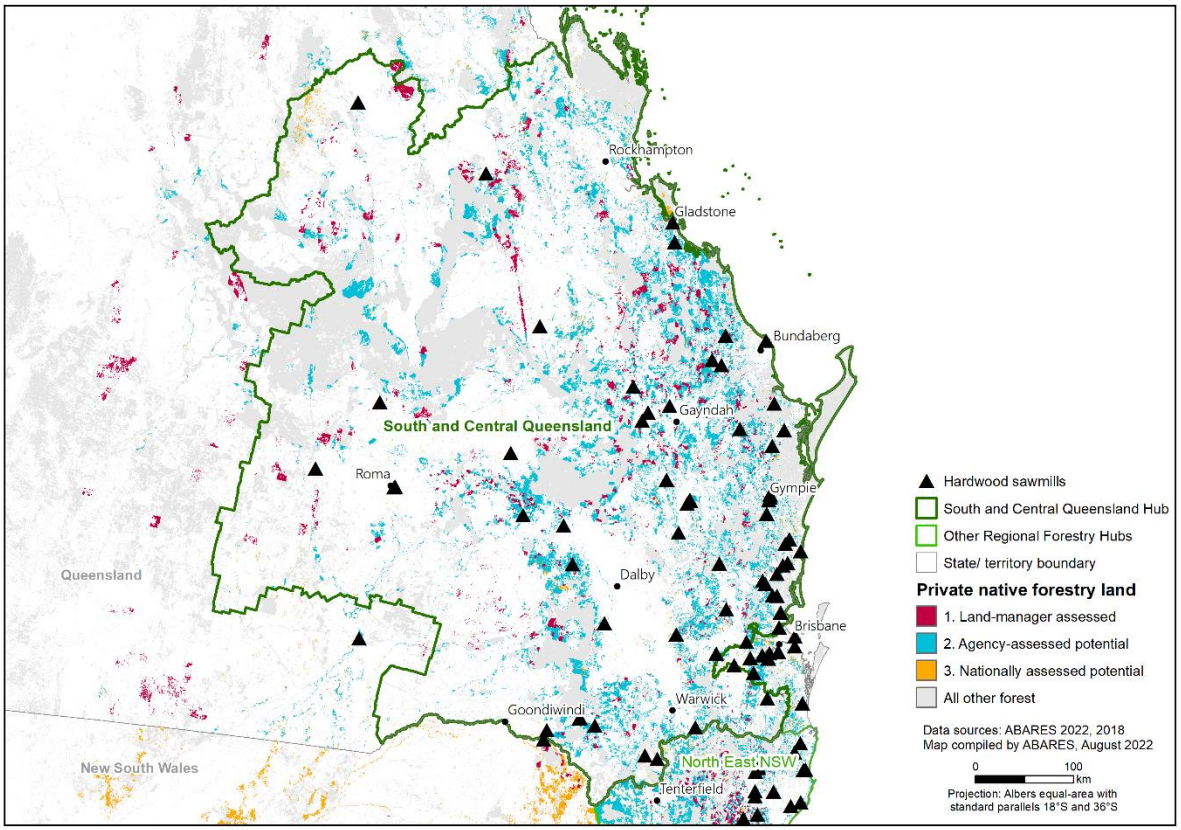
Actual or potential private native forestry land in the hub is dominated by Eucalypt medium height forest (79%) (Table 11, Table B1), and is either woodland (60%) or open (40%) forest (Table B2). Sawmills are distributed throughout the hub, such that 93% of the area of private native forestry is within 100 km of a sawmill, and the remaining 7% is within 200 km of a sawmill (Table 24).

Table 11: Area of actual or potential private native forestry land in the South and Central Queensland Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
					Category 3 commerciality rating			
Forest type	Hub Total	Category 1	Category 2	Category 3	Low	Medium	High	Very high
Acacia	**56**	53	4	0	0	0	0	0
Callitris	**72**	11	57	4	3	1	0	0
Casuarina	**6**	2	3	1	1	0	0	0
Eucalypt	**2,648**	458	2,047	143	108	28	7	0
Eucalypt mallee	0	0	0	0	0	0	0	0
Eucalypt low	3	3	0	0	0	0	0	0
Eucalypt medium	2,565	445	1,983	137	107	25	5	0
Eucalypt tall	79	10	63	6	1	3	3	0
Melaleuca	**7**	0	5	1	1	0	0	0
Other native forest	**445**	63	381	0	0	0	0	0
Total	**3,234**	**588**	**2,497**	**149**	**113**	**29**	**7**	**0**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 12: Actual or potential private native forestry land in the South and Central Queensland Regional Forestry Hub



2.4.3 North East New South Wales Regional Forestry Hub

Much of the areas assessed as Category 1 (land-manager assessed private native forestry land) and Category 2 (agency-assessed potential private native forestry land) in New South Wales are in this hub (Table 12). Almost all of the Category 1 areas are in the north-east part of the hub where environmental conditions are conducive to sawlog growing (Figure 13).

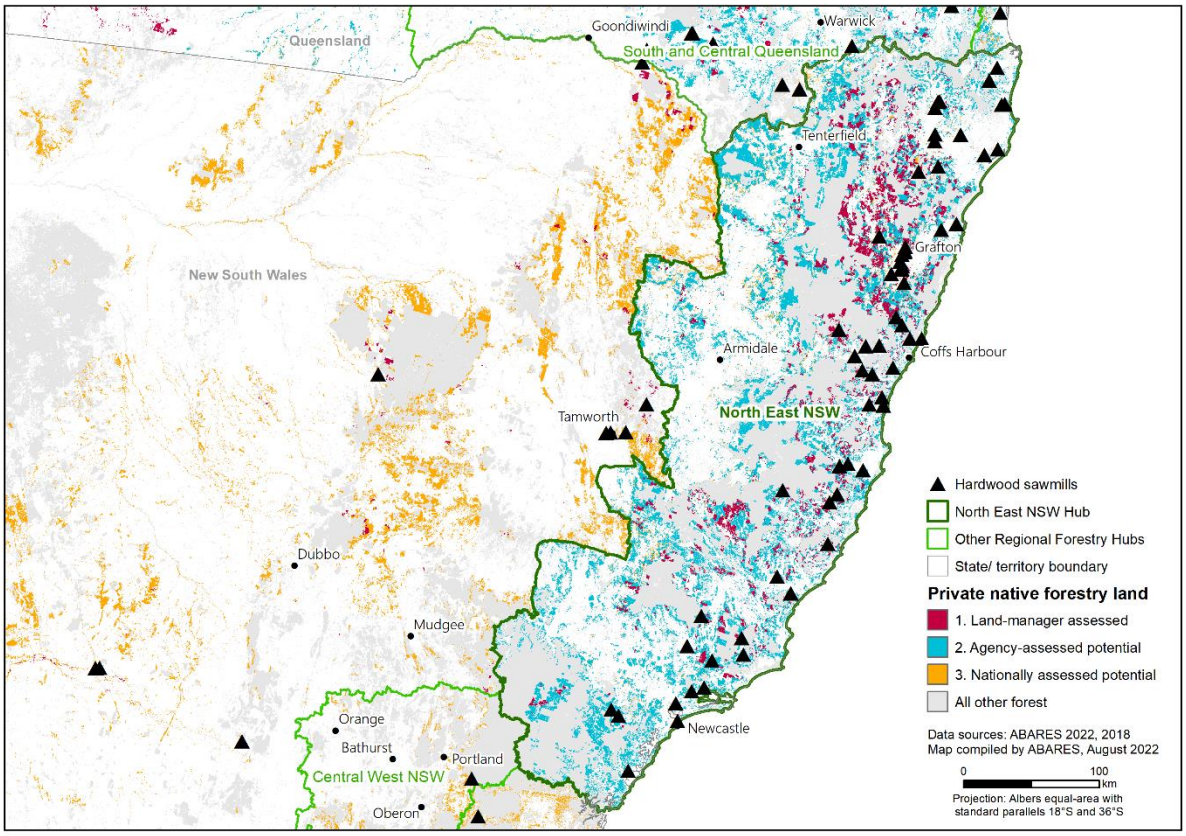
Actual and potential private native forestry land within this hub is dominated by Eucalypt medium height forest (46%) and Eucalypt tall forest (40%) (Table 12, Table B1), and is predominately open forest (91%, Table B2). The distribution of sawmills along the north coast of New South Wales results in most (99%) areas of actual and potential private native forestry land being located within 100 km of a sawmill (Table 24).

Table 12: Area of actual or potential private native forestry land in the North East New South Wales Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
					Category 3 commerciality rating			
Forest type	Hub Total	Category 1	Category 2	Category 3	Low	Medium	High	Very high
Acacia	**5**	14	4	0	0	0	0	0
Callitris	**68**	21	61	4	2	2	0	0
Casuarina	**4**	0	4	0	0	0	0	0
Eucalypt	**1,788**	385	1,316	88	41	22	15	10
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**13**	2	11	1	0	0	0	0
Eucalypt medium	**949**	139	751	59	32	14	8	4
Eucalypt tall	**826**	244	554	28	8	7	7	6
Melaleuca	**23**	1	22	0	0	0	0	0
Other native forest	**170**	16	138	16	6	3	3	5
Total	**2,057**	**404**	**1,544**	**109**	**49**	**27**	**18**	**15**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 13: Actual or potential private native forestry land in North East New South Wales Regional Forestry Hub



2.4.4 Central West New South Wales Regional Forestry Hub

Almost all (99.8%) of the actual or potential private native forestry land in the Central West New South Wales Regional Forestry Hub is Category 3 (nationally assessed potential private native forestry land) (Table 8). These areas occur mainly in the south-east and in the mid-east parts of the hub (Figure 14). Most of the sawlog commerciality of the potential private native forestry land in this hub is rated as Low (81 thousand hectares, 74%) with smaller areas rated as Moderate (11 thousand hectares, 10%), High (11 thousand hectares, 10%) and Very high (8 thousand hectares, 7%) (Table 9).

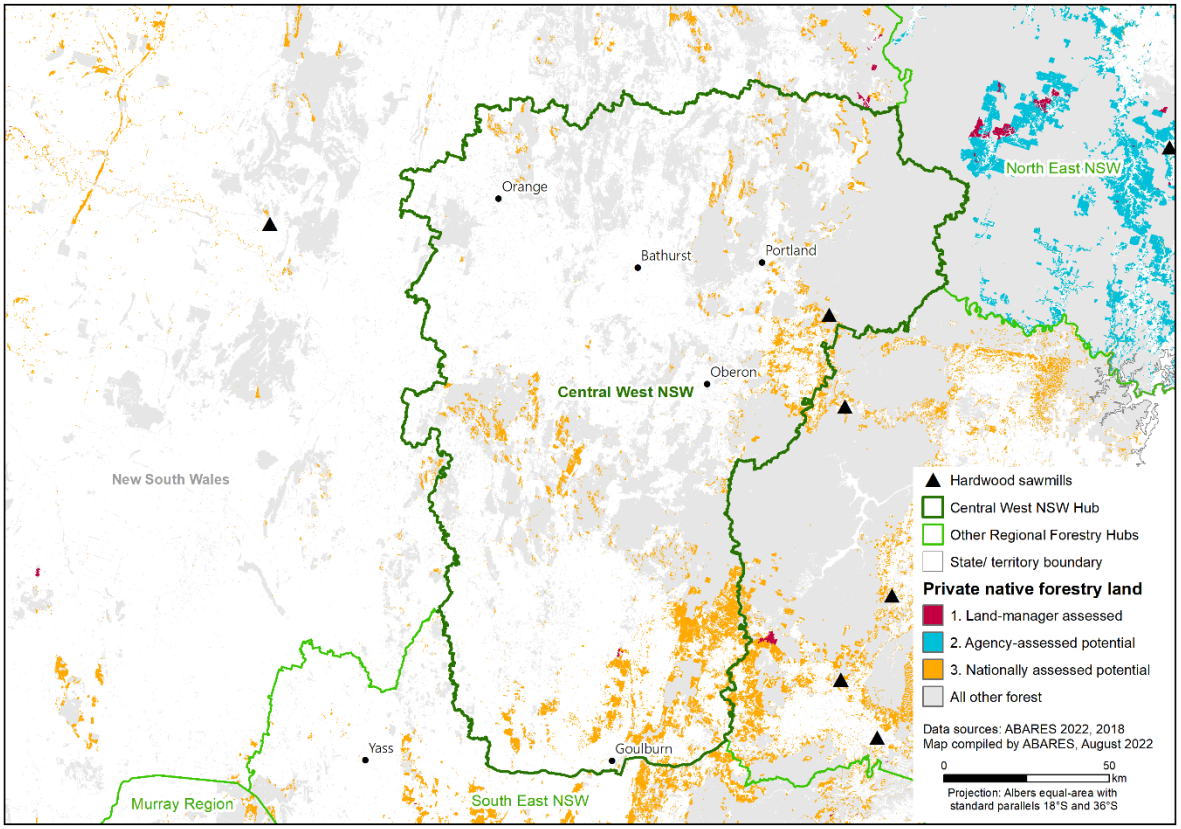
Potential private native forestry land in this hub is dominated by Eucalypt medium height forest (98%) (Table 13, Table B1), and is either woodland forest (41%) or open forest (59%) (Table B2). Sawmills are located primarily in the Blue Mountains and Southern Highlands areas, and 91% of the potential private native forestry land is within 100 km of a sawmill (Table 24).

Table 13: Area of actual or potential private native forestry land in the Central West New South Wales Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**0**	0	0	0	0	0	0	0
Callitris	**2**	0	0	2	2	0	0	0
Casuarina	**1**	0	0	1	0	0	0	0
Eucalypt	**108**	0	0	108	79	10	11	8
Eucalypt mallee		0	0	0	0	0	0	0
Eucalypt low	**0**	0	0	0	0		0	0
Eucalypt medium	**108**	0	0	108	79	10	11	7
Eucalypt tall	**0**	0	0	0	0			0
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**0**	0	0	0	0	0	0	0
Total	**111**	**0**	**0**	**110**	**81**	**11**	**11**	**8**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 14: Potential actual or private native forestry land in the Central West New South Wales Regional Forestry Hub



2.4.5 South East New South Wales Regional Forestry Hub

Almost all (95%) of the actual or potential private native forestry land in the South East New South Wales Regional Forestry Hub is Category 3 (nationally assessed potential private native forestry land) (Table 8). The remaining 5% is land-manager assessed (Category 1) private native forestry land. Land-manager assessed private native forestry areas are located primarily along the immediate western edge of the southern escarpment (Figure 15). There is a range of assessed potential sawlog commerciality values for private native forest in Category 3 in this hub (Table 9). Private native forest with very high potential sawlog commerciality is concentrated around Batemans Bay and north-west of Eden on the escarpment.

There is no private native forestry in the Australian Capital Territory component of the South East New South Wales hub as native forest harvesting is not permitted in that jurisdiction.

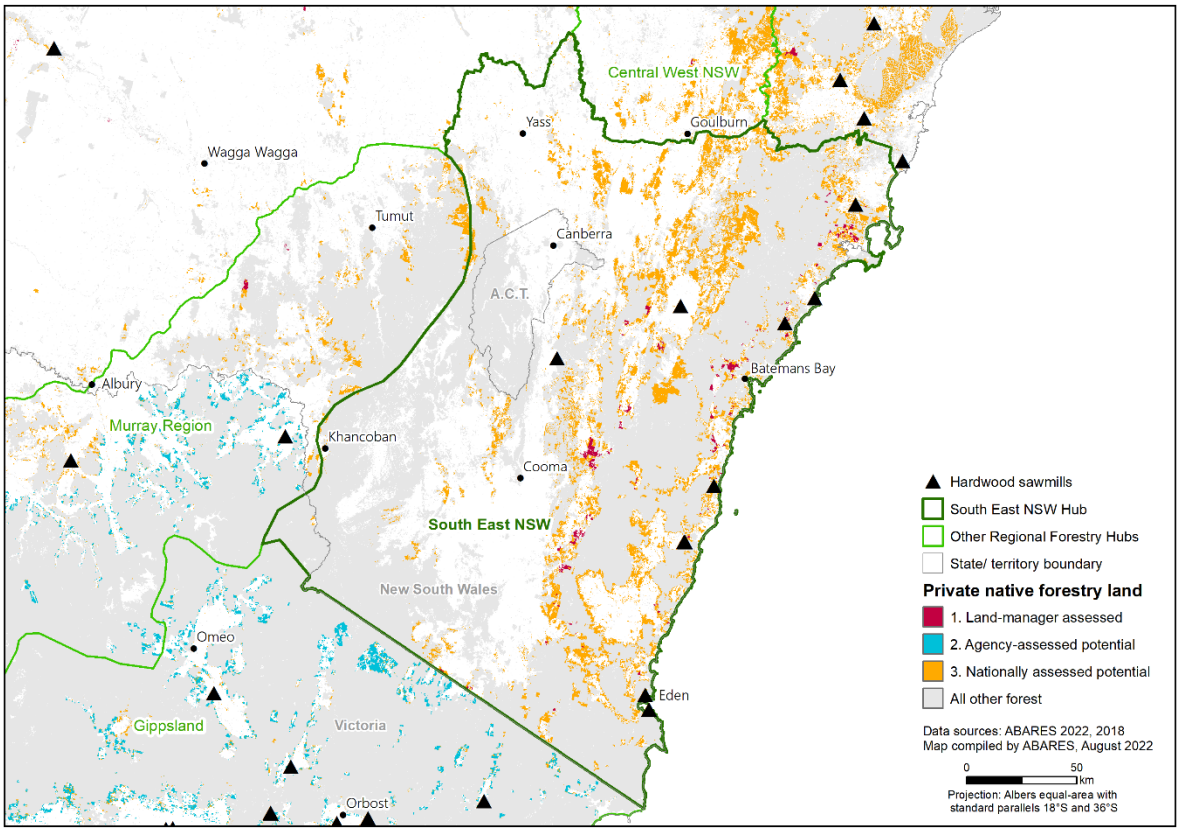
Actual or potential private native forestry land in this hub is dominated by Eucalypt medium height forest (84% of total area) (Table 14, Table B1), and is woodland forest (45%) or open forest (55%) (Table B2). The distribution of sawmills along the coast and escarpment means that 99% of actual or potential private native forestry land is within 100 km of a sawmill, and the remaining area is within 100 and 200 km of a sawmill (Table 24).

