



Australian Government
Department of Agriculture
ABARES

Development of the *Australia's Indigenous forest estate (2013)* dataset

Robert Dillon, Jeya Jeyasingham, Sid Eades, Steve Read

Research by the Australian Bureau of Agricultural
and Resource Economics and Sciences

Research report 15.6
August 2015



Ownership of intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia (referred to as the Commonwealth).

Creative Commons licence

All material in this publication is licensed under a Creative Commons Attribution 3.0 Australia Licence, save for content supplied by third parties, logos and the Commonwealth Coat of Arms.



Creative Commons Attribution 3.0 Australia Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided you attribute the work. A summary of the licence terms is available from creativecommons.org/licenses/by/3.0/au/deed.en. The full licence terms are available from creativecommons.org/licenses/by/3.0/au/legalcode.

Cataloguing data

Dillon, R, Jeyasingham, J, Eades, S, & Read, S 2015, *Development of the Australia's Indigenous forest estate* (2013) *dataset*. ABARES Research report 15.6, Canberra, August. CC BY 3.0.

ISSN 1447-8358

ISBN 978-1-74323-248-4

ABARES project 115061-43514

Internet

Development of the Australia's Indigenous forest estate (2013) *dataset* is available at agriculture.gov.au/abares/publications.

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

Postal address GPO Box 858 Canberra ACT 2601

Switchboard +61 2 6272 2010

Facsimile +61 2 6272 2001

Email info.abares@agriculture.gov.au

Web agriculture.gov.au/abares

Inquiries about the licence and any use of this document should be sent to copyright@agriculture.gov.au.

The Australian Government acting through the Department of Agriculture, represented by the Australian Bureau of Agricultural and Resource Economics and Sciences, has exercised due care and skill in preparing and compiling the information and data in this publication. Notwithstanding, the Department of Agriculture, ABARES, its employees and advisers disclaim all liability, including for negligence and for any loss, damage, injury, expense or cost incurred by any person as a result of accessing, using or relying upon information or data in this publication to the maximum extent permitted by law.

Acknowledgements

The authors thank the various agencies that provided data and advice for this project, including Australian Capital Territory Government Territory and Municipal Services Directorate; Australian Government Department of Sustainability, Environment, Water, Populations and Communities; Indigenous Land Corporation; National Native Title Tribunal; New South Wales Government Department of Environment and Conservation; Northern Territory Government Department of Lands and Planning; Northern Territory Government Department of Natural Resources, Environment, the Arts and Sport; Queensland Government Department of Environment and Resource Management; Queensland Government Department of Natural Resources and Water; South Australian Government Department of Environment and Natural Resources; Victorian Government Department of Sustainability and Environment; Western Australian Government Department of Environment and Conservation; Western Australian Government Department of Indigenous Affairs; and Western Australian Government Landgate. Agency names are correct at the time data were provided (2010-2012), but may since have changed as a consequence of administrative changes.

Contents

Abbreviations, Terms and Definitions	vi
Summary	vii
1 Introduction	1
Purpose	1
Importance of forests on Indigenous land	1
Forest information	2
Previous process	4
The need for new data	4
2 Developing the Indigenous land estate and Indigenous forest estate datasets	5
Project model and process	5
Defining Indigenous land and Indigenous forest (Step 1)	5
Defining the components of Indigenous land (Step 2)	7
Identifying relevant legislation and programs (Step 3)	7
Defining Indigenous land management categories (Step 4)	9
Procuring Indigenous land data (Step 5)	9
Mapping datasets to components of the Indigenous land definition and then to land management categories (Step 6)	13
Converting, generalising and merging the data (Step 7)	16
Attributing areas to management categories (Step 8)	17
Combining Indigenous land estate data with forest data (Step 9)	19
3 Results	20
Indigenous land estate statistics	20
Comparison with older Indigenous land estate datasets	21
Indigenous forest estate statistics	22
Comparison with older Indigenous forest estate datasets	27
4 Discussion	29
Australia's Indigenous forest estate by management category	29
Reporting on Australia's Indigenous forest estate	30
Appropriate use of the data	30
Gap analysis	31
Development of related products	33
Appendix A: Linkages between legislation and government programs and Indigenous communities	36
Australian Capital Territory	36
Commonwealth	36
New South Wales	39

Northern Territory	39
Queensland	40
South Australia	40
Tasmania	41
Victoria	41
Western Australia	42
References	43

Tables

Table 1 Montréal Process indicators relating to forests on Indigenous land, as modified for use in Australia's forest reporting	3
Table 2 Legislation and government programs that provide Indigenous communities with an opportunity to own, manage or be involved in the management of land	8
Table 3 Spatial information collected for Indigenous lands	10
Table 4 Non-spatial information collected for Indigenous lands	11
Table 5 Indigenous land spatial datasets collected or derived by the NFI	12
Table 6 Land and forest area statistics for individual input Indigenous land datasets	17
Table 7 Indigenous land datasets ranked on basis of level of Indigenous management involvement	18
Table 8 Areas of Indigenous land by management category and jurisdiction	20
Table 9 Comparison of land areas in the 2006 and 2011 Indigenous estate datasets	22
Table 10 Areas of Indigenous forest by management category and jurisdiction	23
Table 11 Areas of Indigenous forest by management category and tenure	25
Table 12 Areas of Indigenous forest by management category and forest type	27
Table 13 Comparison of the area of NFI 2011 forest in the 2006 and 2011 Indigenous forest estate datasets	28
Table 14 Spatial datasets not included in the Indigenous forest estate dataset and for which the DLILI was used as a surrogate	31
Table 15 Datasets identified for collection for future NFI indigenous estate projects	34

Figures

Figure 1 Process for construction of the Indigenous forest estate dataset	6
Figure 2 Relationship between the datasets used to create the Indigenous land database and the components of the NFI definition of Indigenous land	14
Figure 3 Relationship between the components of the NFI definition of Indigenous land and the four NFI Indigenous land management categories	15
Figure 4 Relationship between the datasets used to create the Indigenous lands database and the four NFI Indigenous land management categories	16
Figure 5 Potential allocation of Western Australian Aboriginal Land Trust data to more than one of the NFI Indigenous land estate categories	32

Maps

Map 1 The Indigenous land estate dataset by management category	21
Map 2 Changes in the Indigenous land estate datasets between 2006 and 2011	23
Map 3 The Indigenous forest estate dataset by management category	24
Map 4 The Indigenous forest estate dataset by tenure category	26
Map 5 Changes in the Indigenous forest estate datasets between 2006 and 2011	28

Abbreviations, Terms and Definitions

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ATSI Act	<i>Aboriginal and Torres Strait Islander Act 2005 (Cth)</i>
ATSIC Act	<i>Aboriginal and Torres Strait Islander Commission Act 1989 (Cth)</i>
ATSIC	Aboriginal and Torres Strait Islander Commission
CAPAD	Collaborative Australian Protected Areas Database
DLILI	Database of Legal Indigenous Land Interests
FAO	Food and Agriculture Organization of the United Nations
GDA	Geocentric Datum of Australia
GFRA	Global Forest Resources Assessment
GIS	Geographic Information System
ILC	Indigenous Land Corporation
ILUA	Indigenous Land Use Agreements
IPA	Indigenous Protected Area
NFI	National Forest Inventory
NIFS	National Indigenous Forestry Strategy
NNTT	National Native Title Tribunal
SOFR	Australia's State of the Forests Report
VAT	Value Attributes Table
WHA	World Heritage Area

Agency names used in this report are the names correct at the time data were provided from that agency (2010-2012), but may since have changed as a consequence of administrative changes.

The term Indigenous is used throughout the report, as in *Australia's State of the Forests Report 2013* (SOFR 2013), to refer to Australia's Aboriginal and Torres Strait Islander peoples.

The definition of 'Indigenous land' used by the NFI for this work is:

all land over which Indigenous people have use and rights as recognised through ownership, management, access or other special rights.

The definition of forest used in this work is the definition used by the NFI:

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 per cent. 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.

Summary

Indigenous people value forests for a range of cultural, social and economic reasons. These reasons can be divided into three broad but not mutually exclusive categories, namely heritage, contemporary and aspirational. In each case, access, management and ownership can be key parts of the relationship of Indigenous people with land, and these parameters were used in this work to define the categories of forest over which Indigenous people have use and rights.

Australia uses the Montréal Process framework of criteria and indicators for reporting progress towards sustainable forest management. This includes reporting on the area of Australia's forest over which Indigenous people have use and rights, as recognised through formal and informal management regimes. However, consultation with Indigenous stakeholders during preparation of a forest mapping tool for the National Indigenous Forestry Strategy indicated a need for data on forests on Indigenous land to be presented in a more useful way. Preparation for *Australia's State of the Forests Report 2013* also revealed the need for a dataset within the National Forest Inventory describing the variety of Indigenous forest management arrangements.

A new national spatial dataset of forested and non-forested land that is owned or managed by Australia's Indigenous communities, or over which Indigenous people have use and rights, was therefore compiled from information supplied by Australian, state and territory governments and other statutory authorities with Indigenous land management interests. This dataset was then intersected with Australia's 2011 forest cover, to create a spatial dataset which was used to describe and map Australia's Indigenous forest estate.

Four nationally consistent categories were created to represent the range of types of access, use and management that Indigenous people have in regards to land: Indigenous owned and managed; Indigenous managed; Indigenous co-managed; and Other special rights. A total of 41 million hectares of forest were identified across these four Indigenous management categories, with about three-quarters of this Indigenous forest estate being in Queensland and the Northern Territory. These categories were used for reporting in *Australia's State of the Forests Report 2013* the area of Australia's forest over which Indigenous people have use and rights, and the spatial data underlying these area figures were published as the *Australia's Indigenous forest estate (2013)* dataset.

This dataset is a significant advance in describing Indigenous use of forest land and involvement in natural resource management. The dataset includes a greater diversity of land than captured previously under simpler definitions of Indigenous land, as it also includes lands owned by non-Indigenous parties where legislated arrangements are in place that enable the Indigenous community to access, manage, jointly manage, or be consulted on management of land. For the first time, a comprehensive national description of the forest areas over which Indigenous people have ownership, management or special rights is available.

1 Introduction

Purpose

This report:

- provides an overview of issues that affect the ability of the National Forest Inventory to report domestically and internationally on the area of forested land that is owned or managed by Australia's Indigenous communities or over which Indigenous people have use and rights
- outlines the process that was followed to develop a new Indigenous forest estate dataset for the National Forest Inventory, named the *Australia's Indigenous forest estate (2013)* dataset
- establishes categories for classification of Indigenous land areas, including forest areas, according to the level of ownership, management control or access that Indigenous communities have over that land
- describes the extent and distribution across Australia of these components of the Indigenous forest estate
- provides information on known gaps in the Indigenous forest estate dataset, and proposes areas that require improvement in future versions of the dataset
- underpins the use of *Australia's Indigenous forest estate (2013)* for domestic and international reporting.

The term Indigenous is used in this report, as in *Australia's State of the Forests Report 2013* (SOFR 2013), to refer to Australia's Aboriginal and Torres Strait Islander peoples. The terms Indigenous land and Indigenous forest refer respectively to land and forest owned or managed by Indigenous communities or over which Indigenous people have use and rights.

Importance of forests on Indigenous land

Indigenous people value forests for a range of cultural, social and economic reasons. These reasons can be divided into three broad but not mutually exclusive categories, namely heritage, contemporary and aspirational:

- **Heritage values** associated with Indigenous history are important for connecting people with the landscape, and include archaeological sites, natural landscape features, and places associated with Indigenous history, culture and ceremony, including secret and sacred places.
- **Contemporary reasons** for which Indigenous people value forests include landscapes of reconciliation and empowerment, places where Indigenous beliefs and customs can be integrated with modern living, and forests important for economic independence.
- **Aspirational values** of forests for Indigenous people may include areas in which Indigenous people can gain greater autonomy through a range of mechanisms, including ownership and management of country.

In each case, a combination of access, management and ownership can be key parts of the relationship of Indigenous people with land, and were therefore the parameters used to define the categories of Indigenous land in this work.

Further discussion of the extent to which Indigenous values are protected, maintained and enhanced through Indigenous participation in forest management in Australia is presented in Indicator 6.4c of SOFR 2013 (MIG & NFISC 2013).

Forest information

The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), under the auspices of the National Forest Inventory (NFI), collects and communicates information on Australia's forests. The NFI is an authoritative source of information for international, national and regional monitoring and reporting on the management, conservation and use of Australia's forests, and for supporting decision-making on Australia's forests. The National Plantations Inventory (NPI) is a program of the NFI.

The NFI collects and collates data from Commonwealth, state and territory government agencies and authorities, and from private land managers. These data are reported nationally through publications such as the Australia's State of the Forests Report (SOFR) series published every five years, most recently *Australia's State of the Forests Report 2013* (SOFR 2013) (MIG & NFISC 2013). These data are also reported internationally through processes such as the 5-yearly Global Forest Resource Assessment (GFRA¹) of the Food and Agriculture Organization of the United Nations (FAO 2010), with Australia's Country Report to the GFRA 2015 to be released at the World Forestry Congress in September 2015. ABARES also publishes directly the key spatial datasets developed for SOFR reporting (ABARES 2014a-c).

Australia is a member country of the Montréal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (the "Montréal Process"). This working group has endorsed a set of criteria and indicators for forest conservation and sustainable management, for use in reporting and by policy-makers and other decision-makers (Montréal Process Working Group 2009a,b). Australia has adopted the criteria developed by the working group (Commonwealth of Australia 1998), but has modified the indicators to better suit this country's unique forests (Commonwealth of Australia 2008). This framework of criteria and indicators is used in the SOFR series, underpins sustainability indicators used regionally in the Regional Forest Agreement process (as specified in an attachment to each Regional Forest Agreement), is used as the basis for a number of state-based forest reporting processes (Victoria's State of the Forests Report², Tasmania's State of the forests report³, the New South Wales Seeing Reports⁴, and the Western Australia Forest Management Plan⁵), and informed the development of the Australian Forestry Standard program of certification (Australian Forestry Standard 2013).

¹ www.fao.org/forestry/fra/76871/en/

² <http://www.depi.vic.gov.au/forestry-and-land-use/forest-management/state-of-the-forests-report>

³ [http://www.fpa.tas.gov.au/publications/state of the forests tasmania reports](http://www.fpa.tas.gov.au/publications/state%20of%20the%20forests%20tasmania%20reports)

⁴ <http://www.forestrycorporation.com.au/resources/pubs/corporate/seeing-reports-and-facts-and-figures-archive>

⁵ <http://www.conservation.wa.gov.au/management-planning/management-plans/forest-management-plan-2014-2023.aspx>

The indicators that Australia uses for forest reporting include indicators that relate to the use and management of forests by Indigenous people (Table 1). Indicator 6.4a explicitly identifies the need for ongoing collection and collation of information and data on forests to which Indigenous people have use and rights. These data then serve as input into other indicators that describe Indigenous participation in forest management (Indicator 6.4c) and the resilience of Indigenous communities that are dependent on forests (Indicator 6.5d). Indigenous estate information and data are also inputs into the development of other key indicators, including those relating to forest cover (Indicator 1.1a) and protected forests (Indicators 1.1c and 4.1a).