Table 14: Area of actual or potential private native forestry land in South East New South Wales Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**12**	0	0	11	1	9	1	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**15**	1	0	14	1	1	11	1
Eucalypt	**360**	16	0	344	137	95	57	55
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**1**	0	0	1	0	0	0	0
Eucalypt medium	**327**	14	0	312	136	87	47	43
Eucalypt tall	**33**	2	0	31	1	8	10	12
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**1**	0	0	0	0	0	0	0
Total	**387**	**18**	**0**	**370**	**139**	**105**	**69**	**56**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 15: Actual or potential private native forestry land in the South East New South Wales Regional Forestry Hub



2.4.6 Murray Region Regional Forestry Hub

The Murray Region Regional Forestry Hub, which spans New South Wales and Victoria, is divided almost equally between agency-assessed potential (Category 2) private native forestry land (54%) and nationally assessed potential (Category 3) private native forestry land (45%) (Table 8). There are 900 hectares of land-manager assessed (Category 1) private native forestry land in the hub, all of which is in the New South Wales Riverina (Figure 16). More than half (62%) of the Category 3 potential private native forestry area has a low sawlog commerciality rating (Table 9), and is divided approximately equally between Victoria and New South Wales. Category 3 potential private native forestry with a moderate sawlog commerciality rating (35%) is concentrated in the New South Wales portion of the hub between Khancoban and Tumut, and to the east of Tumut.

Actual or potential private native forestry land in the hub is dominated by Eucalypt medium height forest (97%) (Table 15, Table B1), and is mostly open forest (88%, Table B2). The range of sawmill locations in the west-central portion of the hub means that 99% of actual or potential private native forestry areas are within 100 km of a sawmill (Table 24).

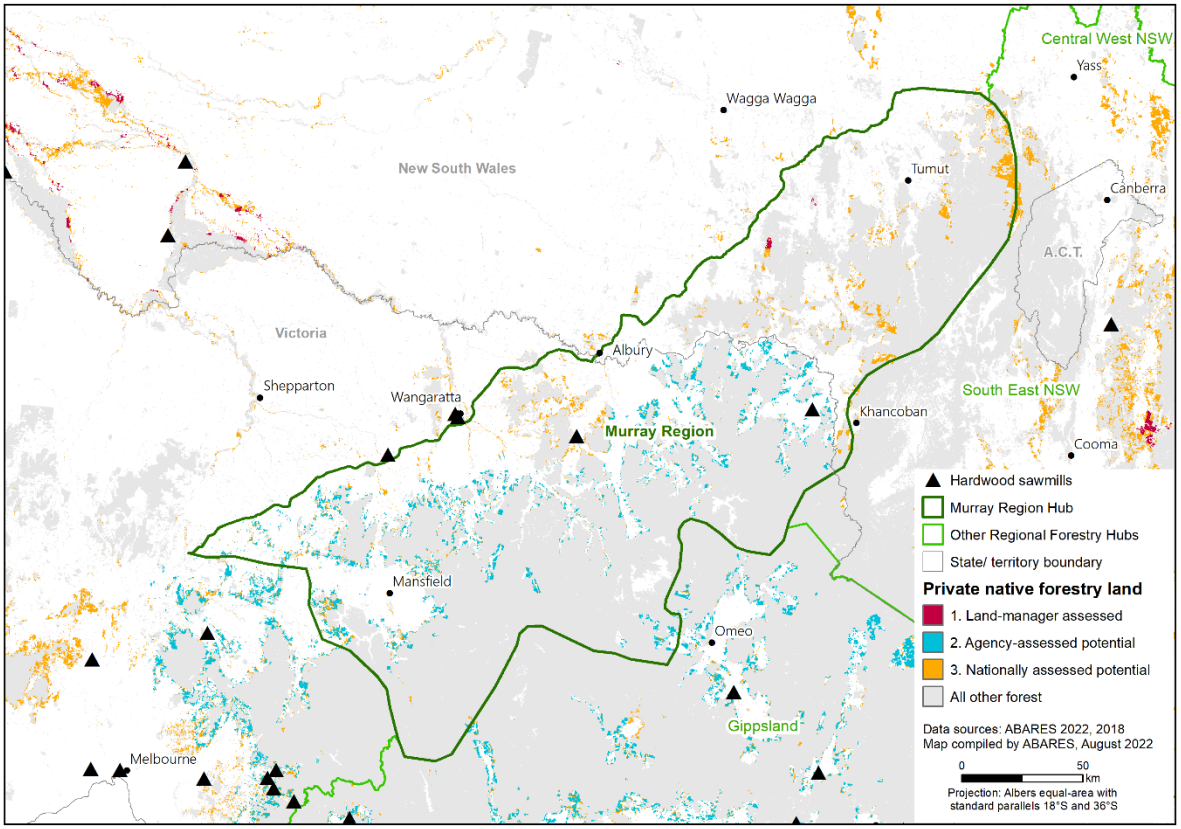
All of the Category 2 potential private native forestry area in this hub occurs in Victoria, where DELWP Victoria has mapped forest stands deemed to be homogenous in species composition, crown cover, crown form, height and distribution (DELWP 2020). River red gum forests in New South Wales have been assessed for environmental, social, cultural, economic and timber resource values (Natural Resources Commission 2009), however, the data were not available for this project.

Table 15: Area of actual or potential private native forestry land in the Murray Region Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
					Category 3 commerciality rating			
Forest type	Hub Total	Category 1	Category 2	Category 3	Low	Medium	High	Very high
Acacia	**0**	0	0	0	0	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0		0	0	0	0	0
Eucalypt	**149**	1	81	68	42	24	2	0
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**0**	0	0	0	0	0	0	0
Eucalypt medium	**145**	1	77	67	41	23	2	0
Eucalypt tall	**4**	0	3	1	0	1	0	0
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**0**	0	0	0	0	0	0	0
Total	**150**	**1**	**81**	**68**	**42**	**24**	**2**	**0**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 16: Actual or potential private native forestry land in the Murray Region Regional Forestry Hub



2.4.7 Gippsland Regional Forestry Hub

Of the 148 thousand hectares of potential private native forestry land in the Gippsland Regional Forestry Hub, agency-assessed potential (Category 2) private native forestry land accounts for the largest proportion (71%) (Table 8). The remainder is nationally assessed potential (Category 3) private native forestry land. The areas in Category 3 are evenly divided between sawlog commerciality ratings of Very high (25%), High (27%), Moderate (25%) and Low (23%) (Table 9). Potential private native forestry land is distributed throughout the hub, with most of the Category 2 area occurring in the central and eastern parts of the Hub, and Category 3 areas in west Gippsland (Figure 17).

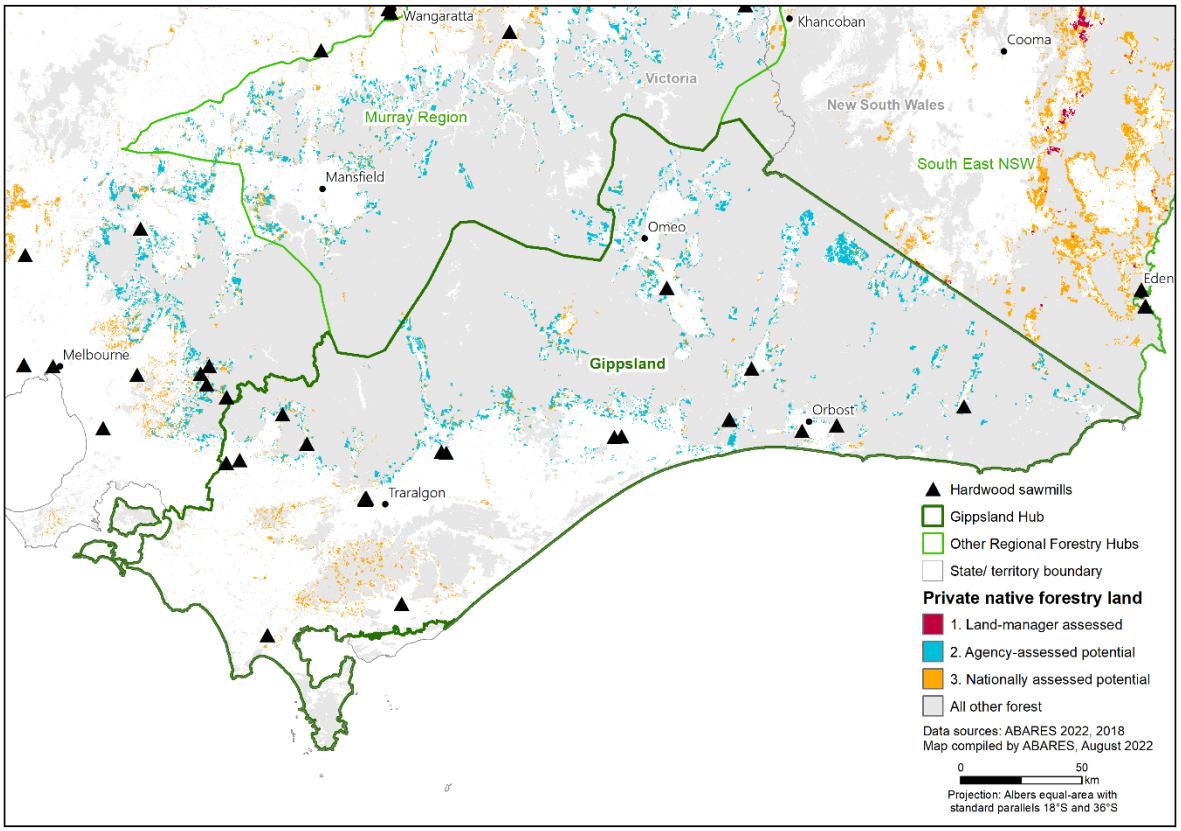
The actual or potential private native forestry areas in the hub are dominated by Eucalypt medium height forest (98%) (Table 16, Table B1), and are predominantly open forest (78%, Table B2). All potential private native forestry areas are within 100 km of a sawmill (Table 24).

Table 16: Area of actual or potential private native forestry land in the Gippsland Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**0**	0	0	0	0	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0	0	0	0	0	0	0
Eucalypt	**147**	0	104	43	10	11	11	11
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**0**	0	0	0	0	0	0	0
Eucalypt medium	**144**	0	103	41	9	10	11	11
Eucalypt tall	**2**	0	0	2	0	1	1	0
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**1**	0	1	0	0	0	0	0
Total	**148**	**0**	**105**	**43**	**10**	**11**	**11**	**11**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 17: Actual or potential private native forestry land in the Gippsland Regional Forestry Hub



2.4.8 Green Triangle Regional Forestry Hub

The 23 thousand hectares of potential private native forestry land in the Green Triangle Regional Forestry Hub consists entirely of nationally assessed potential areas (Category 3) (Table 8), and are restricted to the wider Otway and Mount Gambier regions of Victoria (Figure 18). Half of the Category 3 potential private native forestry areas have a Moderate sawlog commerciality rating (51%), with smaller areas of High (21%) and Very high (19%) sawlog commerciality (Table 9). Areas of Very high sawlog commerciality rating are in the Otway region in the east of the hub, while the forests of Moderate sawlog commerciality rating occur both in the wider Otway and Mount Gambier regions in the east and south-central areas of the hub.

There is no private native forestry land in the South Australian component of the Green Triangle hub as native forest harvesting is not permitted in that jurisdiction.

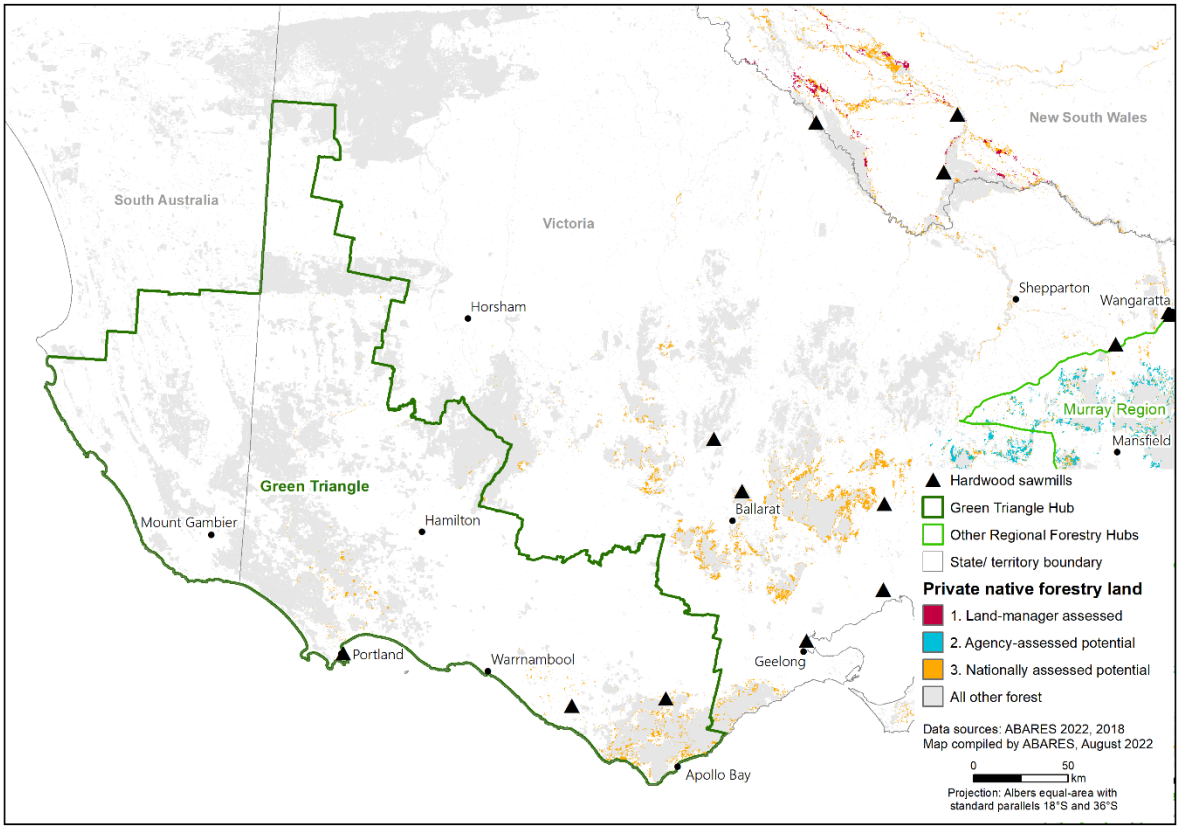
Private native forestry land in the hub is dominated by Eucalypt medium height forest (96%) (Table 17, Table B1), and is predominantly open forest (91%, Table B2). Most (96%) of the private native forestry area is within 100 km of a sawmill, with the remainder between 100 and 200 km of a sawmill (Table 24).

Table 17: Area of actual or potential private native forestry land in the Green Triangle Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**0**	0	0	0	0	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0	0	0	0	0	0	0
Eucalypt	**23**	0	0	23	2	12	5	4
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**0**	0	0	0	0	0	0	0
Eucalypt medium	**22**	0	0	22	2	11	5	4
Eucalypt tall	**1**	0	0	1	0	0	0	0
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**0**	0	0	0	0	0	0	0
Total	**23**	**0**	**0**	**23**	**2**	**12**	**5**	**4**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 18: Actual or potential private native forestry land in the Green Triangle Regional Forestry Hub



2.4.9 Tasmania Regional Forestry Hub

Of the 514 thousand hectares of actual or potential private native forestry land in the Tasmania Regional Forestry Hub, agency-assessed potential (Category 2) private native forestry land accounts for 62% of the total. The remainder is divided between land-manager assessed (Category 1, 18%) and nationally assessed potential (Category 3, 19%) (Table 8). Actual or potential private native forestry areas are restricted to central, eastern and north-western Tasmania. Much of the area of Category 3 in Tasmania is owned by private forestry companies and used as environmental 'offsets', and thereby not available for wood production. The distribution of each of the categories is widespread, although the land manager assessed areas (Category 1) are concentrated in the northern and eastern midlands (Figure 19).

Actual or potential private native forestry land in this hub is mostly Eucalypt medium height forest (65%) with some Eucalypt tall forest (27%) (Table 18, Table B1), and predominantly woodland forest (76%) (Table B2). All actual and potential private native forestry areas are within 100 km of a sawmill (Table 24).