Table 1 Montréal Process indicators relating to forests on Indigenous land, as modified for use in Australia's forest reporting

Indicators that explicitly cover Indigenous issues	
Indicator	Title
6.4a	Area of forest to which Indigenous people have use and rights that protect their special values and are recognised through formal and informal management regimes
6.4c	The extent to which Indigenous values are protected, maintained and enhanced through Indigenous participation in forest management
6.5d	Resilience of forest dependent Indigenous communities to changing social and economic conditions
Other indicators that draw on data relating to the forests on Indigenous land	
Indicator	Title
1.1a	Area of forest by forest type and tenure
1.1c	Area of forest in protected area categories
4.1a	Area of forest land managed primarily for protective functions

Source: *Australia's State of the Forests Report 2013* (MIG & NFISC 2013)

Data on Australia's forests have also been used to support the National Indigenous Forestry Strategy (NIFS⁶), launched by the Australian government in 2005 in consultation with Indigenous communities and forest industry stakeholders. The NIFS mapping website⁷ presents summary information on forests organised by Indigenous Coordination Centre areas, but does not present information on the areas of forest owned or managed by Indigenous communities or over which Indigenous people have use and rights.

Internationally, the ongoing collection and collation of Indigenous forest estate information and data by the NFI enables reporting on the GFRA 2015 variable 18.2.3 "Forest area that is privately owned by local tribal and Indigenous communities" (FAO 2012).

⁶ agriculture.gov.au/forestry/policies/nifs

⁷ data.daff.gov.au/nifs/

Previous process

The NFI historically sourced Indigenous land estate data from other Australian government agencies that compile the data for their own reporting requirements and purposes. These land data were then intersected with NFI forest data to produce area statistics on the Indigenous forest estate.

Information included in SOFR 2003 and SOFR 2008, and provided to the FAO for GFRA 2010, were derived using data from the Database of Legal Indigenous Land Interests (DLILI, produced in 2001). This database was sourced from the Indigenous Land Corporation (ILC), an independent statutory authority of the Australian Government with responsibility for assisting Indigenous people to acquire and manage land for a range of economic, environmental, social and cultural benefits.

The DLILI provided a snapshot of all Indigenous-held land, as defined in the (now repealed) *Aboriginal and Torres Strait Islander Commission Act 1989 (Cth)* (ATSIC Act), plus any government-owned land held for Indigenous use. In the decade after its production in 2001, the DLILI was deemed to be suitable for the NFI to report on the area of land and forest that was owned by, or held for, Indigenous communities. However, the database has not been comprehensively updated since 2001.

The need for new data

Consultation forums were held in 2010 in New South Wales, South Australia and Western Australia to review the progress of the NIFS. During these forums, several Indigenous stakeholder groups communicated a desire for the NFI to be able to report on the areas of forest not necessarily owned by the Indigenous community, but where there was opportunity for community input into management, or access for social, cultural or economic purposes.

During preparation of a forest mapping tool for the NIFS in 2011, consultation with Indigenous stakeholders and community representatives in Western Australia and New South Wales also identified the need for more detailed information on the level of Indigenous ownership and management of forests on Indigenous land. Discussions with other Local Aboriginal Land Councils confirmed they saw benefit in this type of information.

In addition, the NFI team identified that more up-to-date data describing the variety of Indigenous management arrangements for forests on Indigenous land would be required for the compilation of information and statistics for reporting in SOFR 2013 and in future Country Reports to the GFRA.

Specifically, a database was required that considered a definition of 'Indigenous land' broader than the definition applied during compilation of the 2001 DLILI. However, no databases that could be used as alternative national sources of information were available.

It was thus determined that the most appropriate course of action was for ABARES to compile an up-to-date and purpose-built Indigenous land estate database for the NFI, which could then be intersected with NFI forest cover data to allow reporting on the Indigenous forest estate of Australia. Achieving this goal required collaboration with other Australian, state and territory government agencies to procure the required information.

2 Developing the Indigenous land estate and Indigenous forest estate datasets

Project model and process

The first part of the project involved agreeing on the definitions of Indigenous land and Indigenous forest (Step 1), articulating the various components of Indigenous land (Step 2), identifying legislation and programs that provide for Indigenous land ownership, management, use or access (Step 3), and defining appropriate Indigenous land management reporting categories (Step 4).

The second part of the project involved acquiring the available input datasets (Step 5), then constructing a framework that used the components of the definition of Indigenous land to connect these Indigenous land datasets to the Indigenous management categories (Step 6). The datasets were then combined to create a single Indigenous land spatial dataset (Step 7), and Indigenous land areas were attributed to the appropriate Indigenous management category to produce the Indigenous land estate dataset (Step 8). Intersection of this land dataset with the national forest cover dataset produced the Indigenous forest estate dataset (Step 9).

These steps are displayed in Figure 1.

Defining Indigenous land and Indigenous forest (Step 1)

The DLILI has historically been used by the NFI to enable reporting on the area of land, and within that forest, that is owned by or held for Indigenous communities. This database was compiled in 2001 with the following definition of 'Indigenous lands':

Indigenous held land as defined in [section] 4b of the ATSIC Act (1989 as amended), and government held land for Indigenous use.⁸

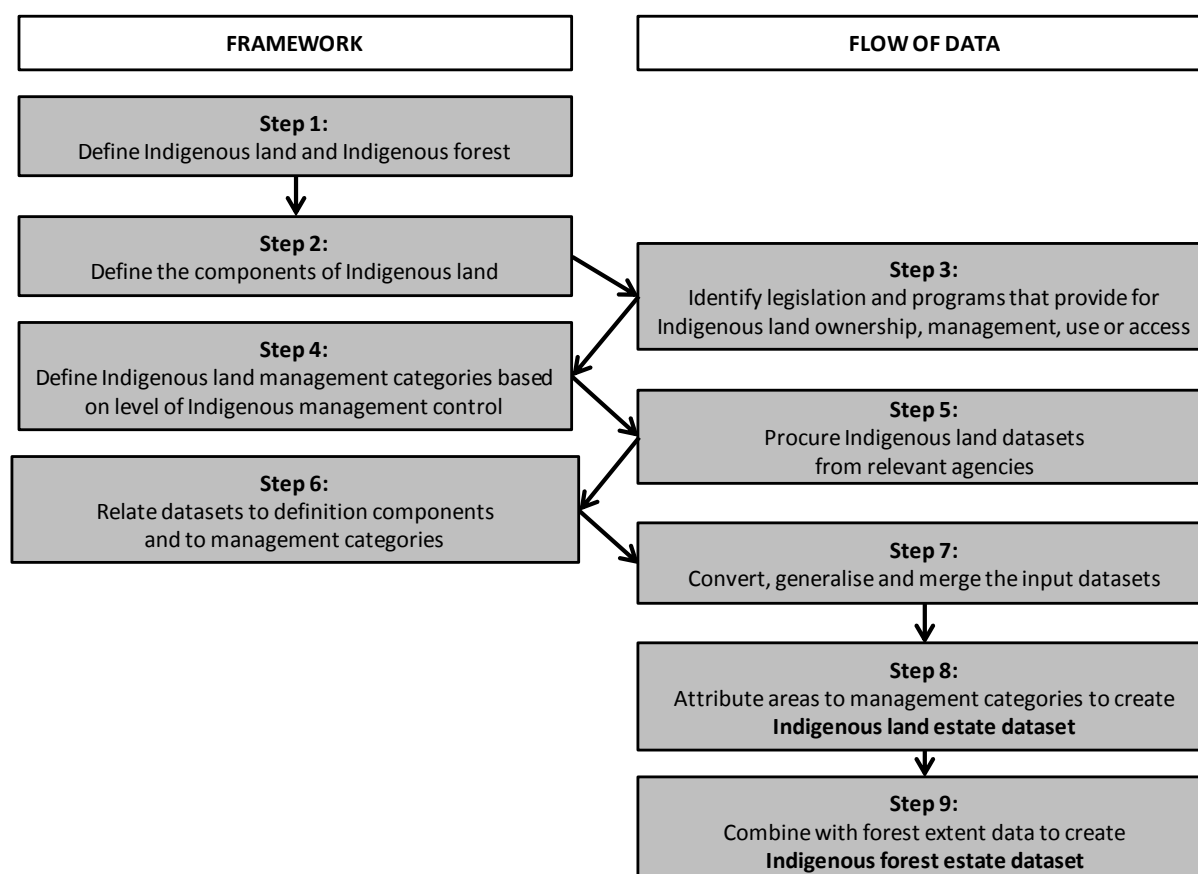
The ATSIC Act was repealed in 2005, after the production of the DLILI, and replaced by the *Aboriginal and Torres Strait Islander Act 2005 (Cth)* (ATSI Act). The ATSI Act retained the same Section 4b, which defines 'Indigenous-held lands' as:

Lands with at least 50 per cent of the legal or equitable interest held by Aboriginal or Torres Strait Islander corporations

Lands with at least 50 per cent of the legal or equitable interest held by Aboriginal or Torres Strait Islander persons

Government owned land that is held for Aboriginal or Torres Strait Islander uses.

⁸ Definition in the Database of Legal Indigenous Land Interests metadata statement provided by the Indigenous Land Corporation.

Figure 1 Process for construction of the Indigenous forest estate dataset

Source: ABARES

However, the scope of this definition underpinning land reported in the DLILI did not encompass other lands in which Indigenous communities have an interest, such as Indigenous owned and leased-back nature reserves, lands with formal joint management or co-management arrangements with Indigenous communities, or lands covered by other special rights.

A broader understanding of 'Indigenous land' was thus used by the NFI for this work, as:

All land over which Indigenous people have use and rights as recognised through ownership, management, access or other special rights.

'Indigenous forest' is Indigenous land that carries forest according to the definition of forest used by the NFI (MIG 2008, MIG & NFISC 2013), which is:

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 per cent. 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.

Defining the components of Indigenous land (Step 2)

The compilation of a complete and authoritative Indigenous land estate dataset required establishing formal definitions for each of the components of Indigenous land. The following list of types of Indigenous land was therefore assembled:

- Land owned and managed by Indigenous groups or communities, and granted to the groups or communities through Acts of parliament
- Land owned or managed by Indigenous groups or communities, and either purchased directly or purchased, granted or vested through government agency programs
- Land owned by the government, but held and managed for Indigenous uses
- Pastoral leasehold lands owned by the government and leased to Indigenous groups or communities
- Land owned by Indigenous groups or communities, but where formal management or co-management arrangements are in place with government agencies
- Land owned by the government or other private owners, but where formal management or co-management arrangements with Indigenous groups or communities are in place
- Land where there is a legislated requirement for developers to consult and gain endorsement from Indigenous groups or communities prior to any development activities taking place
- Culturally significant land where other legislated arrangements are in place that enable access by Indigenous groups or communities

Together, these various components comprise Australia's Indigenous land estate, encompassing all lands for which identifiable arrangements are in place that enable Indigenous communities or groups to be involved in land management or to have legislated rights of access and use over land. It includes a greater diversity of land than would be captured using simpler definitions such as either 'Indigenous managed' or 'Indigenous owned or managed', as it also includes lands owned by non-Indigenous parties where legislated arrangements were in place that enable the Indigenous community to access, manage, jointly manage, or be consulted on the management of land.

Articulation of these components of the definition of Indigenous land enabled identification of the types of information required to assemble an Indigenous land database, and targeted and efficient collection of data for individual land components.

The above definition includes the component 'Land owned or managed by Indigenous groups or communities, and ... purchased directly...'. However, freehold lands that have been purchased independently by Indigenous people on the open property market are not readily identifiable, and thus that type of land is not currently included in the database.

Identifying relevant legislation and programs (Step 3)

A comprehensive review was completed of all Commonwealth, state and territory legislation and government programs that provide Indigenous communities or groups with opportunities to own, manage, access, use or be involved in the management of land, in accordance with the above definition of the components of Indigenous land.

Legislation and programs identified in this review are listed in Table 2. While some of the Acts on this list have been repealed, they have been included as they are predecessors of current Acts.

Appendix A contains a brief description of how each Act or government program provides the Australian Indigenous community with opportunities to own, manage or be involved in the management of land.

Table 2 Legislation and government programs that provide Indigenous communities with an opportunity to own, manage or be involved in the management of land

Jurisdiction	Relevant legislation/program
Australian Capital Territory	<i>Nature Conservation Act 1980</i>
Commonwealth	<i>Aboriginal Land Fund Act 1974 (Repealed)</i> <i>National Parks and Wildlife Conservation Act 1975 (Repealed)</i> <i>Aboriginal Land Rights (Northern Territory) Act 1976</i> <i>Aboriginal Development Commission Act 1980 (Repealed)</i> <i>Aboriginal Land Grant (Jervis Bay Territory) Act 1986</i> <i>Aboriginal Land (Lake Condah and Framlingham Forest) Act 1987</i> <i>Aboriginal and Torres Strait Islander Commission Act 1989 (Repealed)</i> <i>Native Title Act 1993</i> <i>Land Fund and Indigenous Land Corporation (ATSIC Amendment) Act 1995</i> Indigenous Protected Areas program <i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>Aboriginal and Torres Strait Islander Act 2005</i>
New South Wales	<i>Aborigines Act 1969 (Repealed)</i> <i>National Parks and Wildlife Act 1974</i> <i>Aboriginal Land Rights Act 1983</i>
Northern Territory	<i>Lands Acquisition Act 1978</i> <i>Cobourg Peninsula Aboriginal Land Sanctuary & Marine Park Act 1981</i> <i>Pastoral Land Act 1992</i> <i>Parks and Reserves (Framework for the Future) Act 2003</i>
Queensland	<i>Land Act 1962 (Repealed)</i> <i>Aboriginal Land Act 1991 and Torres Strait Islander Land Act 1991</i> <i>Nature Conservation Act 1992</i> <i>Land Act 1994</i>
South Australia	<i>Aboriginal Lands Trust Act 1966</i> <i>National Parks and Wildlife Act 1972</i> <i>Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981</i> <i>Maralinga-Tjarutja Land Rights Act 1984</i>
Tasmania	<i>Aboriginal Lands Act 1995</i>
Victoria	<i>Aboriginal Lands Act 1970</i> <i>Aboriginal Lands (Aborigines' Advancement League) (Watt Street, Northcote) Act 1982</i> <i>Conservation, Forests and Lands Act 1987</i> <i>Aboriginal Land (Northcote Land) Act 1989</i> <i>Aboriginal Lands Act 1991</i> <i>Aboriginal Lands (Manatunga Land) Act 1992</i> <i>Traditional Owner Settlement Act 2010</i>
Western Australia	<i>Aboriginal Affairs Planning Authority Act 1972</i> <i>Land Administration Act 1997</i> <i>Conservation and Land Management Act 1984</i>

Defining Indigenous land management categories (Step 4)

Based on the individual components of the definition of Indigenous land (Step 2) and the programs and legislation that provide for Indigenous involvement in land ownership, management, use or access (Step 3), four broad Indigenous land management categories were developed. These categories were created as logical groupings around the level of Indigenous involvement in land ownership, management control, use or access. In descending order of Indigenous involvement, the categories are:

- **Indigenous owned and managed** - comprising freehold lands that are both owned and managed by Indigenous communities
- **Indigenous managed** - comprising lands that are managed but not owned by Indigenous communities, and lands that are owned by Indigenous communities but that have formal shared management agreements with Australian and state and territory government agencies
- **Indigenous co-managed** - comprising lands that are owned and managed by other non-Indigenous parties, but that have formal and legally binding agreements in place to include input from Indigenous people in the process of developing and implementing relevant management plans
- **Other special rights** - comprising lands subject to Native Title determinations and active Indigenous Land Use Agreements that provide rights of access or legal requirements for consultation with the Indigenous community before development activities.

The four categories were used for developing spatial statistics for the Indigenous land estate and then the Indigenous forest estate.