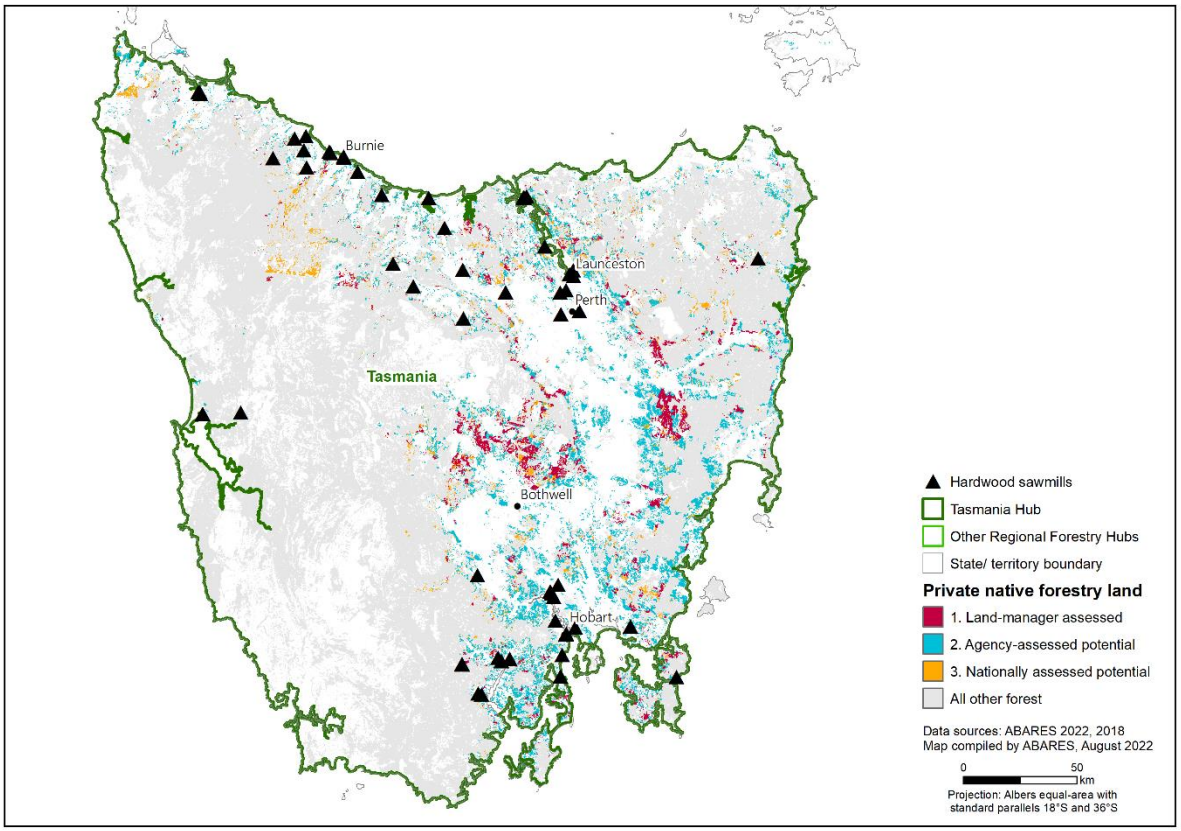
The Tasmania Regional Forestry Hub boundary differs from the state boundary of Tasmania. An additional area of four thousand hectares of private native forestry in Tasmania occurs outside the Tasmania hub, all of which is agency-assessed potential (Category 2, Table 21) private native forestry land.

Table 18: Area of actual or potential private native forestry land in the Tasmania Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**16**	2	9	5	1	3	1	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0	0	0	0	0	0	0
Eucalypt	**480**	90	305	84	**51**	**14**	**19**	**1**
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**4**	0	3	1	0	0	0	0
Eucalypt medium	**336**	45	239	52	43	6	3	0
Eucalypt tall	**140**	45	63	31	7	8	16	1
Melaleuca	**3**	0	2	1	0	0	1	0
Rainforest	**11**	2	3	7	3	1	3	0
Other native forest	**2**	0	1	1	1	0	0	0
Total	**514**	**95**	**320**	**99**	**56**	**19**	**23**	**1**

Mangrove was excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 19: Actual of actual or potential private native forestry land in the Tasmania Regional Forestry Hub



2.4.10 South West Western Australia Regional Forestry Hub

The private native forestry land in the South West Western Australia Regional Forestry Hub is entirely nationally assessed potential areas (Category 3) (Table 8). These areas are mostly distributed throughout the hub (Figure 20), but the small area (2%, Table 9) of potential private native forestry land with a Very high sawlog commerciality rating is south of Manjimup, while the area of potential private native forestry land with High sawlog commerciality rating (19%) is in the central portion of the hub between Manjimup and Dwellingup.

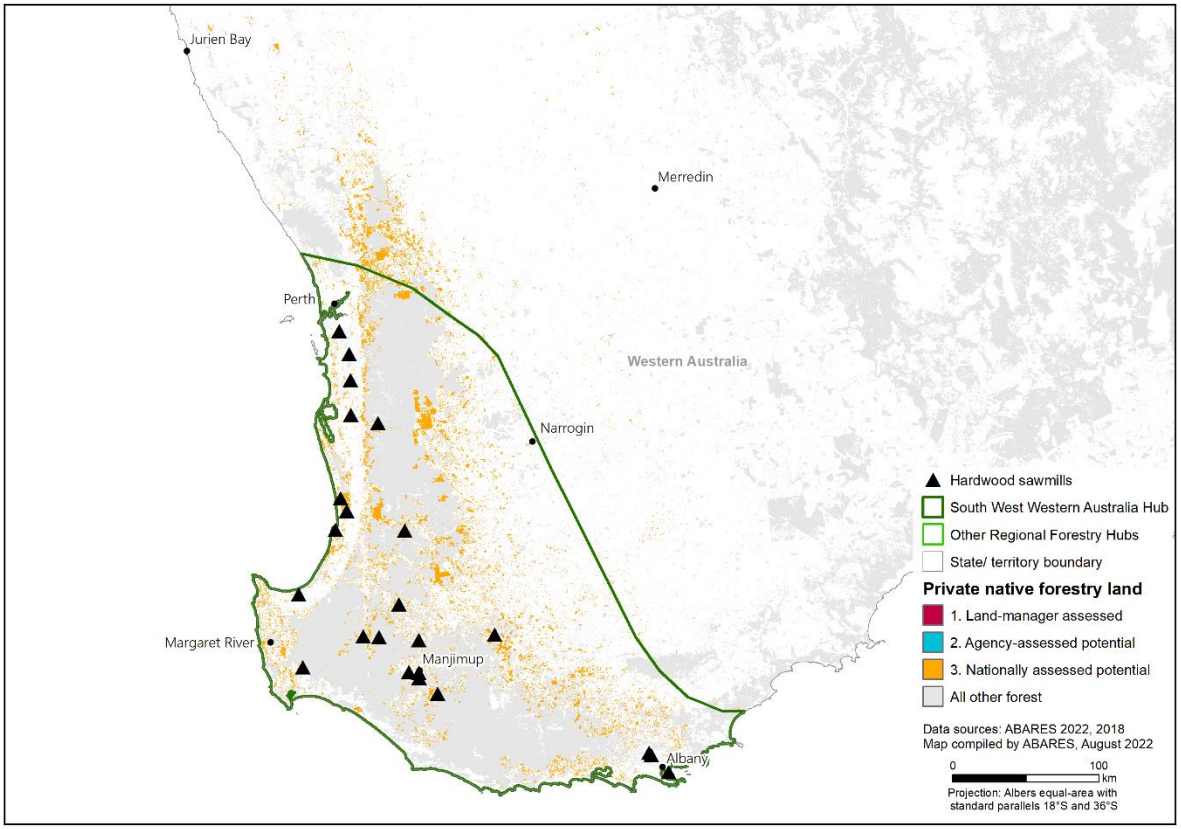
Potential private native forestry land in the hub is dominated by Eucalypt medium height forest (93%) (Table 19, Table B1), and is mostly open forest (72%, Table B2). Almost all (99.9%) private native forestry areas are within 100 km of a sawmill (Table 24).

Table 19: Area of actual or potential private native forestry land in the South West Western Australia Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**0**	0	0	0	0	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0	0	0	0	0	0	0
Eucalypt	**381**	0	0	381	127	173	72	9
Eucalypt mallee	**11**	0	0	11	11	0	0	0
Eucalypt low	**0**	0	0	0	0	0	0	0
Eucalypt medium	**355**	0	0	355	117	172	66	0
Eucalypt tall	**15**	0	0	15	0	1	6	9
Melaleuca	**0**	0	0	0	0	0	0	0
Other native forest	**0**	0	0	0	0	0	0	0
Total	**382**	**0**	**0**	**382**	**127**	**173**	**72**	**9**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 20: Actual or potential private native forestry land in the South West Western Australia Regional Forestry Hub



2.4.11 Northern Territory and Ord Valley Regional Forestry Hub

The Northern Territory and Ord Valley Regional Forestry Hub contains only nationally assessed potential private native forestry land (Category 3) (Table 8). These areas are distributed throughout the hub (Figure 21). All potential private native forestry areas have a Low sawlog commerciality rating (Table 9).

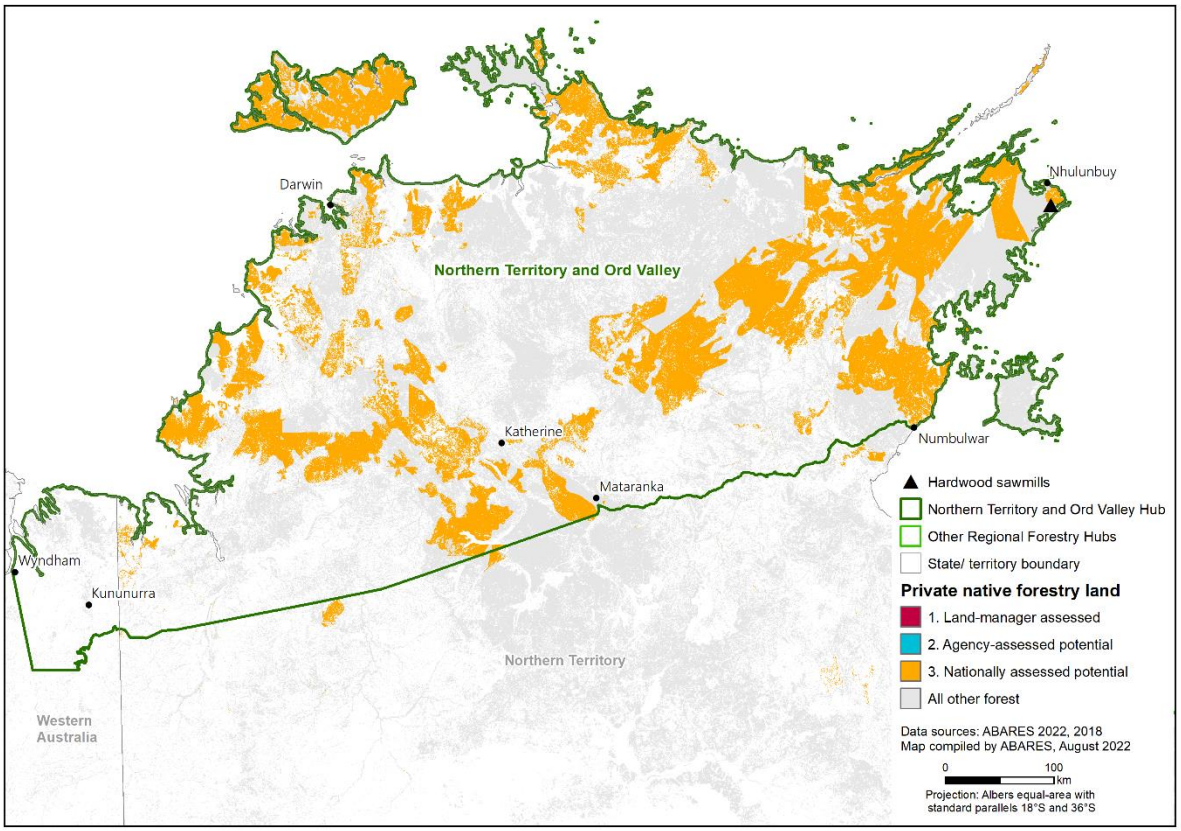
Potential private native forestry areas in the hub are dominated by Eucalypt medium height forest (96%) (Table 20, Table B1), with a mix of woodland forest (45%) and open forest (54%, Table B2). Most (80%) of the potential private native forestry areas in the hub are more than 200 km from a sawmill (Table 24), while 16% is between 100 and 200 km from a sawmill, and 4% is within 100 km of a sawmill.

Table 20: Area of actual or potential private native forestry land in the Northern Territory and Ord Valley Regional Forestry Hub, by category and forest type

	Area ('000 ha)							
	Hub	Category	Category	Category	Category 3 commerciality rating			
Forest type	Total	1	2	3	Low	Medium	High	Very high
Acacia	**2**	0	0	2	2	0	0	0
Callitris	**0**	0	0	0	0	0	0	0
Casuarina	**0**	0	0	0	0	0	0	0
Eucalypt	**5,682**	0	0	5,682	5,682	0	0	0
Eucalypt mallee	**0**	0	0	0	0	0	0	0
Eucalypt low	**3**	0	0	3	3	0	0	0
Eucalypt medium	**5,679**	0	0	5,679	5,679	0	0	0
Eucalypt tall	**0**	0	0	0	0	0	0	0
Melaleuca	**224**	0	0	224	224	0	0	0
Other native forest	**16**	0	0	16	16	0	0	0
Total	**5,924**	**0**	**0**	**5,924**	**5,924**	**0**	**0**	**0**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

Figure 21: Actual or potential private native forestry land in the Northern Territory and Ord Valley Regional Forestry Hub



2.4.12 Areas outside Regional Forestry Hubs

A total of 2.7 million hectares of actual or potential private native forestry land occurs outside the Regional Forestry Hubs, of which 204 thousand hectares (8%) are managed for private native forestry and 391 thousand hectares (14%) are agency-assessed as having the potential for private native forestry, with most of the area (2.1 million ha, 78%) identified as nationally assessed (Category 3) (Table 8).

Of the area of actual or potential private native forestry outside of the 11 hubs, New South Wales comprises the largest area with 1.8 million hectares (66%), of which 64 thousand hectares is actual (Category 1) private native forestry land concentrated along the major river systems in the Riverina and mid-west, and around the Pilliga in mid-north New South Wales (Figure 10)[21]. However, most of the area outside the hubs in New South Wales is nationally assessed as Category 3 (1.7 million hectares). Much of this area (1.2 million hectares, 74%) is rated as having Low sawlog commerciality, with a further 313 thousand hectares (18%) rated as Medium sawlog commerciality and 155 thousand hectares (9%) rated as having a High sawlog commerciality (Table 21).

Queensland has the next largest area of actual and potential private native forestry land outside the Regional Forestry Hubs (Table 21). The 141 thousand hectares (26%) of actual (Category 1) private native forestry land are scattered from central Queensland west of the Carnarvon Ranges

[21] A further 8,500 hectares of land-manager assessed private native forestry outside the hubs in New South Wales was on unresolved land tenure, and so is not included in this report. There are only 100 hectares of private native forestry on unresolved tenures inside Regional Forestry Hubs, also not included in the report.

south to the New South Wales border, while the 337 thousand hectares (63%) of agency-assessed potential (Category 2) private native forestry land is mostly located between the two Queensland Regional Forestry Hubs with large areas inland from Sarina, south west of Mackay).

Much smaller areas of actual or potential private native forestry land occur outside the hubs in other jurisdictions with 153 thousand hectares in Victoria, 126 thousand hectares in Northern Territory and 108 thousand hectares in Western Australia.

Table 21: Area of actual or potential private native forestry land by category and jurisdiction outside Regional Forestry Hubs

	Area ('000 ha)							
	Outside hub				Category 3 commerciality rating			
Jurisdiction	Total	Category 1	Category 2	Category 3	Low	Medium	High	Very high
Australian Capital Territory	**0**	0	0	0	0	0	0	0
New South Wales	**1,772**	64	1	1,707	1,232	313	155	7.1
Northern Territory	**126**	0	0	126	126	0	0	0
Queensland	**535**	141	337	57	43	13	1	0
South Australia	**0**	0	0	0	0	0	0	0
Tasmania	**4**	0	4	0	0	0	0	0
Victoria	**153**	0	48	105	59	18	27	1.4
Western Australia	**108**	0	0	108	101	7	0	0
Total	**2,698**	**204**	**391**	**2,103**	**1,561**	**352**	**183**	**9**

Totals may not tally due to rounding.

Victoria has 6% of the potential private native forestry areas outside of hubs, of which 31% is assessed as Category 2, with most (69%) is assessed as Category 3. The Category 2 area is located north-east of Melbourne, while the Category 3 area is located in central Victoria with most rated as Low or Medium sawlog commerciality.

Most (74%) of the nationally assessed potential (Category 3) private native forestry areas outside the Regional Forestry Hubs have a Low sawlog commerciality rating. This is driven by the large areas of this category in inland New South Wales, north of Perth in Western Australia, and in the Northern Territory. There are 8.5 thousand hectares of nationally assessed potential private native forestry areas of Very high sawlog commerciality in New South Wales and Victoria, concentrated on the Southern Highlands and northeast of Melbourne respectively. Most (85%) of the Category 3 potential private native forestry areas with a High sawlog commerciality rating occur in New South Wales along inland rivers and east of Narrabri.

More than half (60%) of the actual or potential private native forestry areas outside the Regional Forestry Hubs is Eucalypt medium height forest, with a further 29% Callitris forest (Table 22). Most (69%) of the potential eucalypt private native forestry areas outside the hubs are woodland forests, with the remaining area comprising open forests (31%) (Table B2).

Of the 2.7 million hectares of actual or potential private native forestry land outside of Regional Forestry Hubs, most (55%, 1.475 million hectares) is less than 100 km from a mill, with 956 thousand hectares (35%) between 100 km and 200 km from a mill, and 268 thousand hectares (10%) greater than 200 km from a mill (Table 23).

Just under half (42%) of the 204 thousand hectares of land-managed assessed (Category 1) private native forestry land outside of the Regional Forestry Hubs is less than 100 km from a mill, and another 48% is between 100 km and 200 km from a mill (Table 24). Almost all (87%) of the 391 thousand hectares of agency-assessed potential (Category 2) private native forestry land outside of the hubs is within 100 km of a mill. Half (50%) of the nationally assessed potential (Category 3) private native forestry land outside the hubs occurs within 100 km of a sawmill, while 38% is between 100 and 200 km from a sawmill, and the remaining 12% is greater than 200 km from a sawmill.

Table 22: Area of actual or potential private native forestry land by category and forest type outside the Regional Forestry Hubs

	Area ('000 ha)							
	Outside hub				Category 3 commerciality rating			
Forest type	Total	Category 1	Category 2	Category 3	Low	Medium	High	Very high
Acacia	**84**	80	1	3	3	0	0	0
Callitris	**793**	18	36	739	601	73	66	0
Casuarina	**13**	1	1	11	8	1	1	0
Eucalypt	**1,733**	93	327	1,313	916	275	112	8
Eucalypt mallee	**53**	0	0	52	49	3	0	0
Eucalypt low	**8**	5	0	3	3	0	0	0
Eucalypt medium	**1,617**	87	324	1,206	844	259	94	8
Eucalypt tall	**54**	1	3	51	20	13	18	1
Melaleuca	**18**	0	2	16	16	0	0	0
Other native forest	**57**	12	23	22	17	2	3	0
Total	**2,698**	**204**	**391**	**2,103**	**1,561**	**352**	**183**	**9**

Mangrove and rainforest were excluded from the analysis.
Height classes are only applied to Eucalypt non-mallee forest. Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
No Category 3 area was rated 'Very low' commerciality.
Totals may not tally due to rounding.

2.4.13 Distance from sawmills

Each of the 11 hubs were developed based on regions of forestry activity including location of active and potential harvesting operations, processing facilities and associated infrastructure and industry. Characterising the actual and potential private native forestry sector for each of the hubs by distance from sawmills provides an insight into the economic opportunities for private native forestry, and especially for the potential private native forestry land in Categories 2 and 3.

Of the total actual or potential private native forestry estate, most (51%) is within 100 km of a mill (Table 23). Within Regional Forestry Hubs, almost all total actual or potential private native forestry areas are less than 100 km of a sawmill, except for the North Queensland and the Northern Territory Hub and the Ord Valley Hub.

Table 23: Area and proportion of private native forestry by distance to nearest sawmill and Regional Forestry Hub

Regional Forestry Hub	Area ('000 ha) and *proportion (%)*						
	<100 km		100-200 km		>200 km		Total
North Queensland	400	*21*	220	*12*	1,287	*67*	**1,907**
South and Central Queensland	3,000	*93*	234	*7*	0	*0*	**3,234**
North East New South Wales	2,030	*99*	27	*1*	0	*0*	**2,057**
Central West New South Wales	100	*91*	10	*9*	0	*0*	**111**
South East New South Wales	385	*99*	2	*1*	0	*0*	**387**
Murray Region	148	*99*	2	*1*	0	*0*	**150**
Gippsland	148	*100*	0	*0*	0	*0*	**148**
Green Triangle	22	*96*	1	*4*	0	*0*	**23**
Tasmania	514	*100*	0	*0*	0	*0*	**514**
South West Western Australia	381	*100*	0	*0*	0	*0*	**382**
Northern Territory and Ord Valley	263	*4*	933	*16*	4,728	*80*	**5,924**
Out of hub	1,475	*55*	956	*35*	268	*10*	**2,698**
Total	**8,866**	***51***	**2,386**	***14***	**6,282**	***36***	**17,533**

Totals may not tally due to rounding.

Table 24: Area of actual or potential private native forestry land by category, Regional Forestry Hub and distance to nearest sawmill

Regional Forestry Hub	Area ('000 ha)									
	Category 1			Category 2			Category 3			Total
	<100k	100–200k	>200k	<100k	100–200k	>200k	<100k	100–200k	>200k	
North Queensland	20	61	2	303	127	1,233	76	32	52	**1,907**
South and Central Queensland	551	37	0	2,314	182	0	134	16	0	**3,234**
North East New South Wales	403	1	0	1,520	24	0	107	3	0	**2,057**
Central West New South Wales	0	0	0	0	0	0	100	10	0	**111**
South East New South Wales	18	0	0	0	0	0	368	2	0	**387**
Murray Region	1	0	0	81	0	0	66	2	0	**150**
Gippsland	0	0	0	105	0	0	43	0	0	**148**
Green Triangle	0	0	0	0	0	0	22	1	0	**23**
Tasmania	95	0	0	320	0	0	99	0	0	**514**
South West Western Australia	0	0	0	0	0	0	381	0	0	**382**
Northern Territory and Ord Valley	0	0	0	0	0	0	263	933	0	**5,924**
Out of hub	86	98	21	341	49	1	1,048	809	246	**2,698**
Total	**1,174**	**196**	**23**	**4,985**	**381**	**1,234**	**2,707**	**1,808**	**5,025**	**17,533**

<100k, less than 100 km from a sawmill; 1–200k, between 100 km and 200 km from a sawmill; >200k, greater than 200 km from a sawmill

An update to the sawmills dataset for the most recent national wood processing surveys[22] indicates a shift of 63 thousand hectares of Category 1 forest from less than 100 kilometres from a sawmill, with 7 thousand hectares reallocated to 100-200 kilometres, and 56 thousand hectares reallocated to more than 200 kilometres from a sawmill, due to sawmill closures in central New South Wales and central Queensland. Approximately two thirds of this is outside the Regional Forestry Hubs, and the remainder is in the South and Central Queensland hub. There are minor changes in other hubs across Category 2 and 3 forests from both the closure and opening of

[22] agriculture.gov.au/abares/research-topics/forests/forest-economics/national-wood-processing-survey

sawmills. Further analysis resulting from changes to the sawmill dataset was outside the scope of this report.

3 Data collection and methodology

The purpose of this study was to identify and describe existing resource data that could be used by ABARES to describe Australia's private native forestry sector. Anticipated data holders included landholders, forest management businesses, sawmillers and other processors, state government agencies, and consultants. A public call was made through media and newsletters, seeking resource-related information describing native forests on private freehold and on leasehold land (excluding Queensland) either actively managed for wood production or having commercial potential for wood production.

The information sought for the study included current and historical datasets and maps, reports and studies from state government databases, private industry, forest owners and managers, associations and forestry experts, and any other existing information relevant to private native forests.

Investigations were undertaken by ABARES between March to August 2020, supported by Margules Groome Consulting, and Private Forestry Services Queensland, as an efficient way to identify the status of relevant inventory programs and datasets across Australia including all states and territories. A literature review of published materials on private native forestry was undertaken, to develop an evidence-based description of the state of knowledge of private native forestry in Australia.

3.1 Private native forestry sector consultation

A total of 53 individuals and organisations were contacted across the forestry value chain, on the basis of being either directly involved with, or with knowledge of, the private native forestry sector (Table 25). Almost half (25) were based in New South Wales. Major stakeholder groups that responded positively included landholders, forestry consultants, government departments and industry peak bodies, as well as contractors, processors, exporters and traders.

Table 25: Number and type of private native forestry stakeholders contacted

Type	Consultant	Government	Industry	Landholder	Peak body	Total
Number	10	12	23	2	6	53

Data exclude contacts specifically related to sawmills.

These stakeholders included:

- New South Wales: forest management organisation, private consultants, state government organisations
- Queensland: private forestry consultant groups, state government organisation, forest management organisations, forestry service provider
- South Australia: Farm Forestry Landcare Network Groups, CSIRO, state government organisations, individual farmers/tree growers, forestry consultants
- Tasmania: private forestry consultants, state government organisations
- Victoria: Farm Forestry Landcare Network Groups, local government organisations, water management groups, state government organisations, individual farmers/plantation growers, forestry consultants

- Western Australia: Industry associations, individual farmers/tree growers, forestry consultants, state government organisations, non-forestry private companies with plantation investments.

The majority of contacted stakeholders expressed support for the project, and were willing to contribute their knowledge and, where available, information (Table 26). In some instances, commercial interests and privacy and confidentiality concerns hampered the process. For example, some commercial operators and traders were concerned with intellectual property issues and the potential loss of commercial advantage. The information sources identified by stakeholders appeared promising, however issues with access and with data inconsistencies meant only a subset of the identified data was suitable for inclusion in a national dataset.

Table 26: Example information sources identified by private native forestry stakeholders

Coverage	Company/ organisation	Topic/item	Type	Information period
Australia	Wood trading company	Business and markets descriptions; list of potential private native forest landholders with potential commercial interests	Reports	2018-20
New South Wales	Government	Land clearing certificates and notifications	Report	Current
		River red gum forest assessment	Report	2009
		Private native forestry approvals dataset	Spatial	Current
		Private native forestry enquiries and incomplete applications register	Register	Ongoing
	Forestry company	Historical harvesting records	Maps, notes	1970s-2010
Northern Territory	Government	Management planning for private native forest harvesting	Report	2000
Queensland	Government	Private Native Forestry Notifications post-2016	Register	2016-ongoing
	Forest services organisation	Growth plot data	Database	2012-ongoing
	Forest services organisation	Case studies on managing private native forests: report on sustainable forest management	Report	2002
Tasmania	Prepared for Government	Forest Owner Intent Survey 2012-13	Report	2012-13
Victoria	Government	Statewide Forest Resource Inventory & forest resource inventory spatial dataset	Report / Spatial	1994/2001-03
Western Australia	Government	Register of clearing permits	Register/ Spatial	Current
	Government	Landgate Western Australia spatial datasets	Spatial	Current
	Forest services organisation	Examples of private native forestry participants	List/Spatial	2018-20
	Government	Private Land Flora Suppliers Licences (Timber & Sandalwood)	Register	Current
	Government	Western Australia local government map	Spatial	Current
	Forest services organisation	Private company estate	Spatial	Current

Some company and individual names have been de-personalised in accordance with privacy and confidentiality agreements.

3.2 Private native forestry data

Apart from the national dataset held by ABARES, data were only identified in regions where systematic forest inventory data had been collected and where research projects had delivered an improved understanding of the private native forest resource. Furthermore, variation and inconsistences in the data supplied led to the project focussing primarily on spatial data; data supplied as inventory data for specific plots was not used. After these considerations and an exhaustive search for suitable national, regional, and local spatial datasets, nine spatial datasets external to ABARES were identified as reliable sources of private native forestry data in Australia, either actual private native forestry (areas approved for commercial harvesting, or with plans established) or potential private native forestry (areas with potential for commercial harvesting). Seven of these datasets were supplied by state governments, and two were supplied by private industry.

Datasets were supplied in tabular format (non-geospatial), or vector or raster format (geospatial).

Each of these nine private native forestry datasets was analysed to determine the level of landholder engagement and/or agency involvement in forest assessment:

- Datasets of forest currently managed by landholders for private native forestry were classified as Category 1 (Land manager-assessed).
- Datasets of forest not in Category 1 but assessed by jurisdictional (state or territory) agencies as having the potential to be managed for private native forestry were classified as Category 2 (Agency-assessed potential).
- In addition, areas of native forest not identified in the above externally supplied datasets, but assessed by ABARES as potentially available for private native forestry and potentially commercial for sawlog production according to the ABARES Australian Sawlog Commerciality Database (Davey and Dunn 2014; see also MIG and NFISC 2018), were classified as Category 3 (Nationally assessed potential).

3.2.1 Private native forestry datasets

The nine datasets external to ABARES that were used as input to the private native forestry spatial database are summarised as follows. Only dataset components with attributes consistent with commercial private native forestry were retained for analysis (Appendix C).

New South Wales

Harvesting approvals, NSW (2020) – Dataset ID-1

This dataset describes areas with approved applications for harvesting native timber on private property under the *Local Land Services Act* 2013 (LLS NSW, 2021). Local Land Services New South Wales administers and manages applications and approvals under this Act, and supplied ABARES with a confidential dataset of approved applications (to October 2021). Approved areas are based on property boundaries or land parcels and are valid for 15 years.

This dataset was assigned to private native forestry Category 1.

Yield Association Groups (2018) – Dataset ID-5

The Yield Association Groups (2018) dataset describes forests of the New South Wales north coast, grouping forest types with similar wood properties and biophysical attributes (DPI

2018). The ten native forest Yield Association Groups are defined by canopy tree species mix, and biophysical attributes including altitude, moisture levels and canopy height. These Yield Association Groups include Blackbutt and Spotted gum, both of which are highly valued by the forestry industry, as well as more general species groupings (Appendix C).

This dataset was developed by DPI New South Wales for the hardwood forest sector and covers all native forest types and land tenures (DPI 2018b).

The Rainforest Yield Association Group was discarded from analysis because harvesting of wood from rainforests in New South Wales is prohibited (LLS 2022a,b). The Viney invasive scrub/degraded Yield Association Group was discarded because merchantable trees were described as rare or absent in areas classified in that group (DPI 2018b).

This dataset was assigned to private native forestry Category 2, excepting any areas already identified as land-manager assessed private native forestry (Category 1).

Forest growth status (2019) – Dataset ID-9

This dataset describes commercially suitable forests on private tenure in the New South Wales north coast region (DPI 2019). The dataset was developed from digital airborne photoimagery. Mapping was limited to contiguous stands of private native forest greater than 25 hectares and with common biophysical attributes. The dataset captured mature canopy height: areas with canopy height 15 metres and greater were considered to have potential commercial quality, while areas with canopy height less than 15 metres were considered 'un-productive' and discarded from the dataset (DPI 2019). The dataset includes only forest on private tenure.

This dataset was assigned to private native forestry Category 2, excepting any areas already identified as land-manager assessed private native forestry (Category 1).

Queensland

Vegetation management – register of accepted development vegetation clearing code notifications, Queensland – Dataset ID-7 and Dataset ID-8

The Queensland government maintains a public register of accepted development vegetation clearing code notifications (Queensland Department of Resources 2020a). Data from the register are available as two tabular datasets[23], covering notifications issued before and after 20 July 2016 respectively: notifications prior to July 2016 were approved under the *Vegetation Management Act 1999*, and notifications after July 2016 were approved under the *Planning Act 2016*. Forest harvesting is treated as land clearing under the above state legislation.

The two tabular datasets identify areas by land parcel number, and cover all land tenures and purposes for land clearing that require a permit[24]. Only areas with attributes 'Native forest practice' and 'Thinning (native forest practice)' were retained; all other areas were discarded (details in Appendix C). The tabular datasets were converted by ABARES to spatial datasets by using the parcel identification number to link individual notifications to the *Property Boundaries Queensland* dataset (Queensland Department of Resources 2020b). The datasets were downloaded on 1 November 2020.

[23] data.qld.gov.au/dataset/vegetation-management-register-of-self-assessable-code-notifications
[24] qld.gov.au/environment/land/management/vegetation/clearing-codes

The resultant spatial datasets were designated as land-manager assessed private native forestry Category 1.

Potentially commercial forests of south east Queensland (2020) – Dataset ID-6

This single dataset identifies the spatial extent, tree species and resource condition of private native forests in south-east Queensland (Lewis et al. 2020). It was developed for Forests and Wood Products Australia as an assessment of the resource and as basis for future inventory.

The base dataset, developed by the Queensland Department of Environment and Science, identifies potentially commercial native forests in south-east Queensland. The dataset was developed from foliage projective cover, and forest communities suitable for sawlog production as determined from the Queensland Regional Ecosystem classification (Lewis et al. 2020). Lewis et al. (2020) used the *Property Boundaries Queensland* dataset (Department of Resources 2020b) to constrain the dataset to private tenure, and used digital elevation datasets and codes of practice to refine the extent of potential forest by excluding areas on slopes greater than 25 degrees, areas less than 20 hectares in size of any one regional ecosystem type, and areas of regional ecosystem types not suitable or not allowed to be harvested. Areas identified in this single dataset were given precedence if they overlapped with areas mapped in the *Agricultural land audit – potential native forestry – Queensland (2013) (Dataset ID-4)* as Dataset ID-6 is more recent.

The dataset includes attributes for potentially commercial private native forest in South East Queensland (ID-6a) and an attribute for 'non-commercial but harvestable under the code' (ID-6b). Areas with this latter attribute (ID-6b) were discarded from the analysis.

This dataset was assigned to private native forestry Category 2, excepting any areas already identified as land-manager assessed private native forestry (Category 1).

Agricultural land audit – potential native forestry – Queensland (2013) – Dataset ID-4

This dataset identifies areas of Queensland with biophysical potential for native forestry (Department of Agriculture and Fisheries 2014). The dataset was developed by the Queensland government as part of the Queensland agricultural land audit. It was derived from the Queensland Regional Ecosystem pre-clearing mapping and descriptions (targeting tree species suitable for sawlog production), foliage projective cover, canopy top height (from LiDAR) and geographic region, to determine forest suitable for forestry. The dataset is intended to be an information source for policy and planning decision-making at a state or regional level; it covers all land tenures.