Procuring Indigenous land data (Step 5)

Requests for spatial data were made by ABARES to all relevant Commonwealth, state and territory government agencies and corporations that were identified through the review of legislation and government programs (Step 3). These formal data requests were made both as requests for data for use in the NIFS mapping project, and as requests for data for use in production of SOFR 2013.

The data collection process benefited greatly from the growing number of government departments, corporations or agencies that provide free and open access to data through internet-based data libraries, with much of the data required for this project being freely available for download directly from the relevant websites.

The spatial datasets collected for this project are listed in Table 3 according to the department, corporation or agency from which the data were sourced.

Table 3 Spatial information collected for Indigenous lands

Contributing department/ agency/ corporation ^a	Spatial dataset	Date of currency
Australian Government Department of Sustainability, Environment, Water, Populations and Communities	Indigenous Protected Areas	2011
	Australia's World Heritage Areas (WHAs) ^b	2011
	Nature reserves (Collaborative Australian Protected Areas Database, CAPAD) ^c	2010
Indigenous Land Corporation	Indigenous Land Corporation purchased, granted and vested lands	2011
	Database of Legal Indigenous Land Interests ^d	2001
National Native Title Tribunal	Native Title determinations	2011
	Active Indigenous Land Use Agreements	2011
Northern Territory Government Department of Lands and Planning	Northern Territory Aboriginal Land Rights lands and Community Living Areas	2011
Queensland Government Department of Natural Resources and Water	Queensland Aboriginal Deed of Grant in Trust areas	2009
Western Australian Government Department of Indigenous Affairs	Western Australian Aboriginal Lands Trust land	2009
Western Australian Government Landgate	Western Australian Indigenous pastoral leasehold properties	2009

^a Names are correct at the time data were provided (2010-2012), but may since have changed as a consequence of administrative changes.

^b These data were used in conjunction with non-spatial information (see Table 4) to derive a spatial dataset of Australia's WHAs with an Indigenous advisory committee.

^c These data (environment.gov.au/topics/land/nrs/science/capad/2010) were used in conjunction with non-spatial information (see Table 4) to derive a spatial dataset of all Indigenous owned and leased-back nature reserves, and to derive a spatial dataset of other nature reserves with formal joint or co-management arrangements

^d The Database of Legal Indigenous Land Interests was used as a surrogate for some spatial datasets (including datasets covering Jervis Bay territory Aboriginal Community Council land, New South Wales Aboriginal Land Council land, Queensland Aboriginal Lands Act and Torres Strait Islander Land Act land, South Australia Aboriginal Lands Trust land, Anangu Pitjantjatjara Yankunytjatjara land, Maralinga-Tjarutja land, Tasmania Aboriginal Lands Council land, and various Victorian Aboriginal Lands Trusts land) that could not be acquired from the relevant state/territory government agency in the time-frame available.

In addition to the spatial data, a considerable amount of non-spatial information was collected. This information was collected to identify which of Australia's World Heritage Areas (WHAs) and which nature reserves in the National Reserve System have formal arrangements in place that allow the Indigenous community to be involved in their management. The non-spatial datasets collected for this project are listed in Table 4 according to the department, corporation or agency from which the data were sourced.

Table 4 Non-spatial information collected for Indigenous lands

Contributing department/ agency/ corporation ^a	Information collected	Date of currency
Australian Capital Territory Government Territory and Municipal Services Directorate	Information on joint/co-managed nature reserves in the Australian Capital Territory b	2011
Australian Government Department of Sustainability, Environment, Water, Populations and Communities	Information on joint/co-managed nature reserves in the Commonwealth's jurisdiction b	2011
	Information on WHAs with an Indigenous advisory committee c	2011
New South Wales Government Department of Environment and Conservation	Information on joint/co-managed nature reserves in New South Wales b	2011
Northern Territory Government Department of Natural Resources, Environment, the Arts and Sport	Information on joint/co-managed nature reserves in the Northern Territory b	2011
Queensland Government Department of Environment and Resource Management	Information on joint/co-managed nature reserves in Queensland b	2011
South Australian Government Department of Environment and Natural Resources	Information on joint/co-managed nature reserves in South Australia b	2011
Victorian Government Department of Sustainability and Environment	Information on joint/co-managed nature reserves in Victoria b	2011
Western Australian Government Department of Environment and Conservation	Information on joint/co-managed nature reserves in Western Australia b	2011

a Names are correct at the time data were provided (2010-2012), but may since have changed as a consequence of administrative changes.

b This information was used in conjunction with spatial data from the CAPAD (see Table 3) to derive a spatial dataset of Indigenous owned and leased-back nature reserves, and to derive a spatial dataset of nature reserves with Indigenous joint or co-management arrangements.

c This information was used in conjunction with the spatial data on Australian WHAs (see Table 3) to derive a spatial dataset of WHAs with an Indigenous advisory committee.

This non-spatial information was used to select land areas from the CAPAD and from the WHA databases maintained by the then Department of Sustainability, Environment, Water, Populations and Communities⁹. This process generated three new spatial datasets:

- **WHAs with an Indigenous advisory committee:** these were identified through a review of the management plans for each WHA. The advisory committees provide advice to the relevant WHA management committee on the management of sites of Indigenous cultural significance under their stewardship. This information was combined with the 2010 WHA database to produce the spatial dataset 'Australia's World Heritage Areas with Indigenous advisory committee'
- **Nature conservation reserves granted to Indigenous communities through Acts of parliament, and leased back to the relevant government environment conservation agency for joint management:** these were identified through a comprehensive review of legislation. This information was coupled with the CAPAD to produce the spatial dataset 'Indigenous owned and leased-back nature reserves'.

⁹ Now the Department of the Environment.

- Government-owned and managed reserves that have formal and gazetted joint management or other co-management arrangements in place, that enable the Indigenous community to be involved in the management of the reserves:** these were identified through a review of legislation, reserve management plans and other relevant documents available from government environment conservation agencies. This information was coupled with the CAPAD to produce the spatial dataset 'Nature reserves with Indigenous joint or co-management arrangements'.

Combining these various spatial and non-spatial datasets gave a total of 12 collected or derived Indigenous land datasets used as input datasets for this project (Table 5), and which were combined in an Indigenous land database.

Table 5 Indigenous land spatial datasets collected or derived by the NFI

Spatial dataset	Name(s) used in SOFR 2013 ^a	Date of currency	Source agency and data link ^b
Indigenous Protected Areas	Indigenous Protected Areas	2011	DSEWPac; available at Discover Information Geographically website (www.environment.gov.au/metadataexplorer/explorer.jsp)
Northern Territory Aboriginal Land Rights lands and Community Living Areas	Northern Territory Aboriginal Lands Trust lands Aboriginal Lands Trust lands, Northern Territory	2011	Northern Territory Department of Lands and Planning (www.lands.nt.gov.au)
Queensland Aboriginal Deed of Grant in Trust areas	Queensland Deed of Grant in Trust Deed of Grant in Trust, Queensland	2009	Queensland Department of Environment and Resource Management (http://dds.information.qld.gov.au/dds/)
Database of Legal Indigenous Land Interests ^c	Indigenous Land Corporation Indigenous estate 2003 ILC Indigenous estate	2001	Indigenous Land Corporation (www.ilc.gov.au)
Indigenous Land Corporation owned and granted lands	Indigenous Land Corporation owned and granted Indigenous Land Corporation-owned and Indigenous Land Corporation-granted lands	2011	Indigenous Land Corporation (www.ilc.gov.au/Land-Acquisition/Land-Purchased/Land-Purchased-All-States)
Western Australian Aboriginal Lands Trust lands	Aboriginal Lands Trust, Western Australia	2009	Western Australia Department of Indigenous Affairs (www.dia.wa.gov.au)
Western Australian Indigenous pastoral leasehold properties	Western Australian Indigenous pastoral leases Indigenous pastoral leases, Western Australia	2009	Western Australia Land Information Authority, trading as WA Landgate (www.landgate.wa.gov.au/corporate.nsf/web/index.html)
Indigenous owned and leased-back nature conservation reserves	Leased-back nature reserves Leased-back nature conservation reserves	2010	State and territory government conservation agencies, and the DSEWPac Collaborative Australian Protected Area Database 2010; available at Discover Information Geographically website (www.environment.gov.au/metadataexplorer/explorer.jsp)
Nature reserves with Indigenous joint or co-management arrangements	Nature conservation reserve memoranda of understanding	2010	State and territory government conservation agencies, and the DSEWPac Collaborative Australian Protected Area Database 2010; available at Discover Information Geographically website (www.environment.gov.au/metadataexplorer/explorer.jsp)

Spatial dataset	Name(s) used in SOFR 2013 ^a	Date of currency	Source agency and data link ^b
Australia's World Heritage Areas with Indigenous advisory committees	World Heritage Area memoranda of understanding	2010	State and territory government conservation agencies, and the DSEWPac Australian World Heritage Areas dataset; available at Discover Information Geographically website (www.environment.gov.au/metadataexplorer/explorer.jsp)
Native Title determinations	Native Title determinations	2011	National Native Title Tribunal (NNTT) (www.nntt.gov.au/Mediation-and-agreement-making-services/Geospatial-services/Pages/Spatial-Data.aspx)
Active Indigenous Land Use Agreements	Indigenous Land Use Agreements	2011	National Native Title Tribunal (NNTT) (www.nntt.gov.au/Mediation-and-agreement-making-services/Geospatial-services/Pages/Spatial-Data.aspx)

^a *Australia's State of the Forests Report 2013* (MIG and NFISC 2013).

^b Agency name and URL as at date of data collection (2010-2012).

^c Used as surrogate for spatial datasets not available.

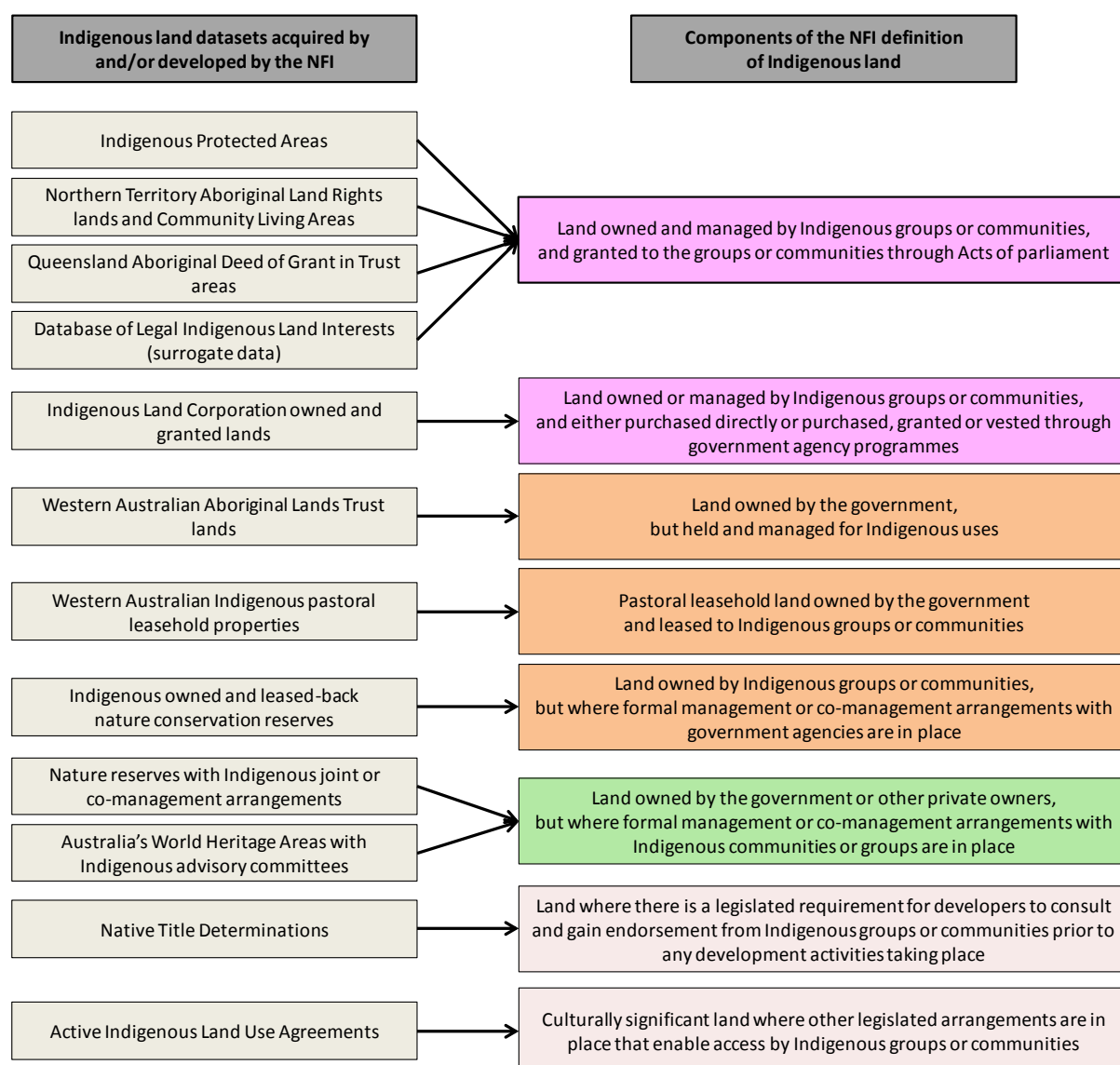
For reporting in SOFR 2013, the NFI only required information describing lands prior to 30 June 2011. Datasets acquired after this date were therefore edited to remove any information that was included after this date. For example, Native Title determinations made after 30 June 2011 were removed from the Native Title determinations dataset acquired in October 2011 from the National Native Title Tribunal.

Mapping datasets to components of the Indigenous land definition and then to land management categories (Step 6)

Each of the 12 input Indigenous land datasets contains land that was captured in one of the components of the NFI Indigenous land definition (Figure 2).

In a few cases, an input dataset contains information on lands that could have been captured under more than one of the components of the NFI definition of Indigenous land. For example, the Western Australian Aboriginal Lands Trust dataset contains some privately owned lands that were purchased and granted through government agency programs, and also crown reserves and leasehold properties, with these two sets of land relating to different components of the NFI definition of Indigenous land. Similarly, while the majority of the Northern Territory Aboriginal Land Rights and Community Living Areas dataset is lands owned and managed by Indigenous groups or communities, some lands (the Community Living Areas) are owned by the government but held and managed for Indigenous uses. The reclassification of these comparatively small portions of the input data was not undertaken within the time and budget available for this project, and the general relationships shown in Figure 2 were used.