This dataset was designated as private native forestry Category 2, excepting any areas already identified as land-manager assessed private native forestry (Category 1).

Tasmania

Private Native Forest Resource (2020) – Dataset ID-3

This dataset was supplied to ABARES by Esk Mapping and GIS. The dataset is an extract of the dataset used to inform the private forest review undertaken by Esk Mapping and GIS on behalf of Private Forests Tasmania (Wilson and Tys 2020).

This dataset was developed using the Forest Groups (Private Forests Tasmania 2015) and Private Timber Reserves (Private Forests Tasmania 2011) datasets, and identifies the distribution of commercial or non-commercial private forests in Tasmania. Appendix C

provides details of the attributes of the dataset. Using the Forest Group and Private Timber Reserve data, three sub-groups were developed by ABARES:

- Subgroup 3a: Non-commercial forest types, whether or not in Private Timber Reserves. These areas were discarded from analysis.
- Subgroup 3b: Commercial forest types not in Private Timber Reserves. These areas were assigned to private native forestry Category 2.
- Subgroup 3c: Commercial forest types in Private Timber Reserves. These areas were assigned to private native forestry Category 1.

ABARES combined this dataset with the Tasmanian Land Tenure dataset (Land Tasmania 2015) to constrain the data to freehold land.

Victoria

Private Native Forest Stand Vegetation (2020) – Dataset ID-10

This dataset describes forest growth stages in forest stands on private tenure in eastern Victoria (DELWP 2020). Forest units were mapped using aerial photography interpretation, according to the Forest Stand Classification of the State-wide Forest Resource Inventory. A stand of forest was determined as an area homogenous in tree species composition, crown cover, crown form, and height, with a minimum size of seven hectares. The dataset was developed by DELWP to collect, collate and store forest resource information.

There are 22 forest types in the dataset, together with information on growth stage, crown cover, and species. Areas with the attribute 'Eucalypt' were retained, while areas with attributes 'Unallocated', 'Undefined' and 'Non-eucalypt' were discarded (see Appendix C).

This dataset was assigned to private native forestry Category 2.

3.2.2 National data on forest commerciality

The *Australian Sawlog Commerciality Database* was the first spatial database of native forest commerciality on a national scale. Commerciality of forest stands was defined as a combination of species merchantability for sawlogs, and sawlog productivity (Davey and Dunn 2014). The database was used in this work to create a national assessment of areas of potentially commercial private native forestry.

The commerciality database was developed from Regional Forest Agreement datasets, FORWOOD and Resource Assessment Commission data, and estimates of productivity, and information published by state and territory agencies or provided directly to the National Forest Inventory in ABARES. Commerciality ratings were given to areas of forest where harvesting is permitted and not legally restricted by legislation, code of practice or management plan. Five ratings were defined for forest assessed as commercial for sawlog production (Very low, Low, Moderate, High and Very high), and ten ratings were defined for forest not capable of production sawlogs commercially (including 'No', 'Possible', 'Unknown' and 'Limited'). Access to the database is restricted as it contains commercial-in-confidence information.

The database was intersected with the ABARES *Forests of Australia (2018)* dataset. Areas of native forest rated as commercial were assigned to potential private native forestry Category 3, provided

they were not already identified as land-manager assessed (Category 1) or agency-assessed potential (Category 2) private native forestry areas.

3.2.3 Creating a single database

The nine external datasets plus the ABARES commerciality dataset, as described in Sections 3.2.1 and 3.2.2 and Appendix C, were combined to create a single dataset with areas of actual and potential private native forestry.

This combined input dataset was then constrained to areas of suitable national forest types on appropriate tenures that are not restricted from harvesting and not classified as farm forestry, using the datasets described in Section 3.3, to identify the area of native forest either being managed for, or having the potential to be managed for, private native forestry. This final area was then characterised by a series of datasets – Regional Forestry Hubs, rainfall, distance from sawmill – described in Section 3.4.

3.3 Constraining datasets

The combined dataset created from the nine external private native forestry datasets plus the ABARES commerciality dataset was constrained using four existing datasets from the National Forest Inventory (NFI), which is the repository for national data about Australia's forests, housed in ABARES. The constraining datasets were developed from data from multiple sources, including contributions from Australian, state and territory government agencies and external sources, as part of the preparation of the *Australia's State of the Forests Report 2018* (MIG and NFISC 2018).

3.3.1 Native forest

The *Forests of Australia (2018)* dataset[25] (ABARES 2018a) is the authoritative national spatial dataset of forest extent. It was developed from multiple forest, vegetation and land cover data inputs, and includes attributes of forest category, type and sub-type, structure (mallee and non-mallee), and height and canopy cover classes.

The dataset classifies forest into three national forest categories: Native forest, Commercial plantation and Other forest. Native forest areas were retained in the private native forestry dataset, whereas areas of Non-forest, Commercial plantation and Other forest were removed. Forest types not available for timber harvesting, namely Rainforest (except for Tasmania) and Mangrove, were also removed.

3.3.2 Forest tenure

The *Tenure of Australia's forests (2018)* dataset (ABARES 2018b) is the authoritative national spatial dataset of forest tenure[26], developed from land tenure information from multiple sources.

The *Tenure of Australia's Forests (2018)* dataset was used to restrict the private native forestry dataset to the national tenure categories private forest and leasehold forest. Public tenure

[25] The *Forests of Australia (2023)* dataset was published as this report was completed. Preliminary investigation suggests that the 2018 and 2023 datasets give very similar areas of private native forestry.
[26] The *Tenure of Australia's forests (2023)* dataset was published as this report was completed. Preliminary investigation suggests that the 2018 and 2023 datasets give very similar areas of private native forestry.

categories and areas of unresolved tenure were removed. In addition, areas of leasehold forest in Queensland were removed as timber rights on this land may be retained by the Crown[27].

3.3.3 Areas legally restricted from wood harvest

Areas legally restricted from wood harvesting, described in the *Legally restricted from harvesting* dataset (ABARES, unpublished), were excluded from analysis. The *Legally restricted from harvesting* dataset was developed by combining the following spatial datasets:

- protected areas in the National Reserve System
- the public and private components of the comprehensive, adequate and representative (CAR) reserve system, including:
    - dedicated CAR reserves
    - informal CAR reserves
    - private CAR reserves, including private land areas under conservation covenant
    - areas with values protected by prescription
- all areas within the ACT and SA, as native forest harvesting is prohibited in these jurisdictions.

All remaining areas were designated as 'not legally restricted', and retained in the private native forestry dataset.

3.3.4 Areas of farm forestry

Areas previously identified as farm forestry (Daian et al. 2022) were excluded from the dataset to ensure consistency with the outcome of the farm forestry investigation and to avoid double-counting of areas in the two studies. During that process, some areas of native forest were determined to be farm forestry and therefore not considered for inclusion in the private native forestry investigation.

3.4 Summary of process

The following steps were used to combine the above input datasets into the final spatial dataset of native forest managed for, or having the potential to be managed for, private native forestry.

Locate, procure, filter and combine candidate private native forestry data (see Section 3.2)

1) Identify and source input spatial datasets
    a) Ten available spatial datasets identified for private native forestry sourced from the private sector, state government agencies and the Commonwealth government.
2) Perform initial assessment of data quality
    a) Assess dataset suitability to ensure datasets describe actual or potential private native forestry
    b) Validate data reliability by visually assessing the presence/absence of forest in areas identified by the dataset, using recent, high-resolution satellite imagery, Google Earth Pro and *Forests of Australia (2018)* forest cover.

[27] daf.qld.gov.au/business-priorities/forestry/state-native/forest-management-plan

c) Retain suitable and reliable datasets (Appendix C)

3) Classify candidate datasets

a) Identify areas in datasets with attributes not appropriate for private native forestry, and use these areas to create and discard sub-datasets (see Appendix C, column 'Attributes of areas discarded before analysis')

i) 'Non-commercial' forest types in the Tasmanian 'Private Native Forest Resource' dataset (ID-3)

ii) 'Not suitable' and 'not forest' areas of the 'Agricultural land audit – potential native forestry – Queensland (2013)' dataset (ID-4)

iii) 'Rainforest' and 'Viney invasive scrub/degraded' areas in New South Wales dataset ID-5 'Yield Association Groups (2018)'

iv) 'Non-commercial' areas of 'Potentially commercial forests of south east Queensland' dataset (ID-6, Category 2)

v) Areas of forest with any of ten categories of limited, no or unknown commerciality in the Australian Sawlog Commerciality Database were removed (see Appendix C).

4) Classify private native forest categories

a) Allocate datasets to one of the three private native forest categories based on dataset origin and purpose. Where an area is present in more than one dataset, apply only the highest category: first Category 1, then Category 2, then Category 3.

5) Create combined candidate private native forestry database

Constrain database to areas appropriate for private native forestry (see Section 3.3)

6) Constrain database

a) Retain Native forest in the *Forests of Australia (2018)* dataset, but exclude Non-forest, Commercial plantations and Other forest.

b) Exclude the Rainforest forest type in the *Forest of Australia (2018)* dataset, except in Tasmania where this forest type is retained (see Section 2.1.2)

c) Exclude the Mangrove forest type in the *Forest of Australia (2018)* dataset (see Section 2.1.2)

d) Retain Private forest and Leasehold forest tenures in the *Tenure of Australia's forests (2018)* dataset, but exclude all other tenures and also exclude Leasehold forest in Queensland (see Section 2.1.2)

e) Exclude areas legally restricted from harvesting using the *Legally restricted from harvesting* dataset assembled by ABARES (see Section 3.2.3)

f) Exclude areas identified as farm forestry from the spatial farm forestry dataset (ABARES, unpublished) that underpins the ABARES Farm Forestry sector report (Daian et al. 2022)

The resultant final spatial dataset describes the areas managed, or having the potential to be managed, for private native forestry in Australia.

3.5 Characterising the private native forestry dataset

The following datasets were used to characterise the final private native forestry dataset.

3.5.1 Regional Forestry Hubs boundaries dataset

Regional Forestry Hubs boundaries (2022) (ABARES 2022) is a spatial dataset comprising the boundaries of each of eleven Regional Forestry Hubs established under the National Forest Industries Plan (DAWR 2018). The Hubs were created to identify economic and social opportunities and benefits in regions with existing concentrations of wood supply resources, processing and/or manufacturing operations, established transport links, and strong potential for growth.

3.5.2 Sawmills and wood processing plants database

The *Sawmills and wood processing plants database* (ABARES, unpublished) contains the location of sawmills and other wood processing infrastructure across Australia. It is collated through, and supports, the ABARES national wood processing surveys (Downham et al, 2019) and *Australian forest and wood products statistics* reports[28]. The database is not exhaustive, and the status of known sawmills is updated opportunistically. The unbuffered geographic coordinates of active hardwood sawmills and cypress (native pine, *Callitris*) sawmills (as at December 2020) were identified from the database, and were used in analysis of the areas of private native forestry up to 100 kilometres from, between 100 and 200 kilometres from, and greater than 200 kilometres from the location of sawmills; distances were linear distances, not distances by road.

3.5.3 Mean annual rainfall data

The Australian Bureau of Meteorology produces maps of average annual rainfall from weather and rainfall stations across Australia (Commonwealth of Australia 2020). Monthly averages are calculated using the 30 years of monthly data between 1981 and 2010. Annual averages are then calculated using the contributing monthly averages. For the purposes of this project, the annual average rainfall dataset was reclassified into 100-millimetre intervals, and intervals combined as appropriate for individual jurisdictions.

[28] agriculture.gov.au/abares/research-topics/forests/forest-economics/forest-wood-products-statistics

4 Stakeholder feedback and sector opportunities

4.1 Stakeholder feedback on the state of private native forestry in Australia

Australia's private native forestry sector has a wide range of stakeholders including landholders, state and territory government agencies, forest management consultants, timber agents, and the harvesting and processing sector. Together these span the value chain from forest management to wood processing and marketing.

4.1.1 Stakeholder engagement

Investigations were undertaken by ABARES, including through consultants Margules Groome Consulting Pty Ltd. and Private Forestry Services Queensland, to understand the perspectives of stakeholders participating in the private native forestry sector, gather information on private native forest inventory data sources, and understand existing inventory and data management systems. ABARES established connections early in the project with Private Forests Tasmania, and with Local Land Services in northern New South Wales. The consultants therefore focussed primarily on regions requiring further investigation, namely southern New South Wales, the Northern Territory, Victoria and Western Australia, and worked with Private Forestry Services Queensland for Queensland. Harvesting of native forest is not permitted in the Australian Capital Territory and South Australia and as such these jurisdictions were not considered.

Stakeholders identified by the consultants included government agency officers, consultants, private forestry companies and sawmillers. A general series of questions were asked of these stakeholders using a combination of email and phone calls to identify challenges and operational issues in this sector, as well as opportunities to better operate (Appendix D – Stakeholder questions). Due to the nature of the sawmilling industry, a specific set of additional questions were prepared for this stakeholder group. Overall, substantial input to this work was received from stakeholders across the private native forestry sector.

There are distinct regional patterns of private native forestry across Australia, both within and across jurisdictional borders, with differing levels of engagement and activity in wood production. Stakeholders revealed strong levels of participation in private native forestry in some states, and also revealed challenges for all states and territories in which native forest harvesting on private and leasehold land is permitted.

4.1.2 Summary of issues and opportunities identified by stakeholders

The stakeholder consultation process identified a range of issues facing the private native forestry sector throughout the value chain.

The processing sector identified difficulties with the varying availability of private forest resources, and their varying level of management and suitability for utilisation, leading to insecurity of log supply. Frequent changes in the operating environment for private native

forestry, such as from the current reviews of policies and codes in New South Wales, Queensland, Victoria and Western Australia, further increase commercial uncertainty.

A lack of market information and pricing clarity was regularly cited. There would therefore be significant benefit in facilitating engagement between stakeholders and industry associations to build confidence in the sector through improved shared sectoral understanding. Stakeholders in the private native forestry sector include landowners and managers, harvesting and haulage contractors, and processors. Stakeholder feedback indicated each of these could benefit from a more coordinated engagement process both within their respective sub-sectors as well as across the supply chain.

The complexity of legislation and regulations affecting permits, harvesting and forest operations was frequently identified as limiting private native forest management and use. In most states and territories, but especially Victoria and Western Australia, sector operators identified the harvesting approval process as too cumbersome to justify private native forestry. The efficiency of the Tasmanian forest practices system was noted: for example, land declared as a Private Timber Reserve under criteria specified in the *Forest Practices Act* (Tasmania) does not require additional local government approval for forestry operations[29]. There is therefore scope in most jurisdictions to investigate the regulatory environment for private native forestry and potentially identify steps to improve the transparency and simplicity of the regulatory environment whilst upholding sustainable forest management practices, and to improve landowner understanding of legislation, regulations and codes of practice and harvest permits.

Negative publicity on the use of native forest resources was also cited as an issue. Specifically, concerns were raised regarding potential legal challenges by environmental groups, and the possibility of protests targeting individual landowners during approved native forest harvesting.

An opportunity was identified in regard to the provision of greater support to landholders around sustainable forest management activities, and the potential benefits of active forest management. For example, a Queensland stakeholder noted that surveys from field days showed landholder respondents had a very low understanding of appropriate forest management practices and a lack of understanding of the potential returns on investment in forest management, and there were a high number of landholders keen to improve their skills and knowledge.

Much of the private native forestry resource comprises either unmanaged regrowth forests from previously cleared land, or heavily disturbed forest arising from a succession of poorly managed wood harvests. Limited understanding of silviculture, best-practice harvest operations or marketing options has resulted in many forests having a reduced productive and environmental condition with overstocked regrowth stands, a high proportion of non-merchantable trees, and poor habitat values for native species. A well-directed extension program focussing on the benefits of increased management of the resource, aimed at restoring productivity through thinning and remedial management of overcut forests, and improving knowledge of economic returns from private native forestry investment, could help ameliorate many of these challenges.

[29] fpa.tas.gov.au/Documents/FPA_forest_practices_leaflet_Sep_2021_printable.pdf

In addition, risks were identified in some jurisdictions that relate to the long-term decline in the knowledge base required for native forest management and for policy development, and to long-term reductions in the body of skilled forestry professionals available to provide this.

4.2 Stakeholder feedback and regulatory arrangements by jurisdiction

This section summarises the findings from the stakeholder consultation processes for private native forestry at jurisdictional levels, with information about regulatory arrangements for context.

Forest management activities and operations on private and leasehold land are undertaken in accordance with Australian and state or territory government Acts and dependent regulations that are designed to ensure the conservation and sustainable management of forests. Some of the legislation is administered jointly by state or territory and local governments, statutory authorities and regional management authorities. There is also a legislative requirement to apply best practice standards to forest management activities (MIG and NFISC 2018).

4.2.1 Australian Capital Territory

Harvesting of native forest for wood production in the Australian Capital Territory is not permitted and is therefore out of scope for this study.

4.2.2 New South Wales

Private native forestry activity in New South Wales plays a significant role in the wood products value chain, and is an important source of regional employment. For example, on the North Coast the private native forest industry generates around $482 million and directly and indirectly employs 835 people (DPI 2018a).

Private native forestry advice and approvals for landowners regarding private native forestry in New South Wales are administered by Local Land Services, the state government agency that delivers services to landholders and the wider community on rural land management. Approval to harvest wood on private forests must be obtained in accordance with the *Local Land Services Act 2013* (LLS Act), and all private native forestry operations in New South Wales must comply with the Private Native Forestry Codes of Practice[30] which support the long-term sustainable management of native forests on private land and Crown land for timber production and ecologically sustainable forest management. Spatial information from Local Land Services was key to the development of the private native forestry Category 1 for this study.

Prior to commencing native forest management activities, a landholder must obtain an approval in the form of a Private Native Forestry Plan. Once an approved plan is in place, landholders must undertake private native forest management activities in line with the Private Native Forestry Codes of Practice. The codes set minimum operating standards for harvesting in private native forests in line with ecologically sustainable forest management. Under the codes, certain areas are excluded from harvest, including old-growth forest, rainforest, Aboriginal cultural heritage and

[30] The four Private Native Forestry Codes of Practice, introduced on 02 May 2022, are Northern NSW, Southern NSW, River Red Gum Forests, and Cypress and Western Hardwood Forests. See lls.nsw.gov.au/help-and-advice/private-native-forestry/private-native-forestry-code-of-practice

European heritage sites, wetlands, rocky outcrops, threatened ecological communities, heathlands, cliffs, steep slopes and riparian zones. Private Native Forestry Plans are valid for a period of 15 years, after which a landholder must apply for a new plan if they wish to continue the sustainable management of their forest for productive values. Private Native Forestry Plans may also be varied to reflect a change in land ownership.

The LLS Act allows for vegetation management other than private native forestry, such as the thinning of invasive native species. Landholders are not prevented from selling wood removed as a result of this type of management. However, it is unlikely that these alternative pathways are generally used for commercial gain due to restrictions on the area that can be managed in this way, with the resultant log sizes, species and quality usually not merchantable. However, economic assumptions may change as different export markets with varying product requirements emerge.

Private native forests in New South Wales are a significant source of hardwood timber for domestic markets. An FWPA project (Lewis et al. 2020) reports that 525 thousand hectares of private native forests in the Upper North East region of New South Wales may be commercially viable for private native forestry, and that current harvests provide approximately half of hardwood sawmill throughput in the region. (This compares to the 404 thousand hectares of landowner-assessed private native forestry land reported here for the North East New South Wales Regional Forestry Hub, Table 8.) However, the condition of the private native forest resource identified by Lewis et al (2020) was described as highly variable, with many stands in poor growing condition with a high proportion of unmerchantable trees.

Stakeholder consultation indicated that landholders in central and western New South Wales are being approached by Queensland traders and exporters seeking to meet export demand for native cypress pine (primarily *Callitris glaucophylla*). According to industry sources, logs from inland regions are often transported by rail to the coast for processing or further shipment. While the buyers are unknown, this shows the market's ability to encompass haulage beyond 200 km.

On the other hand, the impact of export markets on utilisation of the NSW private native forest resource is unknown. It appears there is a stronger export market for lower-grade timber, smaller size classes, and 'minor species' like lancewood (*Acacia petraea*) in eastern Australia than the sawmill consumption and export chip market alone would indicate. This may be creating a driver for harvesting for export in locations typically considered too far from domestic processors and the domestic market.

Some 80% of private native forest harvesting in New South Wales occurs in northern New South Wales. Timber products from the private native forest estate comprise approximately half of the input to processing mills on the North Coast region of New South Wales (DPI 2018). Forests and private native forests have been assessed by the New South Wales Department of Primary Industries (DPI) for sawlog suitability (DPI 2019), and New South Wales Local Land Services has run a range of extension activities in the region on private native forestry including for river redgum (*Eucalyptus camaldulensis*) forests in the Riverina.

Stakeholder consultation indicates a recent increase in demand for firewood as public native forest harvesting winds down in Victoria. There is a perceived increase in consumer willingness to pay a premium, which is elevating firewood from a marginal or residual commodity. The

commercial return from firewood can help to support viable sustainable forest management activities including silvicultural treatments and sawlog harvesting.

4.2.3 Northern Territory

In 2016, the Northern Territory had an area of 13.4 million hectares of private native forest, according to an evaluation of existing literature and information (MIG and NFISC 2018). However, no current commercial markets or suppliers of private native forest wood were identified in the Northern Territory, with the only entities being two small sawmills that sourced native logs from Indigenous-owned and/or -managed land for community use. Stephens et al (2020) reports the need for native forest inventory information across the extensive estate and for a more thorough assessment of its commercial potential. Limited infrastructure and challenges with economies of scale were also identified as issues in the development of a private native forestry industry. A three-year research study investigating the potential for sustainable and commercial forestry in East Arnhem Land, and managed by Forest and Wood Products Australia, is anticipated to lead to an improved knowledge of the resource for wood production in this area (FWPA 2020).

4.2.4 Queensland

Private native forestry makes an important contribution to Queensland's supply of native hardwood timber with a reported 60% of total native hardwood volumes sourced from areas of privately owned native forests[31]. The south-eastern section of Queensland was identified by researchers, stakeholder respondents and forestry consultants as containing a significant private native forestry sector. This region was identified as sharing similar opportunities and challenges to northern New South Wales and taken together they are perceived as forming a larger private native forestry regional economy.

Private native forestry in Queensland is regulated under '*Accepted development vegetation clearing codes'* through the vegetation management framework. The clearing code 'Managing a native forest practice' specifies the sustainable management of a native forest area using selective harvesting to produce value-added products (other than woodchips for export) within a framework that conserves the natural values of the forest[32]. This code includes a description of required practices such as silvicultural requirements, soil and watercourse protection, wildlife protection, and management of roads and tracks.

A range of organisations and data custodians have been or are involved with the large hardwood resource on private land in Queensland. This includes various private organisations, resource management companies such as Private Forest Services Queensland, research institutions and universities. Commonwealth, Queensland and local governments and organisations have funded studies and projects on the commerciality and sustainability of private native forest resources such as Cameron et al (2019) and the study by Lewis et al (2020) commissioned for the FWPA. This latter study presents an overview of: field measurement methods that provide a framework for ongoing inventory in the private native forest resource; the extent and condition of the private native forest resource in northern New South Wales and the south-eastern Queensland, Wide Bay Burnett, and Western Queensland regions; the effect of silviculture on forest growth rates; and a description of a decision support tool to demonstrate the effects of silviculture on future wood

[31] daf.qld.gov.au/business-priorities/forestry/native-timber-action-plan/privately-owned-native-forests
[32] resources.qld.gov.au/__data/assets/pdf_file/0007/1446919/managing-native-forest-practice-code.pdf

products and livestock grazing value. The report by Lewis et al (2020) identifies 1.9 million hectares of harvestable private native forests are present in southern Queensland, which is consistent with the 3.2 million hectares identified for the South and Central Queensland hub in this national study. Over the decade 2010-20, private native forests reportedly supplied approximately 55% of the hardwood resource to industry in Queensland, however, the productive condition of Queensland's private native forest resource is highly variable (Lewis et al, 2020). The report also demonstrated that applying best-practice silviculture to 25% of the resource in these regions could, over time, result in a threefold increase in the current yield from all native forests in the region.

The Queensland Private Native Forestry Notifications register (private native forestry notifications) is an important source of non-spatial data. This dataset is accessible to the public via the Queensland Department of Natural Resources, Mines and Environment. It is updated monthly, and relates to freehold private land where the landowner holds the timber rights[33]. Private native forestry notifications convey a primary intention to harvest, rather than a specific timeline or harvest strategy. Data in the notifications register therefore include the size of the property, but not the area of forest to be harvested. Data from the register were incorporated into this study by combining them with spatial cadastral and national forest cover data.

Private Forest Services Queensland provided feedback that included a description of the available information on private native forestry areas in southern Queensland, as well as a summary of the major issues and potential solutions for improved resource utilisation. The feedback recognised that the private native forestry resource generates significant income for landholders, most of whom are beef producers with low operating margins on sub-commercial beef enterprises, and also underpins employment for many rural and regional communities that have relatively high unemployment, particularly youth unemployment. Opportunities remain with much of the private native forestry resource comprising either unmanaged regrowth forests from previously cleared land, or heavily disturbed forest arising from a succession of poorly managed wood harvests. Limited understanding of silviculture, best-practice harvest operations or marketing options has resulted in these forests having a reduced productive and environmental condition with overstocked regrowth stands, a high proportion of non-merchantable trees, and poor habitat values for arboreal and ground-dwelling wildlife. It was recognised that a well-directed extension program, improved knowledge of economic returns from private native forestry investment, removal of impediments, and increased management of the resource would ameliorate much of these challenges.

4.2.5 South Australia

Harvesting of native forest for wood production in South Australia is not permitted and is therefore out of scope for this study.

4.2.6 Tasmania

Harvesting of wood in private native forests in Tasmania is administered by the Forest Practices Authority under the Forest Practices Act 1985, with Forest Practices Plans required to be prepared and certified in accordance with the Forest Practices Code and other legislation. Land declared as

[33] Forestry on leasehold land in Queensland for which the state holds the timber rights is managed by Queensland Department of Agriculture and Fisheries, QDAF.

Private Timber Reserves has to meet criteria specified in the Forest Practices Act but, once declared, additional local government approval is not required for forestry operations.[34]

Private native forests across Tasmania have been assessed by Private Forests Tasmania for commercial suitability, based on potential yield (generated from height and crown density), forest type (grouped by dominant eucalypt or non-eucalypt vegetation community), and the presence or absence of Private Timber Reserves[35] (Wilson and Ty 2020). Private native forests on land gazetted as Private Timber Reserves are considered available for sustainable forest harvesting (and ABARES hence classified such commercially suitable areas as land-manager assessed private native forestry (Category 1), with commercially suitable areas not gazetted as Private Timber Reserve classified as agency-assessed potential provide native forestry (Category 2). Nationally assessed potential (Category 3) private native forests are additional areas not included in the dataset provided (see Section 5.4), and mostly represent areas owned by large timber corporations and managed for natural capital, conservation and carbon sequestration (pers. comms. J. Wilson).

4.2.7 Victoria

Commercial timber production on private land, including of native forests, in Victoria must be undertaken in accordance with the Code of Practice for Timber Production 2014 and in accordance with the 'Permitted clearing of native vegetation – Biodiversity assessment guidelines (2013)[36]. Local governments have responsibility for issuing permits for timber production and monitoring code compliance.

Stakeholder feedback suggested that the Victorian regulatory and operating environment presents the private native forestry sector with challenges when harvesting approvals are sought. The approval process for harvesting operations on private land is reported as not being user-friendly, requiring a number of specialised environmental evaluations even for harvesting relatively small areas. In some instances, prospective forest managers decided not to proceed with harvesting applications for this reason.

In Victoria, local governments are responsible for approving wood harvesting, and the enabling environment for private native forestry is inconsistent between different local government areas, and also not consistent with the management timeframe required for native forest wood production. Conversations with sector stakeholders revealed reduced optimism about the future of private native forestry in Victoria, based on the recent changes to public native forestry. While some local governments (councils) are supportive of private native forestry, it was suggested that others were following the state government's lead and not pursuing direct engagement with the private native forestry sector. Additionally, some councils have been reported to impose conditions on wood harvesting permits that exceed the requirements of the Code of Forest Practice.

4.2.8 Western Australia

At the time of engagement with stakeholders, native timber harvesting in Western Australia's state forests was permitted. However, in October 2023 the Western Australian Government

[34] fpa.tas.gov.au/Documents/FPA_forest_practices_leaflet_Sep_2021_printable.pdf
[35] stategrowth.tas.gov.au/__data/assets/pdf_file/0017/131750/PTR_Information_Sheet.pdf
[36] forestsandreserves.vic.gov.au/__data/assets/pdf_file/0024/571830/Management-Guidelines-for-private-native-forests-and-plantations.pdf

announced a ban on timber harvesting in public native forests by 01 January 2024[37]. The Government committed $80 million to a Native Forest Transition Plan that included significant industry restructure payments, which have now been made to all eligible sawmills. This will substantially impact private native forestry in Western Australia.

Industry representatives, state government, forestry consultants, and other organisations in Western Australia offered their support enthusiastically to this project and mentioned that the landowners who own native forests want to manage their forest for fire prevention, forest health, and income as compatible and synergistic outcomes. However, hardwood sawmillers in Western Australia were reluctant to discuss the topic of private native forestry, similar to respondents from some of the other Australian states.

Industry contacts provided feedback that the current forest management approval system, titled 'clearing permit' by the Department of Water and Environmental Regulation (DWER), was a potential impediment to private native forestry development in the state, as it labels all vegetation management activities as forms of clearing, including sustainable forest management that involves removal of vegetation or wood. In addition, the application process was reported by sector stakeholders as often biased towards conservation criteria, further impeding the applicability of sustainable forest management and harvesting practices to the private native forest resource. Furthermore, once permits are approved there is limited protection from public appeals, leaving such applications overly susceptible to additional monitoring requirements and restrictions.

Respondents from Western Australia recommended data be sourced from commercial and public websites such as Landgate Western Australia[38] which contain cadastral, topographical, and land use layers. Additionally, a public Clearing Permits register maintained by DWER contains spatial data. Industry intelligence from the consultants suggested that wood supply agents and timber mills utilise the Clearing Permits register to identify private native forestry sector members for further consultation. The Western Australian Department of Biodiversity, Conservation and Attractions (DBCA) maintains a non-public database titled Licence to Supply Flora from Private Land (Commercial Producer's Licence – Timber) which includes information on landholder intent and reporting requirements including volume harvested.

The application process for the 'Commercial Producer's Licence – Timber' requests information about the location, species, and quantity or area to be harvested (or 'salvaged' in land-clearing vocabulary). A periodic return is required, detailing the amount or area of harvesting carried out. This may provide insight into actual versus intended forestry activity. The Commercial Producer's Licences are valid for a period of twelve months.

Ongoing engagement with landowners and forest owners/managers could assist creation of a critical mass of supply for regional wood processing centres.

[37] wa.gov.au/government/media-statements/Cook-Labor-Government/Historic-end-to-native-logging-a-step-closer-20231001
[38] landgate.wa.gov.au/

4.3 Hardwood sawmilling sector consultation

At the national level, the hardwood sawmilling sector is the primary domestic user of private native forest resources, and was viewed as a likely source of information and data. However, this sector is both highly fragmented and diverse, mostly comprising small sawmills that obtain logs from the private native forest resource, a few medium-sized manufacturing facilities, and larger sawmills that obtain logs from mostly from public native forest resources. *Australia's State of the Forest Report 2018* (MIG and NFISC 2018) and the ABARES *National Wood Processing Survey: 2016–17* (Downham et al. 2019) provide valuable information linking the native forest resource and the native forest sawmilling sector.

A total of 139 native hardwood sawmills were identified and contacted by the consultants, of which 40 responded. Of these, 26 positively supported the scope of this study and provided feedback to a series of questions (Appendix D – Stakeholder questions) relating to industry participants, harvest activities and contract arrangements, and on the availability of data such as volumes, species, and products, while 14 refrained from discussing anything related to private native forestry, potentially a reflection of the sensitivity of the topic. Sawmills that did not respond were either closed, insolvent, or could not be contacted due to a lack of an internet presence or publicly listed contact details. Overall, there was recognition throughout this work of a general sensitivity associated with data and information about private native forests, and that this was especially the case for sawmillers.

In New South Wales, 88 sawmills in the hardwood processing sector identified by the consultants for this study were approached. Of these, 22 responded to the request for information; the remainder were unavailable, had closed, or did not have internet presence to facilitate contact. However, only 14 sawmill representatives were willing to discuss and share knowledge about private native forestry in New South Wales.

The sawmill representatives interviewed stated that they obtained their logs from the Forestry Corporation of New South Wales, from their own privately owned forests, through direct relationships with landowners and timber agents, or a combination of these sources ('timber agents' work to connect small-scale forest growers with harvesting contractors and with sawmills). In general, it was widely accepted that obtaining sawlogs from private native forests was becoming increasingly challenging due to legislative requirements from both the Local Land Services, for example due to 'basal area limits'[39] for small scale harvesting for a given area, and the New South Wales Environment Protection Authority. The length of time taken for the approval process, and issues arising during the approval process, was also cited as an economic disincentive.

Timber agents may also possess significant regional data and knowledge about private native forest resources. According to interviewed sector stakeholders, timber agents have their own landowner contacts with whom they (the agents) coordinate harvesting paperwork and private

[39] In Northern New South Wales, small-scale harvesting (single trees of various ages harvested at a low intensity) and single-tree selection and thinning (harvesting of single trees or small groups of trees of various ages) must not reduce the stand basal area below 14 m^2 per hectare across the net harvestable area of a Forest Management Plan. Basal area is defined as 'the sum of cross-sectional area of trees that are greater than 10 centimetres in diameter at breast height (usually 1.3 metres from the ground)'. Basal area is measured at breast height and in square metres per hectare (m^2/ha) (EPA, 2022).

native forestry plans through Local Land Services, as well as delivery of harvested hardwood logs to sawmills or to export markets. Some sawmills also acquire wood through their own harvesting crews, but this activity is increasingly being outsourced to timber agents as they are specialised contractors with detailed knowledge of regulatory requirements and their application, and any changes therein.

One sawmiller expressed concern about an increase following the 2019–20 fires in vegetation management certificates approved for vegetation management purposes other than private native forestry, which could reduce the total pool of forest resource available for private native forestry activities. Clearing under these provisions has a dual effect: in addition to clearing an area of private native forest that may not regenerate as native forest, another area must be set aside as compensation for the area cleared, effectively excluding both areas from future wood production.