Figure 2 Relationship between the datasets used to create the Indigenous land database and the components of the NFI definition of Indigenous land

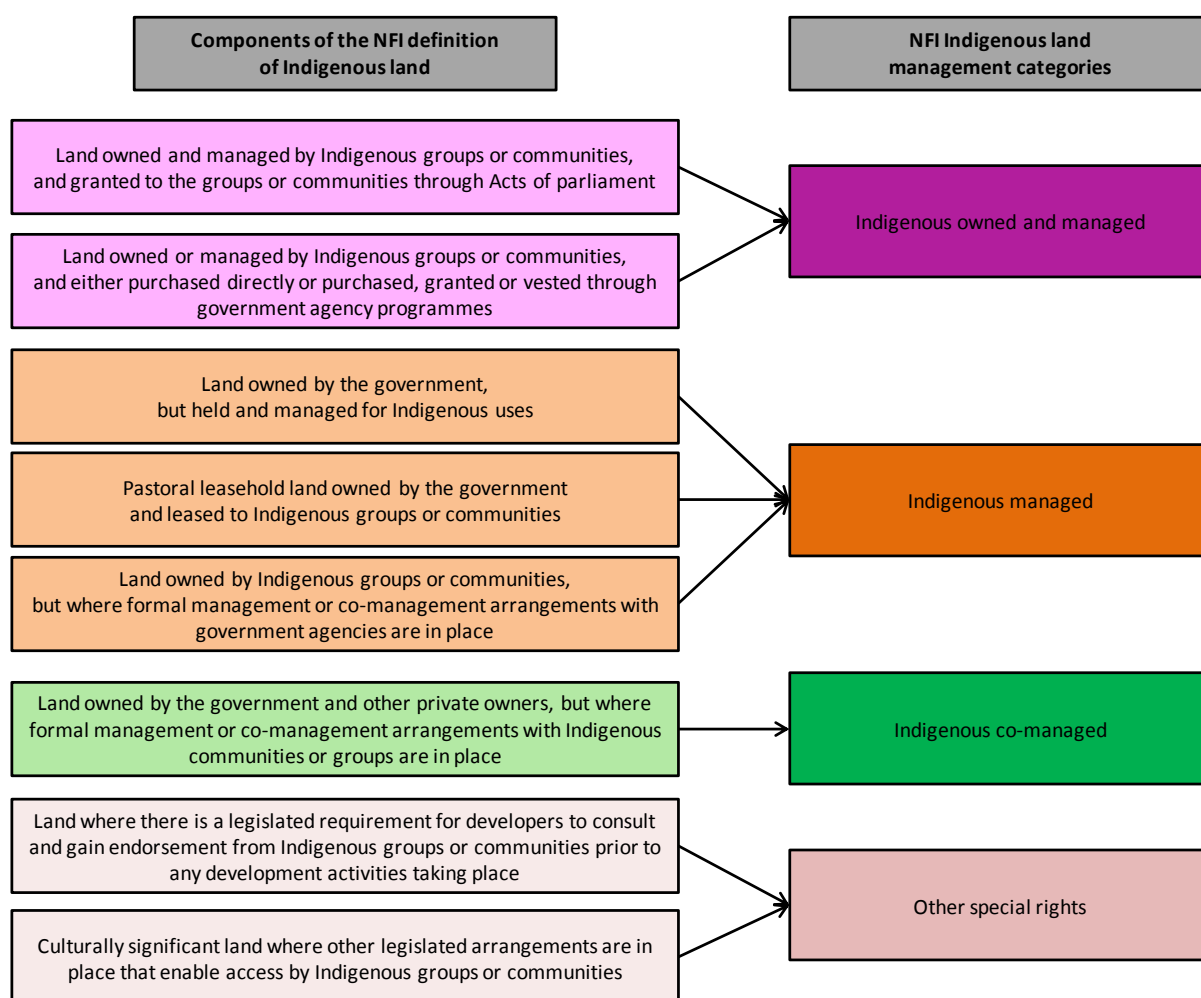


Note: The colour of each Indigenous land definition component box is the same as the colour for the Indigenous land management category to which that definition component relates (Figure 3), and as used to map that Indigenous land management category on Map 1 and Map 3.

Source: ABARES

Each of the components of the Indigenous land definition was then mapped onto one of the four Indigenous land management categories created for this project, according to the category that best summarised the level of Indigenous management control applying to the land fitting that definition (Figure 3).

Figure 3 Relationship between the components of the NFI definition of Indigenous land and the four NFI Indigenous land management categories



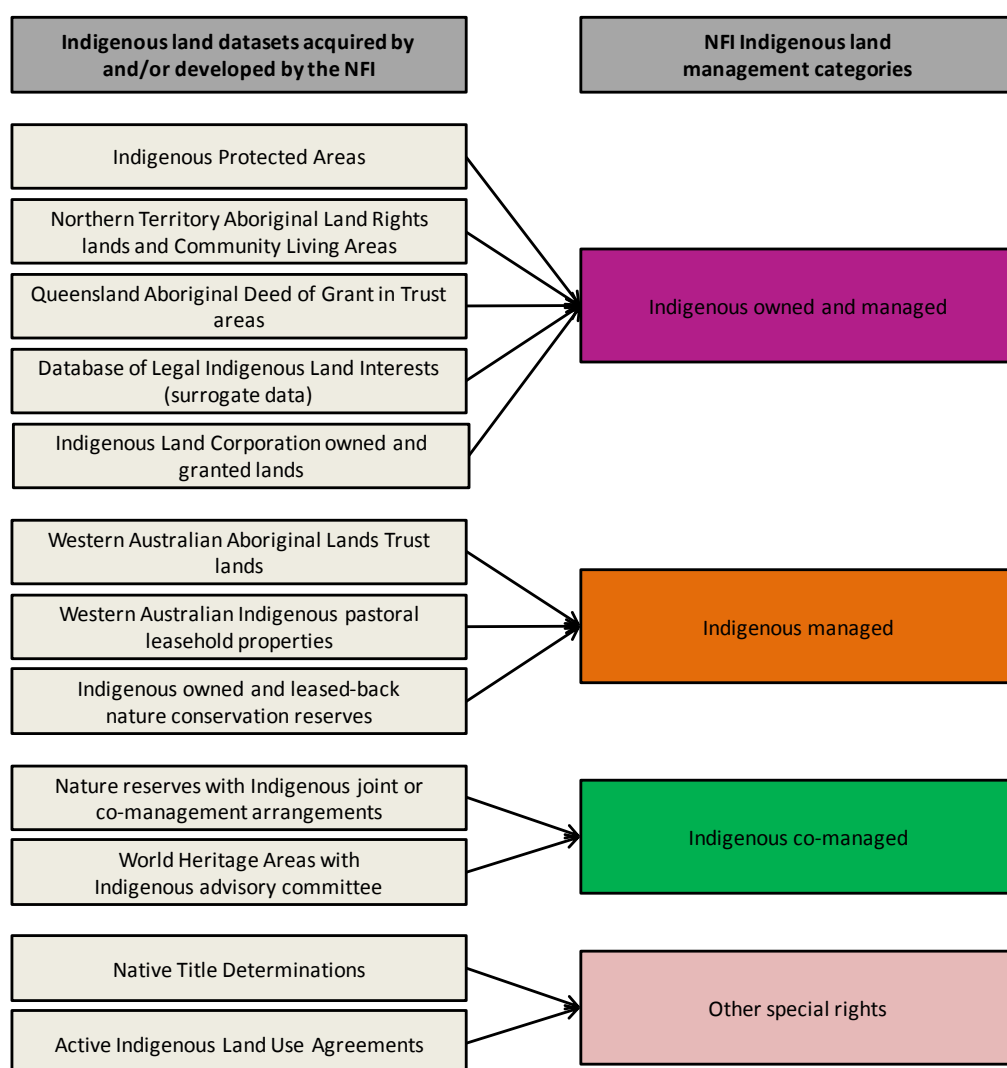
Note: The colour of each Indigenous land management category box is the same as the colour used to map that Indigenous land management category on Map 1 and Map 3.

Source: ABARES

Combining these two process then allowed each of the 12 input Indigenous land datasets to be directly allocated to one of the four output Indigenous land management categories (Figure 4).

Much of the advice that was used to map each Indigenous land dataset onto a component of the Indigenous land definition then onto a land management category was provided by state government agency or statutory body that maintain and supplied the data.

Figure 4 Relationship between the datasets used to create the Indigenous lands database and the four NFI Indigenous land management categories



Note: The colour of each Indigenous land management category box is the same as the colour used to map that Indigenous land management category on Map 1 and Map 3.

Source: ABARES

Converting, generalising and merging the data (Step 7)

ABARES uses the Esri ArcGIS geographic information system suite of software for spatial data management and analysis.

All shapefile datasets collected for this project were converted and stored in the standard NFI data format, by conversion to 100-m raster, projection using the GDA94 Albers equal area projection, and masking and snapping to the NFI standard national extent mask. This conversion process generalised property boundaries and removed information about the attributes of individual land parcels, retaining only the name of the original input dataset. For example, this process aggregated together all individual land parcels identified as Indigenous Protected Areas into a single object named “Indigenous Protected Areas”. This step addressed privacy concerns of the data providers, met the requirements of data-licensing agreements, and complied with the requirements of the *Privacy Act 1988 (Cth)*.

The areas of land reported in each of the 12 input datasets are shown in Table 6. These land areas overlap, as some are reported under more than one dataset, and so land areas in different datasets cannot be summed.

Table 6 Land and forest area statistics for individual input Indigenous land datasets

Spatial dataset	Land	Forest
	Area ('000 hectares)	
Indigenous Protected Areas a	26,203	2,401
Northern Territory Aboriginal Land Rights lands and Community Living Areas	60,794	9,118
Queensland Aboriginal Deed of Grant in Trust areas	1,477	864
Database of Legal Indigenous Land Interests b	125,672	14,975
Indigenous Land Corporation owned and granted lands	6,045	1,229
Western Australian Aboriginal Lands Trust lands	26,796	663
Western Australian Indigenous pastoral leasehold properties	10,880	318
Indigenous owned and leased-back nature conservation reserves	7,351	2,047
Nature reserves with Indigenous joint or co-management arrangements	12,614	3,557
Australia's World Heritage Areas with Indigenous advisory committees	44,118	4,283
Native Title determinations c	124,744	7,759
Active Indigenous Land Use Agreements	125,603	20,974

Note: Many of the land areas reported in these datasets are not mutually exclusive. One land parcel can be present in multiple datasets. It is therefore not appropriate to sum the total area of the input datasets to derive national Indigenous land estate area statistics.

Note: Data from datasets in raster format.

a Use of the NFI standard national 100-m snapgrid mask resulted in removal of some marine or tidal areas from the dataset and area statement.

b Used as surrogate for spatial datasets that were not available.

c Not otherwise allocated.

The individual dataset land areas were separately intersected with the 2011 NFI forest extent (see Step 9), to give the area of forest reported under each dataset (Table 6). As for land areas, the forest areas in different datasets overlap, as some are reported under more than one dataset, so cannot be summed.

The 12 attributed input datasets in raster format were then merged into a single, complete, national dataset. This process ensured that areas present in more than one input dataset were not counted multiple times.

Attributing areas to management categories (Step 8)

Areas in the merged dataset were allocated to one of the four Indigenous land management categories according to their input dataset and the relationships (Figure 4).

However, since the 12 input datasets are not mutually exclusive in regard to the land areas they contain, some parcels of land are present in more than one of the input datasets. For example, an area of land in the Northern Territory may be included in the Northern Territory Land Rights lands and Community Living Areas dataset, in the Indigenous owned and leased-back nature reserves dataset, and in the World Heritage Areas with Indigenous advisory committee dataset.

In this situation, the land was allocated to the Indigenous land management category determined by the dataset that denoted a higher level of Indigenous involvement in land management, provided that the dataset was assessed as accurate (using this term to cover the accuracy, reliability and currency of the data in the dataset). This required the 12 input datasets to be ranked for the level of management involvement that the Indigenous community have over the land in that dataset (Table 7).

Table 7 Indigenous land datasets ranked on basis of level of Indigenous management involvement

Spatial dataset	Data currency	Level of Indigenous management involvement a	Accuracy b	Overall ranking
Indigenous Protected Areas	2011	High	High	1
Northern Territory Aboriginal Land Rights lands and Community Living Areas	2011	High	High	2
Indigenous Land Corporation owned and granted lands	2011	High	High	3
Queensland Aboriginal Deed of Grant in Trust areas	2009	Medium-high	High	4
Western Australian Aboriginal Lands Trust lands	2009	Medium-high	High	5
Western Australian Indigenous pastoral leasehold properties	2009	Medium	High	6
Indigenous owned and leased-back nature conservation reserves	2010	Medium-low	High	7
Nature reserves with Indigenous joint or co-management arrangements	2010	Medium-low	High	8
Australia's World Heritage Areas with Indigenous advisory committees	2011	Medium-low	High	9
Database of Legal Indigenous Land Interests (DLILI)	2001	Medium-high	Low	10
Native Title determinations	2011	Low	High	11
Active Indigenous Land Use Agreements	2011	Low	High	12

Notes:

a A lower number indicates a dataset assessed to have a higher level of Indigenous management involvement for land present only in that dataset.

b The accuracy rating covers the reliability, accuracy and currency of a dataset.

The DLILI, which shows lands that have been granted to Indigenous communities through Acts of parliament and thus lands with a relatively high degree of Indigenous ownership and/or management control, was given a low rank (10) as it contained older information deemed to be of lower accuracy than many of the more recent input datasets. The datasets on Indigenous owned and leased-back nature reserves, nature reserves with Indigenous joint or co-management arrangements, and Australia's World Heritage Areas with Indigenous advisory committees, were given a higher ranking (7-9) as they contain current and accurate data, even though these lands have a relatively low level of Indigenous management involvement. As an example, a parcel of land present in both the Indigenous owned and leased-back nature reserves dataset and the DLILI was allocated to the category indicated by the higher ranked dataset, in this case the Indigenous owned and leased-back nature reserves dataset, thus resulting in allocation to the Indigenous managed category.

Once the data had been categorised into the four management categories and areas attributed appropriately, the data was exported and all other identifying information was removed. The final output Indigenous land dataset only contains information on the four Indigenous land estate management categories, and the original input datasets can no longer be identified.

Combining Indigenous land estate data with forest data (Step 9)

The national Indigenous land estate dataset created in Step 8 was intersected with the national Forests Australia 2013 dataset produced by the NFI in 2013 using forest data collected with a time-stamp of 2011 (ABARES 2014a). This intersection produced an Indigenous forest estate dataset, attributed with forest type and tenure information as well as Indigenous management category information.

3 Results

Indigenous land estate statistics

Information from 12 input datasets (Tables 5 and 6) was used to create a single layer for Indigenous land in Australia. The land in each dataset was attributed to one of the four Indigenous land management categories according to the framework laid out in Figures 2, 3 and 4, with the accuracy ranking presented in Table 7 used to allocate management categories to land parcels occurring in more than one dataset.

Initial statistics for lands in this Indigenous land database, calculated for each of Australia's states and territories according to the four Indigenous land management categories, were reported in SOFR 2013. These calculations were subsequently updated by using the standard NFI snap grid and extent mask, which resulted in a 1.2 per cent reduction in the total reported Indigenous land area. The updated statistics for lands in the Indigenous land database are presented in Table 8, and these lands are mapped by management category in Map 1. This updated spatial dataset was published in *Australia's Indigenous forest estate (2013)* (ABARES 2014c).