Attempts were made to contact 15 Queensland-based hardwood sawmills during the stakeholder consultation process. Four responded, with only one willing to discuss and provide feedback related to private native forestry. This sawmill stated that they source private native logs through their own contractors. Additionally, they reported that there are sustained exports by competitors of private native hardwood logs of both low and high grades, and that "*the mill is unable to compete with the prices of these export logs*."

The limited feedback from Tasmania cited increasing restrictions in the development of Forest Practice Plans (a requirement for wood harvest in Tasmania), and the associated increasing challenges to have the Plans approved.

Hardwood sawmills across Victoria participated in the project, with feedback received from 10 processors. Most indicated that they obtained logs from public resources, while a smaller number sourced logs from plantations. They also mentioned that, when native forest harvesting on public land ceases it is likely that a significant number of hardwood sawmills will close, further reducing the size of the regional market for private native forest landowners[40]. Generally, respondents indicated that after native forest harvesting on public land ceases, it would not be financially viable to manage private native forestry for sawlogs in Victoria due to the overall lack of resource available for hardwood sawmills.

Significant efforts to engage with Western Australia hardwood sawmillers were unsuccessful due to a perceived low motivation to discuss private native forestry issues, limited availability, or no contact details. However, industry discussions did provide recognition of the critical role of markets for wood chip and biomass in ensuring the viability of private native forestry in Western Australia.

4.4 Issues and barriers

This project revealed a range of issues and barriers to utilisation of the private native forest resource, which are here grouped thematically. Some of these issues could be addressed at the national level, while many rest with jurisdictions. Collectively addressing these issues could

[40] At the time of engagement with stakeholders, native timber harvesting in Victoria's state forests was scheduled to cease in 2030. In May 2023 the Victorian Government announced a ban on timber harvesting in public native forests by 01 January 2024. (premier.vic.gov.au/delivering-certainty-timber-workers, accessed 23 May 2023).

deliver efficiencies and improvements to forest condition and wood production opportunities, and deliver increased returns to the private native forestry sector and regional economies.

4.4.1 Issues

Issues that relate to landowners include the following:

- incomplete knowledge about the actual and potential opportunities of private native forests to produce timber
- the unproductive state of some areas of private native forest resource, due either to overstocking of regrowth stands, or to 'high-grading' where harvest activities have removed the higher-quality trees. High-grading typically results in a stand of lower-quality remnant trees of species of poor form, depleted of better genetic material, and with species less desirable for wood production, impeding regeneration and future stand productivity
- incomplete knowledge of forest management options to improve forest condition for ecological and wood production values
- uncertainty about the current and potential timber products that privately managed forests could produce
- limited knowledge of, and/or uncertainty about, the legislative and regulatory requirements regarding sustainable forest management and use, and fear of the risk of future changes in the legislative and regulatory environment.

State and territory governments have a key role in the provision of an enabling environment to support sustainable and profitable enterprises. This includes appropriate policies, regulations, codes and services that support landholder participation in the sustainable management and use of private native forests for wood production. State and territory governments can usefully also document and report land manager intent as an input to development of the processing sector.

Issues for government include the following:

- a lack of coordinated and up-to-date information describing the extent, nature and potential commerciality of the private native forestry resource
- a lack of information on landholders actively or potentially interested in participating in private native forestry.

Lastly, the lines of communication amongst participants in some regions are reasonably established, but in other regions this was identified by stakeholders as a key area for improvement, especially for landholders.

Industry stakeholders from all states expressed concern about resource security for the native forest hardwood processing industry, and about the future ability of private native forest owners to manage their forests responsibly for a variety of objectives, including fire risk reduction, forest health enhancement, and ongoing commercial and profitable wood production. Taken together, these two points lead to uncertainty around the future ability of the private native forestry sector to contribute sufficient wood volume to maintain resource security for the processing sector in the face of declining public native forest wood yields.

Environmental concerns are at the forefront of all discussions in Australia about private native forestry, and native forestry in general. These considerations are most appropriately applied at the landscape level, that is, to entire forest estates, vegetation communities and fauna habitats, and across all tenures present, rather than to small, discrete and discontinuous management units. A unified and strategic approach to forest management and regulation would better address environmental concerns and allow the development of sustainable private native forestry in all jurisdictions.

4.4.2 Barriers

A number of barriers were identified by stakeholders that, if addressed, are likely to improve opportunities for private native forestry. These include the following:

- government legislation in some jurisdictions that presents forest management for commercial wood production as a land clearing activity rather than as a sustainable and renewable land management practice, thereby leading to a generally negative approach to private native forestry, including among regulators
- the generally negative community perception of native forest harvesting, and the lack of community support, perceived or otherwise, in some jurisdictions especially where local government approval for private native forestry is required
- that many landholders traditionally perceive themselves as farmers rather than foresters, which limits their viewpoint on the commodities able to be produced on their land through integrated land management practices
- a general lack of understanding by landholders of complex aspects of native forest management, such as forest management practices, expected returns on investment, timber prices, steps necessary to obtain government approval, and legislation and regulation relating to private native forestry. In particular:
  - it is a challenge for many to remain abreast of legislative changes and code reviews
  - the long-term nature of native forest management from regeneration to harvest can discourage farmers and landholders from investing in silvicultural management to improve the productive state of their forests for future harvest – especially as the average age of farmers is 58 years (Commonwealth of Australia, 2020)
- lack of awareness of the opportunities presented to landholders by active, targeted, science-based forest management practices (silviculture). This includes the potential through management to transition a forest over time from an unproductive state to a productive state while potentially generating early financial returns such as from thinnings
- uncertainty in wood markets and inadequate information about prices or expected returns.

4.4.3 Jurisdictional themes

Industry intelligence identified emergent state- and territory-based themes resulting from various market and regulatory environments, including:

- New South Wales and Queensland:
  - that there is a scarcity of domestic markets outside of south-eastern Queensland and north-eastern New South Wales. This suggests that additional efforts into market

development would be useful, especially if based on the characteristics of particular species and wood products

  - that the economic and environmental benefits and potential of silvicultural management need to be communicated to landholders, such as through extension activities including field days and workshops, to allow them to benefit from research (such as that of Lewis et al. 2020).

- Northern Territory:
  - that there is little data or inventory to describe the private native forestry resource or sector. An integrated and regional approach to timber inventory, assessment of the commercial potential of the extensive native forest estate, and market strategy development could address logistical challenges and the need for economies of scale
- Victoria:
  - Victorian respondents were generally concerned with regulatory issues and pressures from environmental groups, with these being reported as the primary impediments to the development of the private native forestry sector.
- Tasmania and Western Australia:
  - industry respondents were optimistic, particularly if markets for minor products and residues strengthened, but noted that more information on the forest management intentions of landowners could assist sector development.

The following market-related topics were suggested for future investigation:

- identification and quantification of export markets in Queensland, New South Wales, and Western Australia is seen as critical for assessing the private native forestry potential for lower-grade logs and species that are not currently considered desirable or commercially viable in the domestic market, but which can increase the viability of integrated harvesting operations that also provide higher-grade logs and species for the domestic market
- increasing awareness of the scale and potential of the private native sandalwood resource in Western Australia and Queensland. Available quantities will always be limited, but wood value is substantial. However, this forest type has significant conservation value so sustainable practices are essential
- Trials of ecological thinning conducted in Western Australia (Conservation and Parks Commission 2023) may contain learnings for private native forestry or assist in development a policy framework for similar work on the private estate.

Lastly, stakeholders also reported that wood is harvested commercially from areas of sparse woody vegetation with a tree canopy cover less than 20%. These areas were outside the scope of this project as they do not meet the definition of forest. Further investigation and mapping of these areas using existing data products such as the Catchment Scale Land Use of Australia spatial dataset (ABARES 2021) could reveal the potential for some of these areas to respond to active sustainable management for commercial wood production, and thus their potential to contribute to a critical mass and create economies of scale especially regionally.

Areas where commercial wood production occurs in conjunction with livestock grazing is referred to as silvopastoralism, and can occur both in forests and in sparse woody vegetation. This

integrated management approach can provide a range of joint economic and environmental benefits to landholders. Lewis et al (2020) discussed the potential for silvopastoralism to deliver efficiencies and improve production opportunities for, and returns to, the forestry sector.

4.5 Opportunities flowing from stakeholder feedback

Stakeholder feedback suggested opportunities to improve market and regulatory arrangements, and regional landholder information.

- Improve landholder access to information:
  - Regional communication products describing local private native forestry enterprises as part of whole-of-farm management activities, to demonstrate the potential for integrated agriculture and forest land management.
  - Transparent information and descriptions of the regulatory environment for private native forestry, including legislation, codes of practice and land management regulations, in the five states and one territory that permit private native forestry. This is because land and vegetation management regulations regarding forest harvesting for wood on private land differ between jurisdictions and can differ between local government areas within a jurisdiction. Access to clear and contemporary information is important, especially for land managers with limited experience in or exposure to the forestry sector, and will assist in creating an enabling environment within which private native forestry can occur.
  - Regional information describing markets, commodity prices and forecasts for wood products.
  - Business planning guidelines, and professional forestry advice on silvicultural forest management activities and harvesting costs.
- Promotion of current models of best practice whereby state-based authorities administer the planning process and certification of forest practice codes and other legislation, and provide coordination and information services for the sustainable management and use of private native forests for wood production.
- Clear information on the options for and benefits of silvicultural management to improve the productivity of native forests, including economic opportunities with management options such as thinnings which can release the productive capacity of the remaining standing trees and can also be sold for lucrative markets such as firewood, and development by regional officers of extension advice and private native forest grower networks to facilitate coordinated forest management information opportunities for landholders.
  - Stakeholders indicated that many landholders are not well-informed about how to best manage their forests for wood production, are not familiar with wood markets, and do not appreciate the higher timber value of well-managed and actively managed native forests.
- Amendments to terminology used by state and territory governments to better describe the regulated science-based renewable nature of sustainable forest management for timber production.

- Improved consistency is needed in the terminology used by state and territory governments to regulate sustainable timber management and production for private native forestry, and thereby differentiate this sustainable land management practice from land clearing practices which are not forest management activities. Current terms include clearing permits in Western Australia, development applications in Queensland, and harvest approvals in New South Wales.

The nature repair market to be opened later in 2025 offers potential opportunities for landholders undertaking active forest management such as improving ecological values through thinning overstocked forests, undertaking week control and improving access for fire management. Clear, specific, material and extension services will be key in realising value in this area. The concept of the nature repair market was in its initial stages of development during the data collection phase of this report, and as such was not explicitly discussed with stakeholders.

5 Recommendations

This chapter presents recommendations on improved data for private native forestry: for continued inventory work to better characterise the private native forestry sector, for ongoing stakeholder interaction to underpinning improved sector understanding and data provision, and for regional collection, coordination and use of private native forestry sector data. Issues and opportunities identified by stakeholders are summarised in Sections 4.1-4.5.

5.1 Data recommendations

5.1.1 Additional and refined datasets

1) Incorporate additional datasets to refine the data presented in this report, including:
   - the Catchment-scale Land Use Mapping (CLUM) dataset (ABARES 2021) to investigate potential wood products from sparsely wooded areas
   - private native forestry data sources from the New South Wales Department of Environment, Energy and Science that were not included in this study
   - Victorian native vegetation management records: collaboration with the Municipal Association of Victoria and/or the Victorian Local Government Association may identify permits granted for private native forestry operations
   - historical harvesting maps, records from the Clearing Permits database, and the Western Australian Private Land Suppliers Licence register and associated returns, from Western Australian government agencies.
2) Refine areas reported as actual or potential private native forestry land, by editing gross land parcel area statements supplied by land management agencies to actual forest areas derived from the ABARES forest cover spatial dataset.
3) Review and update the ABARES Sawlog Commerciality database (Davey and Dunn 2014), which is the basis of the national assessment of private native forestry land classified as Category 3. This would include updating its input Yield Association datasets, especially for northern Australia; extending the commercial product mix considered beyond just sawlogs to reflect all potential products, and markets; allowing for changing economic assumptions around commerciality; and including infrastructure, haulage costs and other market considerations.

   On-ground validation of areas classified as Category 3 private native forestry land would test the accuracy of this dataset.
4) Re-run analyses at an appropriate frequency with updated national tenure datasets to detect changes in forest tenure and ownership of timber rights, including areas of leasehold forest in Queensland that are freeholded with rights to the timber transferred, and areas of private native forest that are transferred to private covenant.
5) Extend the work to non-forest areas of sparse woody vegetation on private freehold and leasehold land, some of which may be able to supply wood on a commercial basis either immediately or after a period of silvicultural management, thereby offering an alternative

or additional income stream for landholders. These lands may also be suitable for integrating grazing and wood production (silvopastoralism).

6) Input data on potential future commercial wood resource areas to wood volume assessments and analyses, with Regional Forestry Hubs as focal regions, so as to model the potential harvestable volumes of wood products from private native forests.

5.1.2 Stakeholder interactions and data provision

7) Establishment of a trusted communication channel between industry players and a trusted national data repository such as Australia's National Forest Inventory for a more effective exchange of information. More accurate sector knowledge (for example volumes harvested from private native forests) would help identify regional opportunities with the greatest commercial potential, and improve resource security for processors, and increase opportunities to engage with the fragmented hardwood sawmilling sector.

8) Improve the understanding of landholder intent for current and potential wood production from private native forests using the contact lists established during this investigation, and methods established in northern New South Wales, as the basis to stratify regions to sample landholder intent.

9) Pursuing additional contacts with timber agents in New South Wales and Queensland, to allow access to their unique perspective on the connections between small-scale growers, harvest contractors and sawmills, and their engagement with multiple parts of the private native forestry supply chain. This may generate valuable insights into current and prospective wood markets, and into landowner intent for forest management and commercial utilisation.

5.1.3 Regional collection, coordination and use of data

Inventory data is not just important for national policy considerations, but can also stimulate industry confidence and sector development if coordinated at the regional level. The datasets underpinning Category 1 and Category 2 private native forest areas were all collected for actual forest harvest, state-level regulatory or development purposes, but those processes were not coordinated and did not produce integrated data.

10) Establishment of regional or jurisdictional systems for the collection of private native forestry management intent and harvest approval data on a regular basis. This will assist with the development of regional profiles and resource scheduling, which will in turn provide confidence to forest owners and customers, and provide data on fibre supply from private landholders to support regional industry development.

    New South Wales and Tasmania are currently the only jurisdictions with agency-based systems for collecting information regarding landholder intent, forest management plans and harvest approvals.

11) Inclusion in this regional resource information system of a confidential reporting mechanism by which landholders and/or timber agents can supply property-level information on whether wood harvests have or have not occurred, actual areas harvested, and associated product volumes. Currently, data acquisition relies on permits or plans to harvest, which in New South Wales can be a '15-year window to harvest': more contemporary and reliable data are needed to ascertain the productivity of the private native forestry resource.

This would include refinement of areas reported as private native forestry, from gross land parcel area statements supplied by land management agencies, to actual forest areas.

12) Consider development of a trusted national repository of private native forestry data for industry planning, and policy and program development. Australia's National Forest Inventory could be expanded to house these data.

    This would stimulate improvements to, and systematic updates of, state-based registers of areas of private native forestry activities, provide a mechanism for national provision and reporting of data from jurisdictional registers, and coordination with Regional Forestry Hubs and industry initiatives.

    A nationally recognised organisation could also strengthen ties between Regional Forestry Hubs as these work with landowners to meet regional data needs; perform economic analysis and spatial data inventory; and provide information to leverage larger forest estates to increase the economic viability of smaller nearby holdings, including leveraging environmental assessments performed across large, aggregated forest estates to benefit assessments on smaller and more fragmented individual land holdings.

Appendix A – Additional knowledge sources

A review of the literature and web searches was undertaken to compile a list of publications, reports, and other relevant work in Australia on the private native forestry sector or general private forest resource analysis (Table A1).