Table 8 Areas of Indigenous land by management category and jurisdiction

Land management category	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Australia	Proportion of total Indigenous land
	Area ('000 hectares)									
Indigenous owned and managed	0	431	59,805	5,866	20,364	61	11	15,680	102,219	33%
Indigenous managed	0	105	4,352	1,255	2,132	0	54	25,032	32,930	11%
Indigenous co-managed	106	2,605	160	2,049	2,489	1,378	202	5,563	14,552	5%
Other special rights	0	818	20,182	44,333	21,966	0	8,242	60,906	156,445	51%
Indigenous land	106	3,958	84,498	53,503	46,951	1,439	8,510	107,181	306,147	100%
Proportion of total Indigenous land	0.03%	1.3%	28%	17%	15%	0.5%	2.8%	35%	100%	
Total land	243	80,064	134,913	173,065	98,348	6,840	22,742	252,988	769,202	
Proportion of land that is Indigenous land	44%	5%	63%	31%	48%	21%	37%	42%	40%	

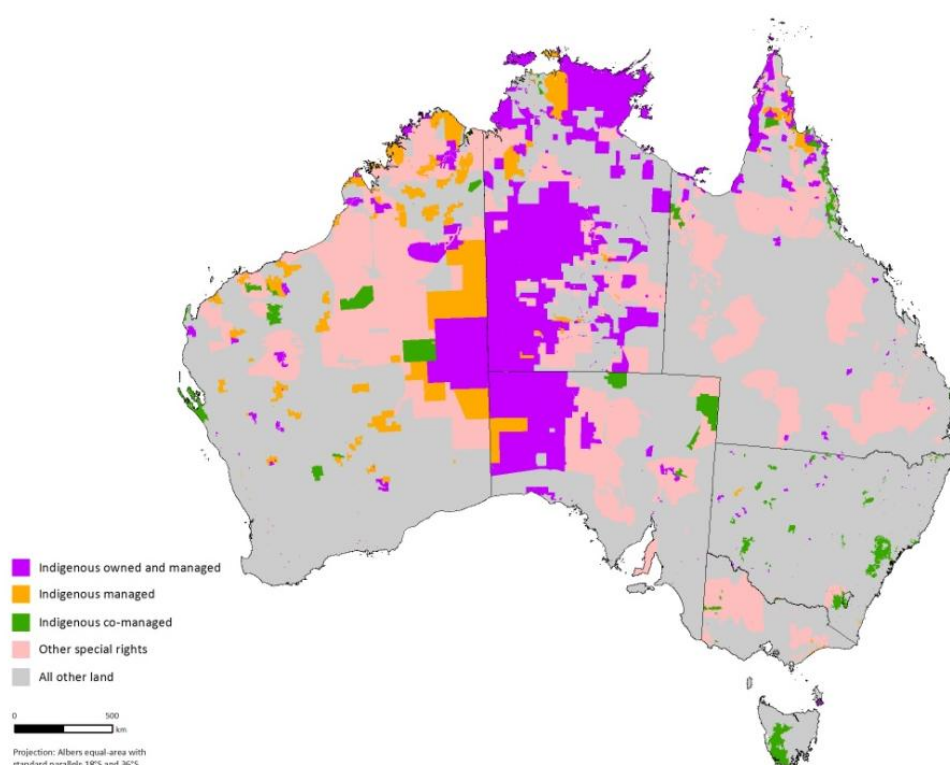
Totals may not tally due to rounding

The area of Indigenous land in Australia is 306 million hectares (40 per cent of Australia's land area). The greatest areas of Indigenous land in Australia are in Western Australia (107 million hectares, 35 per cent of the total Indigenous land) and the Northern Territory (84 million hectares, 28 per cent of the total Indigenous land). The Northern Territory is the jurisdiction with the greatest proportion of its land as Indigenous land (63 per cent), while only 5 per cent of the land area of New South Wales was identified as Indigenous land using the datasets available to this analysis.

Approximately half (156 million hectares, 51 per cent) of the Indigenous land in Australia is classified as Other special rights, that is, land not owned, managed or co-managed by Indigenous communities but with rights of access or requirements for consultation as provided through native title determinations or active Indigenous land-use agreements. Indigenous land subject to Other special rights is distributed across the continent (Map 1).

The majority of the remainder of Indigenous land (102 million hectares, 33 per cent of the total) is classified as Indigenous owned and managed, and is mainly present across the Northern Territory, in north-west South Australia and an adjacent region of Western Australia, and the Cape York peninsula, Queensland (Map 1).

Map 1 The Indigenous land estate dataset by management category



Note: 'All other land' is land that is not Indigenous land.

Source: ABARES

Comparison with older Indigenous land estate datasets

The area of Indigenous land in the 2006 Indigenous estate dataset reported in Indicator 6.4a of SOFR 2008 (MIG 2008) was 123 million hectares. The area of Indigenous land in the 2011 Indigenous estate dataset reported here, and published in *Australia's Indigenous forest estate (2013)* (ABARES 2014c), is 306 million hectares (Table 9).

There are two major drivers associated with the increase in the area of land reported in the Indigenous estate between the 2006 and 2011 Indigenous estate datasets. First, there have been improvements in the availability and accessibility of spatial information on Indigenous land tenure from Commonwealth, state and territory government agencies, and a broadening of the definition of Indigenous land, giving a more comprehensive coverage. Second, there has been an increase in the total area of land over which Indigenous people have legislated rights.

Table 9 Comparison of land areas in the 2006 and 2011 Indigenous estate datasets

Description	Area (‘000 hectares)	Notes
Total Indigenous land in 2006 dataset a	122,428	-
Total Indigenous land in 2011 dataset b	306,147	-
Indigenous land in both 2006 and 2011 datasets	122,289	-
Indigenous land in 2006 dataset only	139	-
Indigenous land in 2011 dataset only	183,858	-
Indigenous owned and managed	5,719	Mostly due to gazettal of new Indigenous Protected Areas
Indigenous managed	7,240	Mostly due to inclusion of leased-back nature reserves (plus an increase in area of Western Australian Indigenous pastoral leasehold properties)
Indigenous co-managed	14,482	Mostly due to inclusion of jointly managed nature reserves not reported previously
Other special rights	156,417	Due to inclusion of Native Title lands and Indigenous Land Use Agreement (ILUA) areas

a The 2006 Indigenous land dataset, time-stamped 2006, was compiled in 2007 from data in DLIL, and used for compilation of SOFR 2008 (MIG 2008). The area of Indigenous land in this dataset, published in SOFR 2008, was 122,524 thousand hectares. For the analysis presented in this table, the 2006 dataset was updated using the standard NFI snap grid and extent mask, resulting in a marginally smaller Indigenous land area of 122,428 thousand hectares.

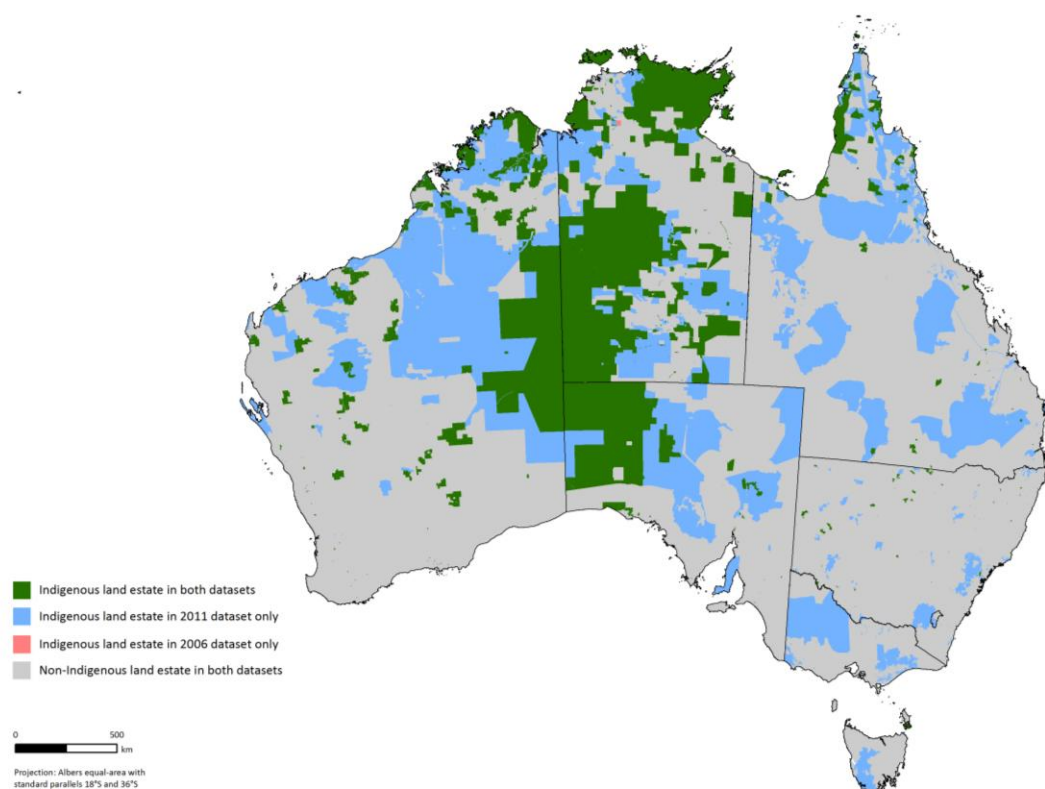
b The 2011 Indigenous land dataset, time-stamped 2011, was compiled by the method presented in this paper, and used for production of SOFR 2013 (MIG & NFISC 2013). The area of Indigenous land in this dataset, published in SOFR 2013, was 309,889 thousand hectares. For publication in *Australia's Indigenous forest estate (2013)* spatial dataset (ABARES 2014c), and for presentation in this paper, the 2011 dataset was updated using the standard NFI snap grid and extent mask, resulting in a marginally smaller Indigenous land area of 306,147 thousand hectares.

The largest component of the increase in reported Indigenous land derives from inclusion of land in the ‘Other special rights’ category (Table 9). The Indigenous land reported in the 2006 Indigenous estate dataset was mostly restricted to central and northern Australia. The additional Indigenous land reported in the 2011 dataset, mostly in the ‘Other special rights’ category, is distributed across the Australian continent (Map 2), with substantial areas in most jurisdictions.

Indigenous forest estate statistics

Initial statistics for forest on Indigenous land, calculated for each of Australia’s states and territories by intersecting the initial Indigenous land spatial dataset with an initial 2011 spatial forest coverage, were reported in SOFR 2013. These calculations were subsequently updated by using the standard NFI snap grid and extent mask for the land spatial dataset and the final 2011 NFI spatial dataset of forest area, which together resulted in a 2.1 per cent reduction in the total reported area of forests on Indigenous land. The updated Indigenous forest area statistics are presented in Table 10, and these forests are mapped by management category in Map 3. This updated spatial dataset was published in *Australia's Indigenous forest estate (2013)* (ABARES 2014c).

Map 2 Changes in the Indigenous land estate datasets between 2006 and 2011



Source: ABARES

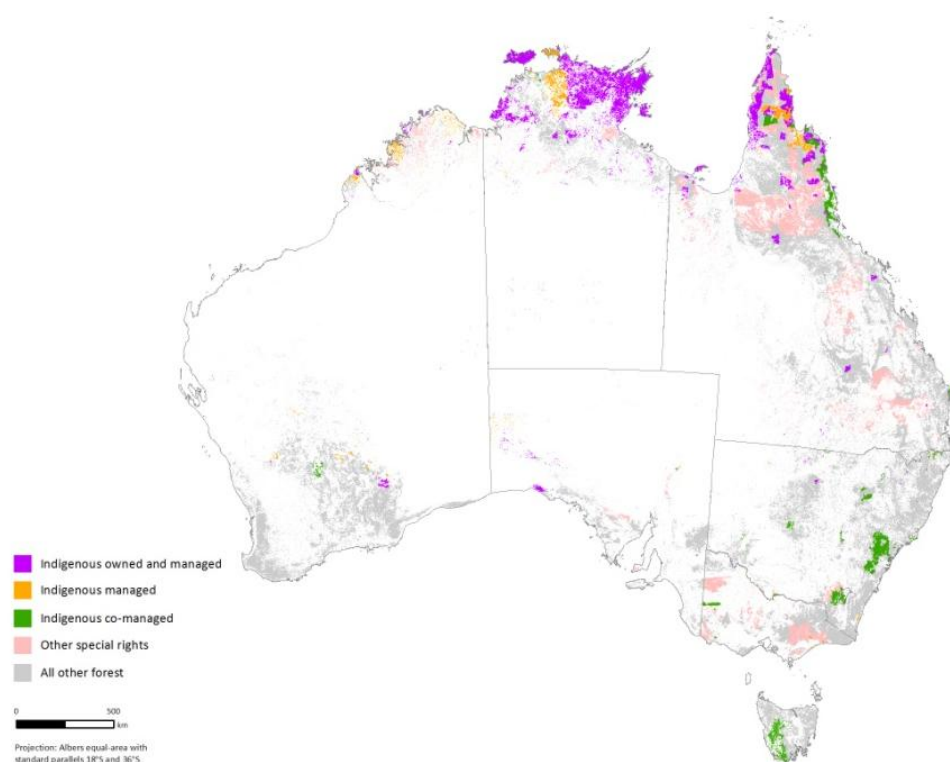
Table 10 Areas of Indigenous forest by management category and jurisdiction

Land management category	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Australia	Proportion of total Indigenous forest
	Area ('000 hectares)									
Indigenous owned and managed	0	126	8,496	4,057	240	8	5	351	13,283	32%
Indigenous managed	0	28	1,225	1,003	74	0	35	809	3,173	8%
Indigenous co-managed	100	1,886	50	1,625	20	750	171	156	4,759	12%
Other special rights	0	429	642	14,107	371	0	2,924	1,371	19,843	48%
Indigenous forest	100	2,469	10,412	20,792	705	757	3,135	2,687	41,058	100%
Proportion of total Indigenous forest	0.2%	6%	25%	51%	1.7%	1.8%	8%	7%	100%	
Total forest	138	22,681	15,214	51,036	4,565	3,706	8,190	19,222	124,751	
Proportion of forest that is Indigenous forest	72%	11%	68%	41%	15%	20%	38%	14%	33%	
Total Indigenous land	106	3,958	84,498	53,503	46,951	1,439	8,510	107,181	306,147	
Proportion of Indigenous land that is forest	94%	62%	12%	39%	1.5%	53%	37%	2.5%	13%	

Note: Totals may not tally due to rounding. 'Indigenous forest' is forest on Indigenous land

The area of the Indigenous forest estate in Australia is 41 million hectares (33 per cent of Australia's forest area). Approximately half (20 million hectares, 48 per cent of the total Indigenous forest estate) is classified as Other special rights, and this is dispersed through Australia's forest area (Map 3). The majority of the remainder of the Indigenous forest estate (13 million hectares, 32 per cent of the total Indigenous forest estate) is classified as Indigenous owned and managed, and is mainly present in contiguous areas in the northern part of the Northern Territory, and the Cape York peninsula, Queensland.

Map 3 The Indigenous forest estate dataset by management category



Note: 'All other forest' is forest that is not Indigenous forest.

Source: Australian Bureau of Agricultural and Resource Economics and Sciences

The greatest areas of Indigenous forest estate in Australia are in Queensland (21 million hectares, 51 per cent of the total Indigenous forest estate) and the Northern Territory (10 million hectares, 25 per cent of the total Indigenous forest estate). Over half of the forest in the Northern Territory (68 per cent) and the Australian Capital Territory (72 per cent) is classified as Indigenous forest, while only 11 per cent of the forest area of New South Wales, 14 per cent of the forest area of Western Australia, and 15 per cent of the forest area of South Australia is identified as Indigenous forest using the datasets available to this analysis. The predominant management category of Indigenous land differs in different jurisdictions.

The proportion of Indigenous land that is forested (and thus classified as Indigenous forest) varies substantially, between 94 per cent for the Australian Capital Territory to 2.5 per cent in Western Australia and 1.5 per cent in South Australia. This reflects the location of Indigenous land in these jurisdictions, from the forested and Indigenous co-managed conservation reserves that occupy much of the total area of the Australian Capital Territory, to the non-forested Indigenous lands in the drier regions of Western Australia and South Australia.

The Indigenous forest estate dataset can also be used to analyse the tenure of Indigenous forests (Table 11). The distribution of the Indigenous forest estate by NFI tenure category is shown in Map 4.

The largest areas of the Indigenous forest estate are found on leasehold or private land, together totalling 30 million hectares (72 per cent of the total Indigenous forest estate). A large area of forest occurs on Indigenous land of private tenure in the northern part of the Northern Territory (as Land Rights lands and Community Living Areas) and on the Cape York peninsula, Queensland (as Indigenous Protected Areas), and mostly comprises Indigenous owned and managed forest. Large areas of the Indigenous forest estate on leasehold tenure occur in inland northern Queensland, as forest with Other special rights (lands under Native Title and Indigenous Land Use Agreements), as well as a smaller portion that is Indigenous owned and managed.

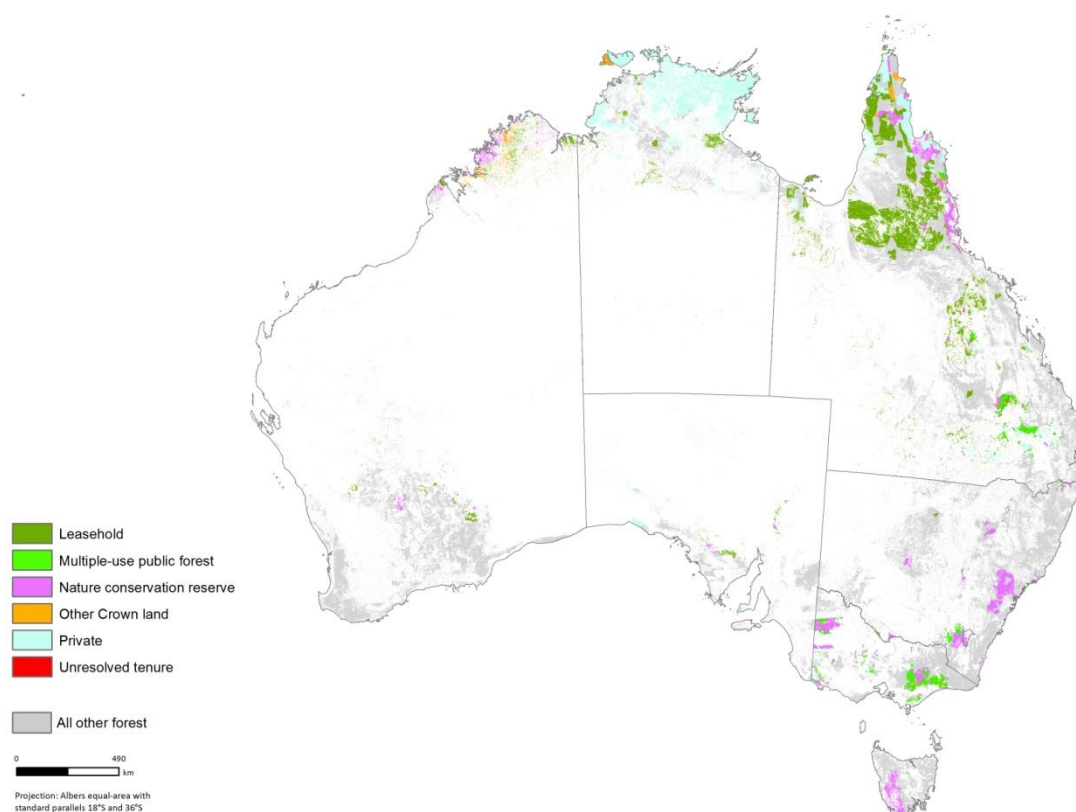
The component of the Indigenous forest estate that is on nature conservation reserve tenure (including on WHAs) totals 7.5 million hectares (18 per cent of the total Indigenous forest estate) and is found in a number of areas, such as the Blue Mountains in New South Wales, western Tasmania, and north-east Queensland. Indigenous forest on nature conservation reserve tenure is predominantly Indigenous co-managed forest.

A smaller portion of the Indigenous forest estate (2.5 million hectares, 6 per cent of the total area of Indigenous forest) occurs on multiple-use forest land as forest with Other special rights. This includes forest in eastern Victoria under Native Title determination, and forest in inland south-east Queensland on Indigenous Land Use Agreement areas.

Table 11 Areas of Indigenous forest by management category and tenure

	Leasehold	Multiple-use public forest	Nature Conservation Reserve	Unresolved tenure	Other Crown Land	Private	Total
Management category	Area ('000 hectares)						
Indigenous owned and managed	2,483	14	133	0	192	10,461	13,283
Indigenous managed	299	0	1,326	0	9	1,539	3,173
Indigenous co-managed	364	81	4,103	8	57	145	4,759
Other special rights	12,080	2,406	1,919	196	1,076	2,166	19,843
Total Indigenous forest	15,225	2,502	7,481	205	1,334	14,311	41,058
Proportion of total Indigenous forest	37%	6%	18%	0.5%	3%	35%	100%
Total forest	48,558	11,124	21,489	874	8,157	34,549	124,751
Proportion of forest that is Indigenous forest	31%	22%	35%	23%	16%	41%	33%

Note: Totals may not tally due to rounding

Map 4 The Indigenous forest estate dataset by tenure category

Note: 'All other forest' is forest that is not Indigenous forest.

Source: Australian Bureau of Agricultural and Resource Economics and Sciences

The Indigenous forest estate dataset can also be used to analyse the forest types on Indigenous land (Table 12). The most abundant forest type on Indigenous land is eucalypt medium woodland (18 million hectares, 43 per cent of total Indigenous forest), reflecting the abundance of this forest type in Australia's forest more generally.

However, the Indigenous forest estate includes higher proportions of eucalypt low open forest (68 per cent of the total area of that forest type), mangrove forest (57 per cent), melaleuca forest (52 per cent), rainforest (48 per cent) and eucalypt low woodland forest (47 per cent), even though forests on Indigenous land comprise only 33 per cent of Australia's total forest area. This reflects the greater proportion of the Indigenous forest estate that is located in northern and inland Australia where a greater proportion of these forest types is located. A large proportion of Indigenous mangrove forest is in the Indigenous owned and managed category, reflecting the coastal location of these forests in Queensland and the Northern Territory. A large proportion of Indigenous rainforest is in the Indigenous co-managed category, reflecting the proportion of Indigenous rainforest in WHAs and nature conservation reserves such as the Blue Mountains in New South Wales, western Tasmania, and north-east Queensland.

Table 12 Areas of Indigenous forest by management category and forest type

Forest type	Indigenous owned and managed	Indigenous managed	Indigenous co-managed	Other special rights	Total	Proportion of total Indigenous forest	Proportion of total area of forest type
	Area ('000 hectares)						
Acacia	334	135	28	1,595	2,093	5%	21%
Callitris	9	0	80	156	245	0.6%	11%
Casuarina	73	12	94	102	280	0.7%	22%
Eucalypt	10,830	2,428	3,235	14,574	31,065	76%	34%
Eucalypt Mallee Open	4	0	30	25	60	0.1%	7%
Eucalypt Mallee Woodland	346	95	253	835	1,527	4%	13%
Eucalypt Low Closed	10	1	1	4	16	0.04%	41%
Eucalypt Low Open	449	44	64	917	1,475	4%	68%
Eucalypt Low Woodland	469	215	93	1,101	1,877	5%	47%
Eucalypt Medium Closed	51	6	8	30	95	0.2%	38%
Eucalypt Medium Open	3,821	539	1,178	2,065	7,603	19%	39%
Eucalypt Medium Woodland	5,671	1,525	1,317	9,003	17,516	43%	36%
Eucalypt Tall Closed	0	0	0	30	30	0.1%	21%
Eucalypt Tall Open	9	3	257	452	720	2%	15%
Eucalypt Tall Woodland	0	0	34	112	146	0.4%	22%
Mangrove	320	59	32	107	518	1.3%	57%
Melaleuca	838	203	88	2,158	3,286	8%	52%
Rainforest	379	198	990	155	1,722	4%	48%
Other native forest	466	138	214	759	1,577	4%	24%
Total native forest	13,249	3,173	4,761	19,606	40,786	99%	33%
Industrial plantations and Other forest ^a	34	1	0	236	271	0.66%	12%
Total forest	13,283	3,173	4,759	19,843	41,058	100%	33%

^a Areas by Indigenous management category of Industrial plantations and Other forest cannot be reported separately as not all Industrial plantations data are reported spatially

Comparison with older Indigenous forest estate datasets

The area of forest in the 2006 Indigenous forest estate dataset reported in Indicator 6.4a of SOFR 2008 (MIG 2008) was 21 million hectares, in an Indigenous land estate of 123 million hectares. The area of forest in the 2011 Indigenous forest estate dataset reported here, and published in *Australia's Indigenous forest estate (2013)* (ABARES 2014c), is 41 million hectares (Table 10), in an Indigenous land estate of 306 million hectares (Table 8).

The location of the land areas in the 2006 and 2011 Indigenous estate datasets are compared in Table 9 and Map 2. However, a direct comparison of the location of forest areas in the 2006 and 2011 Indigenous forest estate datasets is less easy to make, because changes to the reported area of forest occurred between these dates (changes between the 2006 NFI forest area reported in SOFR 2008, and the 2011 NFI forest area reported in SOFR 2013), in addition to the changes

to the area of Indigenous lands. The comparison shown in Table 13 and Map 5 was thus made using solely the NFI 2011 forest extent, giving a view of the increase in the area of forest on Indigenous land that is due specifically to improvements in the identification of Indigenous land.

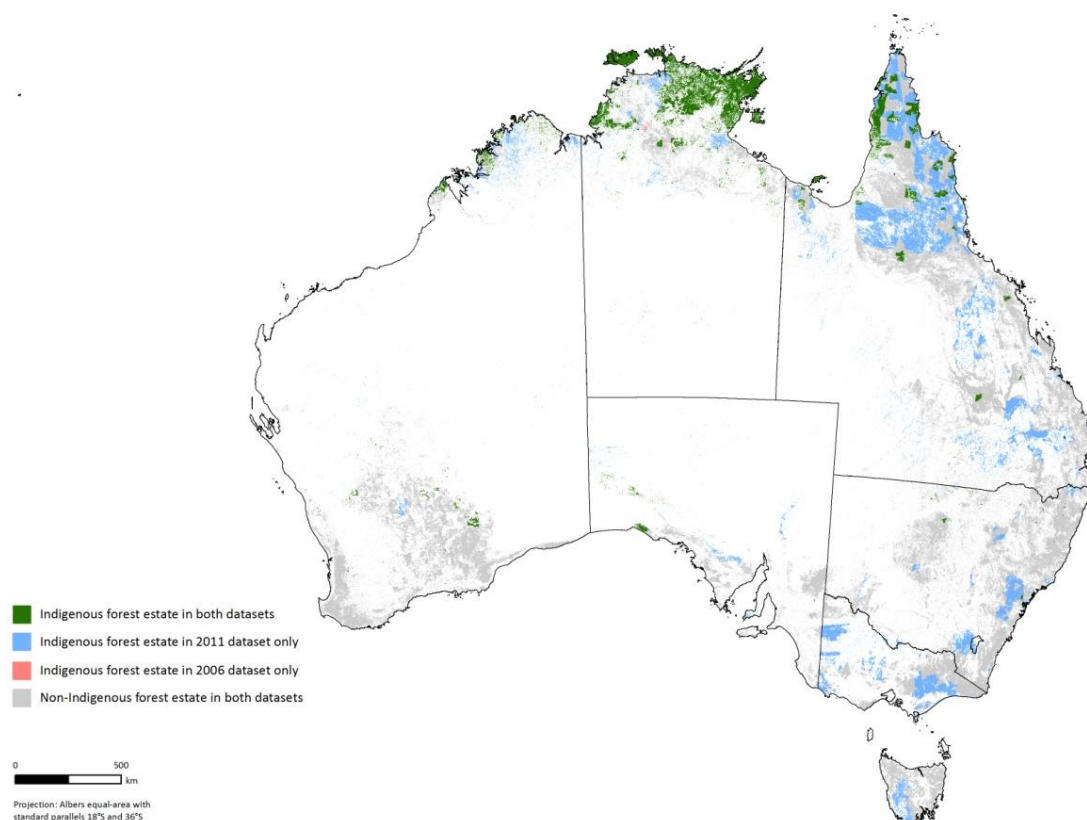
Table 13 Comparison of the area of NFI 2011 forest in the 2006 and 2011 Indigenous forest estate datasets

Description	Area ('000 hectares)
Forest in both 2006 and 2011 Indigenous forest estate datasets	13,879
Forest in 2011 Indigenous forest estate dataset only	27,178
Forest in 2006 Indigenous forest estate dataset only	43
Forest in neither the 2006 Indigenous forest estate nor the 2011 Indigenous forest estate dataset	83,651
Total forest area of Australia	124,751

Note: The 2006 Indigenous forest estate dataset was recalculated based on the NFI 2011 forest extent as published in SOFR 2013 (MIG & NFISC 2013), to allow comparison with the 2011 Indigenous forest estate dataset compiled using the same forest extent.

The additional 27 million hectares of forest on Indigenous land reported in the 2011 dataset is distributed widely across Australia's forest area (Map 5). While all four Indigenous land management categories were represented in this additional area of forest on Indigenous land, the majority of the increase was in forest classified as Other special rights, through inclusion of forests on Native Title lands and Indigenous Land Use Agreement areas.

Map 5 Changes in the Indigenous forest estate datasets between 2006 and 2011



Note: Forest area footprint in map based on the NFI 2011 forest extent

Source: ABARES

4 Discussion

Australia's Indigenous forest estate by management category

This work has identified four nationally consistent Indigenous estate categories that indicate the degree of management control that Indigenous people have over both forested and non-forested land.

Each category was derived from combination of a number of Indigenous land datasets, through a process that identified the different components of Indigenous land, and the range of legislation and programs that provide Indigenous communities or groups with opportunities to own, manage, access, use or be involved in the management of land.

Together, these four Indigenous estate categories include 41 million hectares of Australia's forest:

- **Indigenous owned and managed forest** comprises forest on freehold lands that are both owned and managed by Indigenous communities. A total of 13 million hectares of forest are categorised as Indigenous owned and managed.
- **Indigenous managed forest** comprises forest on lands managed but not owned by Indigenous communities, plus forest on lands that are owned by Indigenous communities but are covered by formal shared management agreements with Australian and state and territory government agencies. A total of 3.2 million hectares of forest are categorised as Indigenous managed.
- **Indigenous co-managed forest** comprises forest on lands that are owned and managed by other non-Indigenous parties, but have formal and legally binding agreements in place to include input from Indigenous people in the process of developing and implementing relevant management plans, such as certain nature conservation reserves and World Heritage Areas. A total of 4.8 million hectares of forest are categorised as Indigenous co-managed.
- **Other special rights forest** comprises forest on lands subject to Native Title determinations and active Indigenous Land Use Agreements that provide rights of access or legal requirements for consultation with the Indigenous community before development activities. These agreements are independent of tenure and, in most cases, do not grant ownership of or management rights over land to Indigenous communities. They can provide for the right to access areas of cultural significance, or a legal requirement for consultation with the local Indigenous community before any major development activities take place. Land is classified as Other special rights if it is not also present in any higher-ranked category. A total of 20 million hectares of forest are categorised as Other special rights.

Tables 10, 11 and 12 and Maps 3 and 4 present information on the areas of forest on Indigenous land in different management categories, analysed by jurisdiction, tenure and forest type.

A detailed description of the lands within each of the 12 input datasets is provided in Indicator 6.4c of SOFR 2013 (MIG & NFISC 2013).