Table A1: Reports and websites relevant to private native forestry

Report	Author / Source	Year
Overview of the New South Wales Forest Management Framework V1.1	NSW Government	2021
Northern Forestry & Forest Products Industry Situation Analysis, CRCNA Project Number A.1.1718122	Stephens et al, CRCNA	2020
Northern Forest Products Industry Opportunities Final Report, CRCNA Project Number A.1.1718122	Stephens et al, CRCNA	2020
Improving the Productivity of the Private Native Forest Resource in Southern Qld and Northern New South Wales	Lewis et al, FWPA	2020
Monitoring the Productive Capacity and Socio-economic Benefits of New South Wales Forests (unpublished)	DPI NSW	2019
Valuing the Suitability of Native Forest for Timber Production, PUB19/96	DPI NSW	2019
Managing a private native forest Area After a Bushfire	LLS NSW	2019
Australia's State of the Forests Report 2018	ABARES	2018
National Forest Industries Plan – Growing a Better Australia – A billion trees for jobs and growth	DAWR	2018
Estimating potential harvestable biomass for bioenergy from sustainably managed private native forests in Southeast Queensland, Australia	Department Environment and Science, Qld.	2018
North Coast private native forest Project – Primary Processors Survey Report	DPI NSW	2018
Private Native Forest Owner Attitudinal Survey – Northern New South Wales	University of Canberra	2017
Report on Survey of New South Wales North Coast private native forest Harvesting Contractors	Jamax Consulting/DPI NSW	2017
Condition of New South Wales North Coast Private Forest	Blue Chip Forest Services	2017
Australia Forest Industry Map	ABARES	2017
Queensland Forest & Timber Industry – an overview	DAF QLD	2016
Private native forest management in South-eastern Queensland	DAF QLD	2014
The Potential Supply of Biomass for Energy from Hardwood Plantations in the Sunshine Coast Council Region of South-East Queensland, Australia	Small Scale Forestry Journal	2014

Report	Author / Source	Year
Sustainable Private Native Forestry (New South Wales)	RIRDC	2009
Assessment of private native forest Areas in Upper North-east New South Wales	BRS	2009
Silvopastoralism Design and Potential in Sub-tropical and Low Rainfall Environments	Michael Stephens/The Winston Churchill Memorial Trust of Australia	2009
A Finer Scale Vegetation Map for the Northern Territory: Scoping Paper	DNREAS NT	2008
Australia's farm forestry industry – Evaluation of resource, market and development prospects	RIRDC, Kelly M	2008
Ecosystem Regionalisation in the Northern Territory of Australia	DNREAS NT	2008
Australia's Farm Forestry Industry (includes private native forestry)	RIRDC/URS/	2008
Farm Forestry Areas and Resources in Australia (includes private native forestry)	RIRDC/URS	2008
Understandings of Sustainable Corporate Governance by Australian Managed Investment Schemes and Some Implications for Small-scale Forestry in Australia	Small Scale Forestry Journal	2008
Private Native Forestry in New South Wales: Environmentally Benign, Economically Important but Silvicultural Challenged?	Small Scale Forestry Journal	2007
Social and ecological issues for private native forestry in north-eastern New South Wales, Australia	Small Scale Forestry Journal	2007
Review of the Draft Code of Practice for private native forests in New South Wales	FWPA	2007
Projecting Farm Scale Product Volumes and Values	S.R. Roberts/ANU	2007
How to foster good husbandry of private native forests	Small Scale Forestry Journal	2006
Report on GIS Analysis – private native forest-assessment of various options and their impact on gross area of timber availability	DNR NSW	2006
Silvicultural Guides – private native forest New South Wales	DNR NSW	2006
The Development of an Effective Methodology to Capture Forest Type, Condition and Volume Data for Privately Managed Forests	FWPRDC	2004
Ironwood *Erythrophleum chlorostachys* in Northern Territory: Aspects of its Ecology in Relation to Timber Harvesting	DAFF	2002
Private Forest Inventory for the Western Hardwoods Region 2	PFSQ	2002
The development of an effective methodology to capture forest type, condition and volume data for privately managed forests	FWPRDC	2001
Western Hardwood Resource Review	QDPI	2001

Report	Author / Source	Year
Southern New England Tablelands Private Forest Inventory	New England-NW Regional Development Board. Natural Heritage Trust	2001

Appendix B – Supplementary data for private native forestry

Table B1: Area of Eucalypt non-mallee forest by private native forestry category, height class and Regional Forestry Hub

	Area ('000)									
	Category 1			Category 2			Category 3			
Regional Forestry Hub	Low	Medium	Tall	Low	Medium	Tall	Low	Medium	Tall	Total
New South Wales										
North East New South Wales	2	139	244	11	751	554	1	59	28	**1,788**
Central West New South Wales	0	0	0	0	0	0	0	108	0	**108**
South East New South Wales	0	14	2	0	0	0	1	312	31	**359**
Murray Region	0	1	0	0	0	0	0	37	0	**38**
Out of Hub	0	47	0	0	1	0	2	841	49	**939**
New South Wales total	**2**	**202**	**246**	**11**	**751**	**554**	**3**	**1,357**	**108**	**3,233**
Northern Territory										
Northern Territory and Ord Valley	0	0	0	0	0	0	3	5,679	0	**5,682**
Out of Hub	0	0	0	0	0	0	1	111	0	**113**
Northern Territory total	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**5,791**	**0**	**5,795**
Queensland										
North Queensland	0	64	0	6	1,592	3	16	108	3	**1,792**
South and Central Queensland	3	445	10	0	1,983	63	0	137	6	**2,647**
Out of Hub	5	40	0	0	275	0	0	45	1	**366**
Queensland total	**7**	**549**	**10**	**6**	**3,850**	**66**	**17**	**290**	**10**	**4,805**
Tasmania										
Tasmania	0	45	45	3	239	63	1	52	31	**480**
Out of Hub	0	0	0	0	4	0	0	0	0	**4**
Tasmania total	**0**	**45**	**45**	**3**	**243**	**63**	**1**	**52**	**31**	**483**
Victoria										
South East New South Wales	0	0	0	0	0	0	0	0	0	**0**
Murray Region	0	0	0	0	77	3	0	30	1	**111**
Gippsland	0	0	0	0	103	0	0	41	2	**146**

Green Triangle	0	0	0	0	0	0	0	22	1	**23**
Out of Hub	0	0	0	0	45	2	0	103	1	**153**
Victoria total	**0**	**0**	**0**	**0**	**226**	**6**	**0**	**196**	**5**	**433**
Western Australia										
South West Western Australia	0	0	0	0	0	0	0	355	15	**371**
Out of Hub	0	0	0	0	0	0	0	105	0	**105**
Western Australia total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**460**	**15**	**476**
Australia	**9**	**796**	**301**	**21**	**5,070**	**690**	**26**	**8,145**	**169**	**15,226**
Total inside hubs	5	708	300	20	4,745	687	23	6,939	118	**13,546**
Total outside hubs	5	87	1	0	324	3	3	1,206	51	**1,680**

Notes:
Low, 2–10 metres; Medium, >10–30 metres; Tall, >30 metres.
Totals may not tally due to rounding.

Table B2: Area of Eucalypt non-mallee forest by private native forestry category, cover class and Regional Forestry Hub

	Area ('000)									
	Category 1			Category 2			Category 3			
Regional Forestry Hub	**Woodland**	**Open**	**Closed**	**Woodland**	**Open**	**Closed**	**Woodland**	**Open**	**Closed**	**Total**
New South Wales										
North East New South Wales	15,772	368,227	625	119,380	1,187,710	8,492	15,151	72,489	76	1,787,922
Central West New South Wales	76	124	0	0	0	0	44,183	63,502	0	107,885
South East New South Wales	8,202	7,734	0	0	0	0	155,224	188,283	44	359,487
Murray Region	8	867	0	0	0	0	1,401	35,925	0	38,201
Out of Hub	30,780	16,829	0	196	439	0	693,009	198,233	1	939,487
New South Wales total	**54,838**	**393,781**	**625**	**119,576**	**1,188,250**	**8,492**	**908,971**	**558,655**	**121**	**3,233,309**
Northern Territory										
Northern Territory and Ord Valley	0	0	0	0	0	0	2,553,100	3,084,748	44,584	5,682,432
Out of Hub	0	0	0	0	0	0	103,904	7,924	675	112,503
Northern Territory total	**0**	**0**	**0**	**0**	**0**	**0**	**2,657,005**	**3,092,672**	**45,259**	**5,794,936**
Queensland										
North Queensland	59,110	5,036	0	1,514,114	85,797	196	103,402	24,128	5	1,791,788
South and Central Queensland	273,699	184,060	0	1,216,783	830,010	0	96,438	46,210	0	2,647,200

Out of Hub	36,370	8,413	0	153,783	121,386	0	26,459	19,554	5	365,970
Queensland total	**369,179**	**197,509**	**0**	**2,884,695**	**1,037,265**	**196**	**226,301**	**89,957**	**10**	**4,805,112**
Tasmania										
Tasmania	69,541	20,538	0	249,195	56,058	10	46,099	38,104	18	479,563
Out of Hub	154	0	0	2,440	1,248	24	10	1	0	3,877
Tasmania total	**69,695**	**20,538**	**0**	**251,635**	**57,306**	**34**	**46,109**	**38,105**	**18**	**483,440**
Victoria	0	3	0	43,635	187,481	1,307	29,185	170,387	1,356	433,354
South East New South Wales	0	0	0	0	0	0	7	126	178	311
Murray Region	0	0	0	10,579	69,490	677	4,720	25,751	62	111,279
Gippsland	0	0	0	29,431	74,442	91	2,494	39,796	230	146,484
Green Triangle	0	0	0	0	0	0	1,697	20,598	313	22,608
Out of Hub	0	3	0	3,625	43,549	539	20,267	84,116	573	152,672
Victoria total	**0**	**3**	**0**	**43,635**	**187,481**	**1,307**	**29,185**	**170,387**	**1,356**	**433,354**
Western Australia										
South West Western Australia	0	0	0	0	0	0	100,724	267,473	2,453	370,650
Out of Hub	0	0	0	0	0	0	84,228	21,222	0	105,450
Western Australia total	**0**	**0**	**0**	**0**	**0**	**0**	**184,952**	**288,695**	**2,453**	**476,100**
Australia	**493,712**	**611,831**	**625**	**3,299,541**	**2,470,302**	**10,029**	**4,052,523**	**4,238,471**	**49,217**	**15,226,251**
Inside Hubs	426,408	586,586	625	3,139,497	2,303,680	9,466	3,124,646	3,907,421	47,963	13,546,292
Out of Hub	67,304	25,245	0	160,044	166,622	563	927,877	331,050	1,254	1,679,959

Notes:
Crown cover class: Woodland, 20–50% canopy cover; Open, >50–80% canopy cover; Closed, >80% canopy cover.
Totals may not tally due to rounding.

Appendix C – Input datasets

Nine spatial datasets (listed with Dataset Code ID-# in Table C1[41]) were assessed by ABARES and used to create the combined private native forestry spatial dataset that underpins this report. Each of the nine datasets categorises forest areas using their particular individual set of attributes; these attributes were used in each case to decide which areas within the datasets were retained for analysis (on the basis that they described land either managed for or with the potential to be managed for private native forestry) and which areas within the datasets were discarded, and not used for further analysis (on the basis that they were not relevant to private native forestry). For example, some of the datasets included areas that were non-forest, and some of the datasets included attributes such as 'non-commercial'; land with such attributes was discarded from the dataset as not suitable for private native forestry.

A national dataset on forest commerciality developed previously by ABARES (Davey and Dunn 2014) was also used in the analysis.

Table C1: Input private native forestry datasets, and attributes used to retain areas in the analysis

Dataset Code	Data source	Dataset Name	Attributes of areas retained for analysis	Attributes of areas discarded before analysis	Allocation to private native forestry categories
ID-1 NSW	Local Land Services (confidential, deidentified)	Harvesting approvals, NSW (2020)	All	None excluded	Category 1
ID-2	The dataset assigned this code early in the investigation was rejected during analysis as it did not contribute value to the analysis.				
ID-3 Tasmania	Esk Mapping and GIS, on behalf of Private Forests Tasmania	Private Native Forest Resource (Tasmania)	Mature Dry Eucalypt Forest; Mature Wet Eucalypt Forest; Mature White Top Forest; Regrowth Dry Eucalypt Forest; Regrowth Wet Eucalypt Forest ; Regrowth White Top Forest; Secondary Species (Blackwood); Secondary	Non-Commercial (Mature Dry Eucalypt Forest); Non-Commercial (Other); Non-Commercial (Regen)	Three sub-groups were developed by ABARES from the dataset. Sub-group 3a comprised areas identified as 'Non-commercial forest types whether or not in Private Timber Reserves', which were discarded before analysis.

[41] The nine datasets are ID-1 to ID-10, omitting ID-2.

Dataset Code	Data source	Dataset Name	Attributes of areas retained for analysis	Attributes of areas discarded before analysis	Allocation to private native forestry categories
			Species (Myrtle); Secondary Species (Other); Secondary Species (Wattle)		Sub-group 3b comprised areas identified as 'Commercial forest types not in Private Timber Reserves', which were allocated to Category 2. Sub-group 3c comprised areas identified as 'Commercial forest types in Private Timber Reserves', which were allocated to Category 1.
ID-4 Queensland	Queensland Government Queensland Spatial Catalogue - QSpatial	Agricultural land audit – potential native forestry – Queensland (2013)	Native forest available for commercial forestry with low potential for sawlog production; Native forest available for commercial forestry with medium potential for sawlog production; Native forest available for commercial forestry with high potential for sawlog production	Native forest available for commercial forestry but not suitable for sawlog production; Non-forest, not native forest, or native forest not available for commercial forestry	Category 2, excepting any areas otherwise identified as Category 1
ID-5 NSW	DPI NSW	Yield Association Groups (2018)	Moist Coastal Eucalypts; Dry Sclerophyll; Semi-moist and Taller Dry Eucalypts; Swamp Sclerophyll; Spotted Gum; Blackbutt; Tableland Eucalypts – Dry; Tableland Eucalypts – Moist	Rainforest; Viney invasive scrub / degraded	Category 2, excepting any areas otherwise identified as Category 1

Dataset Code	Data source	Dataset Name	Attributes of areas retained for analysis	Attributes of areas discarded before analysis	Allocation to private native forestry categories
ID-6 Queensland	Queensland Department of Agriculture and Forestry	Potentially commercial forests of south east Queensland (2020)	Spotted gum; Ironbark; Queensland blue gum; Gum-topped box; Moist tall; Mixed hardwood (Subgroup 6a)	Non-commercial but harvestable under the Code (Sub-group 6b)	Two sub-groups were developed by ABARES from the dataset. Sub-group 6a comprised areas identified as commercial forest types and were allocated to Category 2 excepting areas otherwise identified as Category 1. Sub-group 6b comprised areas comprised areas identified as Non-commercial and were discarded from analysis.
ID-7 **ID-8** **Queensland**	Queensland Department of Resources	Vegetation management – tabular register of accepted development vegetation clearing code notifications, Queensland. **Dataset ID-7**: Notifications issued before 20 July 2016 **Dataset ID-8**: Notifications issued after 20 July 2016.	Native forest practice; Thinning (native forest practice)	Agriculture; Agriculture and grazing; Agricultural efficiency; Improve operational efficiency of existing agriculture; Coordinated Projects; Encroachment; Extractive industry; Fodder harvesting; General Purposes; Infrastructure; Managing Regrowth Density; Managing Weeds; Weed control; Necessary environmental clearing; Necessary environmental works; Necessary infrastructure; Necessary property infrastructure; Public Safety; Category C; Category R	Category 1
ID-9 NSW	DPI NSW	Forest growth status (2019)	All	No areas excluded	Category 2, excepting any areas otherwise identified as Category 1

Dataset Code	Data source	Dataset Name	Attributes of areas retained for analysis	Attributes of areas discarded before analysis	Allocation to private native forestry categories
ID-10 Victoria	DELWP	Private Native Forest Stand Vegetation (2020)	Eucalypt	Unallocated; Undefined; Non-eucalypt	Category 2
National	ABARES	Australian Sawlog Commerciality Database	Very low; Low; Moderate; High; Very high	No; Sandalwood; Plantation; Possible; Unknown; Limited; Limited-acacia; Limited-hardwood; Limited-red gum; NULL	Category 3, excepting any areas otherwise identified as Categories 1 or 2

Appendix D – Stakeholder questions

The following series of general questions was used by the consultants to guide their conversations with stakeholders.

1. Do you have, or know of, any publicly available or other resource information and/or data (spatial or tabular) on Australian privately owned native forests?
2. Do you know what organisation holds those data, and do you have contact person for that information? Is there anyone else you would suggest we contact more generally?
3. Can we please ask for details of any harvesting and haulage contractors you work with or you know are operating in your region?

General data characteristics questions

4. Can we please get some more details about the dataset(s) that you possess (if more than one dataset, the following questions apply for each dataset):

   - What is the geographical extent of the dataset?
   - Who collected the data?
   - When was the dataset collected and for what purpose, and is it ongoing?
   - Who is the hands-on manager of this dataset?
   - If somebody else, are you able to provide contact details for the data owner?

   If the dataset contains detailed information:

   - Do the data have any spatial information, i.e. spatial maps (paper or electronic) or GIS coordinates?
   - Are the data stored electronically?
   - Have the data been maintained since they were collected?
   - Has any analysis / interpretation of the data been done?
   - If yes, by whom, when and for what purpose?
   - Are you aware of any data sensitivity and privacy issues?
   - Would the owner be willing to share (or sell?) the data/dataset with ABARES?
   - Do you have any general thoughts on the quality and/or utility of the available data?
   - Is there any other information that you would be willing to share with us that may help us find other information or data on Australian private native forests?

Resource questions

5. What type of data does this dataset contain:

   - Forest extent
   - Forest type
   - Species mix and product range
   - Commercial value now, expected value with growth in 10 and 20 years
   - Growth stage
   - Standing volume
   - Stocking
   - Productivity score
   - Permanent growth plots
   - Other attributes

Harvesting and timber mill questions

6. Please describe the contracts or other arrangements with land holders, harvesting contractors or other broker/middleman? Alternatively, are there ad hoc purchases and if so by what channels? Do you have information on:
   - Volumes?
   - Species?
   - Specific origins?
7. What other information do you require for such purchases?
8. If not asked already, may I ask who you are aware of working in the private native forestry space that we could contact?

Land planning, permits and utilisation related questions

9. Who do you most have contact with, such as land holders, forest consultants, harvesting contractors?
10. What data, other information or even impressions do you have of the level of interest and activity around private native forestry in your region?
11. What policies and procedures do you have in relation to private native forestry?
12. Do you have thoughts or concerns around private native forestry in your region?
13. Again if not asked already, do you maintain lists of forest operators in your region, or have suggestions for other relevant contacts?

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