Reporting on Australia's Indigenous forest estate

The four Indigenous forest estate management categories were used to report nationally in SOFR 2013 against Indicator 6.4a ("Area of forest to which Indigenous people have use and rights that protect their special values and are recognised through formal and informal management regimes") and Indicator 6.4c ("The extent to which Indigenous values are protected, maintained and enhanced through Indigenous participation in forest management") (MIG and NFISC 2013).

International reporting on Australia's forests occurs through the FAO's Global Forest Resource Assessment (GFRA). For the GFRA 2015, the FAO sought data for reporting against variable 18.2.3 "Forest area that is privately owned by local, tribal and Indigenous communities", but only up to and including the year 2010 (FAO 2012). The 2010 figure supplied by Australia for this variable was based on the earlier estimate of area of forest under Indigenous ownership published in SOFR 2008, but the new Indigenous forest estate dataset developed in the work reported here will allow more accurate reporting by Australia to future GFRA requests. It is anticipated that future reporting requirements for GFRA variable 18.2.3 will be met using two of the four Indigenous forest estate categories now defined, namely 'Indigenous owned and managed' and 'Indigenous managed'.

The spatial data for the new Indigenous forest estate dataset have been published by ABARES as *Australia's Indigenous forest estate (2013)* (ABARES 2014c), including the underpinning Indigenous land estate dataset. The Indigenous forest estate dataset is available for use in potential future projects under the National Indigenous Forestry Strategy, for use by other government agencies involved in natural resource management or cultural resource management, and for use by Indigenous communities and groups.

Appropriate use of the data

The data compiled into the new Indigenous forest estate dataset is suitable for the reporting requirements of the NFI. However, caution should be taken when using the dataset for other purposes.

The four Indigenous land estate categories were developed for the NFI to cover the range of Indigenous involvement in land ownership, management, access and use. The dataset is thus suitable for reporting on Indigenous involvement in natural and cultural resource management, but is less suitable for reporting for other purposes, such as opportunities for Indigenous economic development.

Furthermore, the Indigenous forest estate dataset was developed for reporting on the area of forest on Indigenous land at the national, or state and territory scale. The data is less suitable for accurate reporting or analyses at the regional scale, and much less suitable for accurate reporting or analyses at the local scale, as only limited validation has been undertaken with data providers, land owners or land managers.

Lastly, the data contained in the dataset was current at the time of data collection (2011). However the Indigenous land estate is dynamic and changes regularly. For example, since the data was collected, new Indigenous Protected Areas have been established, formal arrangements for the joint management of additional nature reserves have been entered into, and Native Title claims have been determined. The next national forest layer is expected to carry a 2016 time-stamp.

Gap analysis

This project has resulted in a significant increase in the amount and quality of data used by the NFI to report on the area of forest on Indigenous land, and every effort has been made to ensure all relevant information and data has been collected, but some information is not included in the published Indigenous forest estate dataset, and data gaps exist.

Missing datasets

Several input spatial datasets were not able to be acquired in the time available.

Data on Indigenous owned and managed lands were not available for New South Wales, Queensland, South Australian, Tasmanian and Victorian Aboriginal Land Councils/Trusts, or for the ACT which does not have an Aboriginal Lands Council/Trust. The ILC's Indigenous estate dataset (the DLILI, produced in 2001) was used to fill in data gaps in these jurisdictions where possible, especially in regards to lands granted to Indigenous corporations or land councils prior to 2001. The 2001 DLILI database had also been used previously by the NFI for reporting on the area of forest on Indigenous land, and so was suitable as a baseline dataset for this work. However, Australia's 2011 Indigenous forest estate dataset may not include some Indigenous owned and managed lands acquired after 2001 in New South Wales, Queensland, South Australian, Tasmania, Victoria or the ACT, and which are not included in DLILI.

Spatial information and data that were identified during this work but that were not able to be included in the current Indigenous forest estate dataset, and for which DLILI was used as a surrogate, are listed in Table 14. It is possible that areas incorporated into the Indigenous forest estate dataset from DLILI were not attributed to the correct component of the definition of Indigenous land or to the correct land management category.

Table 14 Spatial datasets not included in the Indigenous forest estate dataset and for which the DLILI was used as a surrogate

Jurisdiction	Legislation/program	Information content
Commonwealth	Aboriginal Land Grant (Jervis Bay Territory) Act 1986	Jervis Bay territory Aboriginal Community Council land boundaries
	Aboriginal Land (Lake Condah and Framlingham Forest) Act 1987	Victorian Aboriginal Lands Trusts land boundaries
New South Wales	Aboriginal Land Rights Act 1983	New South Wales Aboriginal Land Council land boundaries
Queensland	Aboriginal Land Act 1991 and Torres Strait Islander Land Act 1991	Queensland Aboriginal Lands Act and Torres Strait Islander Land Act land boundaries
South Australia	Aboriginal Lands Trust Act 1966	South Australia Aboriginal Lands Trust land boundaries
	Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981	Anangu Pitjantjatjara Yankunytjatjara land boundaries
	Maralinga-Tjarutja Land Rights Act 1984	Maralinga-Tjarutja land boundaries
Tasmania	Aboriginal Lands Act 1995	Tasmania Aboriginal Lands Council land boundaries

Jurisdiction	Legislation/program	Information content
Victoria	Aboriginal Lands Act 1970	Victorian Aboriginal Lands Trusts land boundaries
	Aboriginal Lands (Aborigines' Advancement League (Watt Street, Northcote) Act 1982	Victorian Aboriginal Lands Trusts land boundaries
	Aboriginal Land (Northcote Land) Act 1989	Victorian Aboriginal Lands Trusts land boundaries
	Aboriginal Lands Act 1991	Victorian Aboriginal Lands Trusts land boundaries
	Aboriginal Lands (Manatunga Land) Act 1992	Victorian Aboriginal Lands Trusts land boundaries

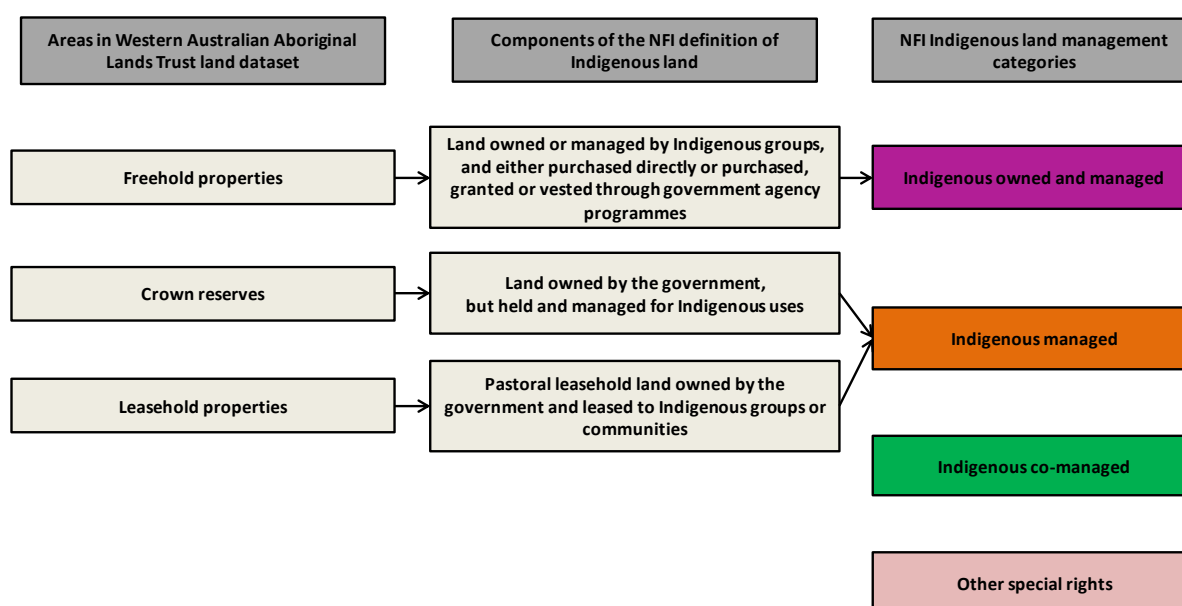
Note: This table shows lands included in the Indigenous forest estate dataset by virtue of their inclusion in the ILC Database of Legal Indigenous Land Interests (DLILI) as at 2001.

A few more recent datasets were also not able to be incorporated in the current Indigenous forest estate dataset. An example is data on lands covered by the Traditional Owner Settlement Act (Victoria): traditional owner settlement lands that are Conservation Reserves were captured through CAPAD (Table 3 and Table 4), but data on Crown lands granted as freehold were not received before project completion and are not included.

Dissection of input data

Each individual dataset collected for this project was mapped onto a single NFI Indigenous land management category (Figure 4). However, some of these datasets include lands that could fall under different components of the NFI definition of Indigenous land, and that could legitimately have been dissected into more than one NFI Indigenous land category. For example, the Western Australian Aboriginal Lands Trust lands dataset contains information that matches with three of the components of the NFI definition of Indigenous estate and two of the NFI Indigenous land categories (Figure 5).

Figure 5 Potential allocation of Western Australian Aboriginal Land Trust data to more than one of the NFI Indigenous land estate categories



Note: The tenure field in the Value Attributes Table of the Western Australian Aboriginal Lands Trust lands dataset identifies whether individual land parcels in the dataset are Crown land, leasehold land or private land

The separation of individual input datasets across land categories was not undertaken during this project because of time and budget constraints. Based on the relatively small area of Indigenous freehold and leasehold land in the Western Australian Aboriginal Land Trust estate, the impact on the final Indigenous forest estate dataset would be minimal.

Data validation and feedback

Time and budget constraints prevented the undertaking of any specific data validation for this project. The acquisition of feedback on the final dataset from the agencies that provided input data could confirm or increase its accuracy, and identify further gaps in the data.

Provision of information to Indigenous communities and groups, including Land Councils and Indigenous corporations, would also enhance understanding of how information on Indigenous lands is reported through the NFI.

Development of related products

Detailed tenure analysis of the Indigenous land and forest estate datasets

Initial tenure analysis has been achieved for the Indigenous forest estate dataset by intersection with the NFI forest tenure layer, using the NFI's own tenure code and tenure type attributes. However, this output has not been compared to the tenure information in the Value Attributes Tables (VATs) for each of the input datasets used to create the Indigenous estate. The tenure information associated with some input datasets is likely to be more accurate: for example, the tenure field in the VAT of the Western Australian Aboriginal Lands Trust lands dataset identifies whether land parcels are Crown land, leasehold land or private land (see Figure 5). Other input datasets, such as the National Native Title Tribunal (NNTT) datasets, including Indigenous Land Use Agreement Areas (ILUAs), do not contain tenure information, and so the NFI tenure data would be used for these areas. Integrating the tenure information associated with each input Indigenous estate dataset with the NFI tenure layer would produce a more accurate and complete overall output.

For the GFRA 2015, the FAO sought data for variable 18.2.3 "Forest area that is privately owned by local, tribal and Indigenous communities" (FAO 2012). Currently, freehold land owned and managed by Indigenous communities is reported under the 'Indigenous owned and managed' category, while lands owned by Indigenous communities where formal shared management agreements with Australian and state and territory government agencies are in place are reported under the 'Indigenous managed' category. However, the 'Indigenous managed' category also includes lands managed but not owned by Indigenous communities. A spatial dataset that explicitly identified lands that are Indigenous owned would allow direct reporting against this GFRA variable, should the same variable be used in the GFRA 2020.

Data on forests on Indigenous land as an input to a forest management intent dataset

Land tenure is not the sole determinant of management intent: for example, forests managed for conservation are present not just on nature conservation reserves, but also on private land, leasehold land, multiple-use forest land, and other Crown land. The NFI is considering creation of a data layer describing the management intent for different forest layers. The categories in the Indigenous forest estate database would be a useful input to this analysis.

Ongoing collection of data

The Indigenous land estate in Australia is dynamic and changes regularly. A number of datasets have been identified as candidate datasets for collection for future NFI Indigenous estate projects (Table 15). This list includes both the 12 input datasets used for this project and additional potentially useful datasets. Integration of all these datasets would lead to a more complete coverage of Indigenous land and Indigenous forest.

Table 15 Datasets identified for collection for future NFI indigenous estate projects

Dataset	Status
Indigenous owned and managed land	
Indigenous Protected Areas	Used in this work
Northern Territory Land Rights Lands	Used in this work as part of a larger, combined dataset
Northern Territory Community Living Areas (enhanced freehold)	Used in this work as part of a larger, combined dataset
Jervis Bay Territory lands (Freehold portion)	Not available for this work
New South Wales Local Aboriginal Land Council lands	Not available for this work
Queensland <i>Aboriginal and Torres Strait Islander Land (Providing Freehold) Act</i> lands – new legislation introduced in QLD in 2014.	Not available for this work but received after project completed
Queensland <i>Aboriginal Land Act</i> and <i>Torres Strait Islander Land Act</i> lands	Not available for this work but received after project completed
Queensland Deed of Grant in Trust lands	Used in this work
South Australian Aboriginal Lands Trust lands	Not available for this work
South Australian Anangu Pitjantjatjara Yankunytjatjara lands	Not available for this work
South Australian Maralinga-Tjarutja Lands	Not available for this work
Tasmanian Aboriginal Land Council lands	Not available for this work but received after project completed
Victorian Aboriginal land council or corporation lands (various)	Conservation reserve component used in this work; freehold component received after project completed
Victoria <i>Traditional Owner Settlement Act 2010</i> lands (Freehold portion)	Not available for this work
Western Australian Aboriginal Lands Trust land (Freehold portion)	Used in this work as part of a larger, combined dataset
ILC purchased, granted and vested land	Used in this work
Indigenous managed land	
Western Australian Aboriginal Lands Trust land (Leasehold and Crown Reserve portion)	Used in this work as part of a larger, combined dataset
Western Australian Indigenous pastoral leasehold properties	Used in this work as part of a larger, combined dataset
Leased-back nature reserves	Used in this work
Indigenous co-managed land	
Nature reserves with joint or co-management arrangements	Used in this work
World Heritage Areas with Indigenous advisory panels	Used in this work
Other special rights land	
Native Title determinations	Used in this work
Indigenous Land Use Agreements	Used in this work

Any new data compilation could also consider the Western Australian South West Native Title Settlement 'Noongar Settlement' lands. These lands in the south-west of Western Australia include jointly managed national parks and reserves, crown reserves held in trust and freehold lands held in trust, and pending passage of the Noongar Recognition Bill in the Western Australian parliament could come into the Indigenous estate in 2016¹⁰.

¹⁰ See <https://www.dpc.wa.gov.au/lantu/Claims/Pages/SouthWestSettlement.aspx> and <https://www.dpc.wa.gov.au/lantu/MediaPublications/Documents/Updated%20SWS%20QAs%20March%202015.pdf>.

Appendix A: Linkages between legislation and government programs and Indigenous communities

This Appendix describes how each of the legislation and government programs identified during this project (see Table 2) enable the Indigenous community to own, manage, jointly manage, use, access, or be consulted in the management of land, and within that forest.

Australian Capital Territory

Nature Conservation Act 1980

The Act enables the establishment of National Parks. An agreement in 2001 between the ACT government and Indigenous Native Title claimant groups established a joint Interim Namadgi Advisory Board. This board ceased to exist in 2006, but cooperative management of the park is ongoing as outlined in the 2010 plan of management for Namadgi National Park.

Commonwealth

Aboriginal Land Fund Act 1974 (Repealed)

The Act established the Aboriginal Land Fund, which was used to purchase lands on the behalf of Indigenous Australians. The Act also established the Aboriginal Land Fund Commission (ALFC), which administered the fund. Lands purchased by the fund were granted to Aboriginal community land trusts or corporations. The ALFC operated between 1974 and 1980.

National Parks and Wildlife Conservation Act 1975 (Repealed)

Amendments to the Act in created Uluru-Kata Tjuta National Park and Kakadu National Park, and enabled the Traditional Owners to lease the Parks back to the Commonwealth government to be jointly managed. The Act was repealed and replaced by the *Environment Protection and Biodiversity Conservation Act 1999*.

Aboriginal Land Rights (Northern Territory) Act 1976

The Act established two Aboriginal Land Councils in the Northern Territory (Central and Northern). Two additional Land Councils (Anindilyakwa and Tiwi) were established later under the Act, by special gazette. The Act granted ownership of existing Aboriginal Reserves in the Northern Territory to Aboriginal Land Trusts as inalienable freehold title. The Act also enabled claims to be made over other vacant Crown lands and Crown lands that were already being leased by Indigenous groups, where a traditional relationship with the land could be proven. All lands granted under the Act are held and managed by the relevant Land Trusts for the benefit of the Traditional Owners, with administrative support and direction provided by the relevant Land Council. Claims over land could be made until 1997, however any claims that had already been submitted continued to be processed after this date.

The Act was amended in 1985 to grant ownership of Uluru-Kata Tjuta National Park (then known as the Ayres Rock-Mount Olga National Park) to the Traditional Owners. The National Park was then leased back to the Commonwealth under amendments to the *National Parks and Wildlife Conservation Act 1975* (which has since been replaced by the *Environment Protection and Biodiversity Conservation Act 1999*), to be jointly managed.

Aboriginal Development Commission Act 1980 (Repealed)

The Act repealed the *Aboriginal Land Fund Act 1974* and abolished the ALFC and the Aboriginal Land Fund. It established the Aboriginal Development Commission (ADC) and a General Fund that was administered by the ADC. This General Fund was used to purchase lands to be granted to Aboriginal community land trusts or corporations, or provide funds to Aboriginal community land trusts and corporations to purchase and/or manage lands. Any lands previously held by the ALFC were vested in the ADC upon its establishment. The ADC operated between 1980 and 1990.

Aboriginal Land Grant (Jervis Bay Territory) Act 1986

This Act established the Wreck Bay Aboriginal Community Council and granted it vacant Crown land in the Jervis Bay Territory, including the Wreck Bay village. In 1995 an additional land grant of the Jervis Bay National Park and the Jervis Bay Botanic Gardens was made to the Council under the Act. These were later renamed respectively the Booderee National Park and Booderee Botanic Gardens, and leased back to the Commonwealth Government to be jointly managed under provisions in *National Parks and Wildlife Conservation Act 1975* (which has since been replaced by the *Environment Protection and Biodiversity Conservation Act 1999*).

Aboriginal Land (Lake Condah and Framlingham Forest) Act 1987

This legislation was enacted by the Commonwealth at the request of the Victorian state government to grant land at Lake Condah to the Kerrup-Jmara Elders Aboriginal Corporation, and land at Framlingham Forest to the Kirrae Waurrong Aboriginal Corporation.

Aboriginal and Torres Strait Islander Commission Act 1989 (Repealed)

The Act repealed the *Aboriginal Development Commission Act 1974* and abolished the ADC and the General Fund. The Act established the Aboriginal and Torres Strait Islander Commission (ATSIC) and, under it, 60 individual ATSIC Regional Councils. All lands that were previously held by the ADC were vested in the ATSIC upon its establishment. The Act also established the Regional Land Fund, which was administered by the ATSIC and was used to purchase lands to be granted to Aboriginal community land trusts or corporations, or to provide funds to Aboriginal community land trusts and corporations to purchase and/or manage lands. The ATSIC operated between 1990 and 2005, however the land acquisition functions of the agency ceased in 1997, shortly after the establishment of the Indigenous Land Corporation (ILC), which assumed the role of the Commonwealth's principal land acquisition agency from 1995.

Native Title Act 1993

This Legislation was enacted in response to the Australian High Court's ruling in *Mabo v Queensland (no. 2)* in 1992. The Act established a procedure for Indigenous people to lodge applications for the recognition of Native Title under Australian law. The Act also established the National Native Title Tribunal (NNTT), which considers and assesses all Native Title claim applications and provides advice to the Federal Court of Australia, which then makes the final ruling on whether or not Native Title exists. Native Title rights can include the right to live on the land, access the land for traditional activities, visit and protect important sites, hunt and gather traditional resources, and teach land and custom on the land. Native Title does not grant ownership of land, however can grant exclusive possession rights over Crown lands or lands already held by or for Indigenous people.

The Act was amended in 1998 to allow governments, companies and native title holders (or claimants) to negotiate agreements about future developments on lands through Indigenous

Land Use Agreements (ILUAs). ILUAs are legally binding agreements that are developed by all relevant parties and registered with the NNTT. ILUAs can be made over lands with or without Native Title determinations and, on a case-by-case basis, lay out arrangements over issues such as land access, compensation, future legislation, cultural heritage protection, infrastructure development, and employment and economic opportunities.

The Act also established the Native Title Land Fund (subsequently renamed the National Aboriginal and Torres Strait Islander Land Fund in 1995). This fund was administered by the ATSIC to purchase freehold lands for Indigenous communities who were unable to claim Native Title over their traditional lands as it had been extinguished by historical acts.

Land Fund and Indigenous Land Corporation (ATSIC Amendment) Act 1995

This Act created the Indigenous Land Corporation (ILC), repealed the land fund provisions from the *Native Title Act 1993*, and inserted new land fund provisions in the *Aboriginal and Torres Strait Islander Commission Act 1989*. The ILC became the Commonwealth's lead Indigenous land acquisition and land management agency from 1995.

Indigenous Protected Areas program

The Indigenous Protected Area (IPA) program was initiated in 1995 by the Commonwealth government, with the aim of establishing partnerships with traditional owners for the creation of conservation reserves on Indigenous owned and managed lands. IPAs do not have a formal legal framework in place like other National Parks and reserves, but are instead voluntarily declared by traditional owners. All IPAs must have a ratified management plan before they can be recognised. Funding to develop, implement and monitor the effectiveness of these management plans is available from the Commonwealth. IPAs contribute significantly to Australia's National Reserve System.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Act 1999* replaces the *National Parks and Wildlife Conservation Act 1975*. The act enables the declaration of Commonwealth nature conservation reserves, including reserves on Indigenous-owned lands. The Act requires that these reserves are managed by a Board of Management, which is predominantly made up of traditional owners. These provisions apply to Kakadu National Park, Uluru-Kata Tjuta National Park, Booderee National Park and the Booderee Botanic Gardens. The Act also provides for Indigenous consultation in the management of other Commonwealth reserves through the relevant Land Council.

Aboriginal and Torres Strait Islander Act 2005

This Act abolished the Aboriginal and Torres Strait Islander Commission and renamed the ATSIC Act as the *Aboriginal and Torres Strait Islander Act 2005* (ATSI Act). The ATSI Act re-established all provisions for the ILC, but also inserted some additional provisions to enhance the agency's powers. Monies from the ATSIC's Regional Land Fund and all properties held by the ATSIC were vested in the ILC on the commencement of the Act.

New South Wales

Aborigines Act 1969 (Repealed)

Created the NSW Aboriginal Lands Trust (NSW ALT), transferred all existing Aboriginal missions and reserves into the Trust's ownership and management, and enabled the Trust to claim additional vacant Crown lands for the use and benefit of Aboriginal people.

National Parks and Wildlife Act 1974

The Act, as amended by the *National Parks and Wildlife Amendments (Aboriginal Ownership) Act 1996*, enables land that is owned by a LALC to be leased to the state government and jointly managed as a National Park. The Act also enables formal co-management agreements to be made between the government and the Indigenous community over government owned National Parks and other nature conservation reserves.

Aboriginal Land Rights Act 1983

Abolished the NSW ALT and established the NSW Aboriginal Lands Council as a statutory authority, along with 121 individual Local Aboriginal Land Councils (LALCs). The Act transferred the ownership of all lands previously held by the NSW ALT to the relevant LALCs, and enabled them to claim vacant Crown land (and some Crown lands that are reserved for nature conservation, with special conditions attached) and purchase freehold lands.

Northern Territory

Lands Acquisition Act 1978

Enables land to be excised from pastoral leases for the purpose of being used as Aboriginal Community Living areas (referred to as enhanced freehold lands). This function was enabled through the *Miscellaneous Acts Amendment (Aboriginal Community Living Areas) Act 1989*.

Cobourgh Peninsula Aboriginal Land Sanctuary & Marine Park Act 1981

Created the Cobourgh Peninsula National Park and granted ownership of the National Park to an Aboriginal Lands Trust. The park is now named the Garig Gunak Barlu National Park. The Act legislates that the land is a National Park in perpetuity and is jointly managed by the Aboriginal owners and the territory government.

Pastoral Land Act 1992

Enables the Northern Territory government to lease or grant land to an Aboriginal Land Trust, for use as Aboriginal Community Living Areas (referred to as enhanced freehold lands). This function was enabled through the *Miscellaneous Acts Amendment (Aboriginal Community Living Areas) Act 1989*.

Parks and Reserves (Framework for the Future) Act 2003

Granted ownership of a number of National Parks and Reserves to Aboriginal Land Trusts, with these lands being required to remain National Parks and be jointly managed by the Aboriginal owners and the territory government. Also established formal joint management arrangements over a number of territory government-owned National Parks and reserves, and identified some Aboriginal-owned lands, granted through the *Commonwealth Aboriginal Land Rights (Northern Territory) Act 1976*, to become new jointly managed National Parks and Reserves.

Queensland

Land Act 1962 (Repealed)

Amendments to this Act from 1982 to 1988 granted the ownership of former reserves and missions to Aboriginal Community Councils, granted through Deed of Grant in Trust (DOGIT) arrangements.

Aboriginal Land Act 1991 and Torres Strait Islander Land Act 1991

Enable Aboriginal and Torres Strait Islander land trusts to be formed and to apply for freehold land grants to be made to those trusts. Applications for land grants can be made over DOGIT lands, Aboriginal or Torres Strait Islander reserve lands, unallocated Crown lands and National Parks in the Cape York region.

Nature Conservation Act 1992

This Act enables the dedication of lands as National Park (Aboriginal land) or National Park (Torres Strait Islander land). The Act was amended by the *Cape York Peninsula Heritage Act 2007* to also include the National Park (Cape York Peninsula Aboriginal Land) category. The ownership of the parks is transferred to an Indigenous Traditional Owner land trust. All lands must remain as National Parks and are jointly managed with the state government.

Land Act 1994

Replaced the *Land Act 1962*. The Act appoints Aboriginal Shire Councils (previously known as Aboriginal Community Councils) as trustees of the Aboriginal DOGIT lands. The Aboriginal Shire Councils have responsibilities as a local government under the *Local Government Act 2009*, and also leasing responsibilities under the *Aboriginal Land Act 1991*. The Act also enables land to be leased by or for Indigenous groups.

South Australia

Aboriginal Lands Trust Act 1966

Established the South Australian Aboriginal Lands Trust (SA ALT). All former Aboriginal missions and reserves were vested in the Trust on its establishment. Additional lands have since been acquired through Crown land grants and the purchase of freehold land. The SA ALT holds and manages these lands on behalf of all Aboriginal people of South Australia. Under the Act, lands can be leased by Indigenous community groups.

National Parks and Wildlife Act 1972

Amendments to the Act in 2004 enable the establishment of statutory co-management agreements between the Aboriginal community and the state government over National Parks and Conservation Parks. These parks can be Aboriginal-owned parks, state-owned parks with a co-management board, or state-owned parks with a co-management advisory structure.

Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981

Created the Anangu Pitjantjatjara Body Corporate and granted it title over a former Aboriginal reserve and several former leasehold properties in the north-west of the state.

Maralinga-Tjarutja Land Rights Act 1984

Created the Maralinga-Tjarutja Body Corporate and granted it title over land in west of the state. Amendments were made to the Act upon the declaration of the Mamungari National Park in 2004. Another amendment to the Act in 2009 granted further lands to the body corporate.

Tasmania

Aboriginal Lands Act 1995

The Act established the Aboriginal Land Council of Tasmania and granted it title to a number of land parcels to be held and managed for the benefit of all Aboriginal people in the state. The Act was amended by the *Aboriginal Lands Amendment (Wybalenna) Act 1999* and the *Aboriginal Lands Amendment Act 2005*, to grant additional land parcels to the Land Council, which included some lands that were previously National Parks.

Victoria

Aboriginal Lands Act 1970

Created the Framlingham Aboriginal Trust and granted it title of the Framlingham reserve. Also created the Lake Tyers Aboriginal Trust and granted it title of the Lake Tyers reserve. These parcels were previously held by the state government as temporary Aboriginal Reserves.

Aboriginal Lands (Aborigines' Advancement League) (Watt Street, Northcote) Act 1982

This Act granted ownership of a land parcel in Northcote to the Aborigines' Advancement League (an existing Aboriginal organisation).

Conservation, Forests and Lands Act 1987

This Act, as amended by the *Traditional Owner Settlement Act 2010*, enables Land Management Co-Operative Agreements to be made between Aboriginal groups and the state government over state-owned National Parks and reserves and Aboriginal title lands.

Aboriginal Land (Northcote Land) Act 1989

This Act granted ownership of a land parcel in Northcote to the Aborigines' Advancement League. This parcel is adjacent to the parcel previously granted to the League under the *Aboriginal Lands (Aborigines' Advancement League) (Watt Street, Northcote) Act 1982*.

Aboriginal Lands Act 1991

This Act granted ownership of three land parcels, which were previously Aboriginal mission cemeteries, to the relevant Aboriginal Indigenous community council/cooperative.

Aboriginal Lands (Manatunga Land) Act 1992

This Act granted ownership of a land parcel in Robinvale to the local Aboriginal community cooperative.

Traditional Owner Settlement Act 2010

This Act provides a framework for out-of-court settlements of Native Title claims between the Victorian government and Native Title claimants. Under the Act, the state government can enter into a 'recognition and settlement agreement' that recognises the Traditional Owners rights to

Crown land. These agreements can include Land Agreements, Land Use Activity Agreements, Land Management and Co-Operative Agreements, Funding Agreements and Natural Resource Agreements.

The Gunaikurnai Land and Waters Aboriginal Corporation Traditional Owner Land Management Agreement has granted ownership of 10 parks and reserves (as 'Aboriginal title') and some freehold lands (formerly Crown lands) to the Gunaikurnai people. These parks and reserves must remain as such and be jointly managed with the state government, as legislated by the *Conservation, Forests and Lands Act 1987*. Additional joint management and co-management arrangements are in place over state-owned parks with the Yorta Yorta people, the Gunditjmara people and the Wotjobaluk people.

Western Australia

Aboriginal Affairs Planning Authority Act 1972

This Act created the Western Australian Aboriginal Lands Trust (WA ALT) statutory authority. Former Aboriginal reserves that were held by the Native Welfare Department (and some other state government agencies) were vested in the WA ALT as 'proclaimed' Crown reserves under Part III of the Act. The Trust also has the authority to acquire freehold properties. Additional lands have been vested in the WA ALT as Crown reserves (Aboriginal reserves), pastoral leases or general purpose leases under provisions in the *Lands Administration Act 1997*. The WA ALT acquires, holds and manages land for the use and benefit of Aboriginal people, with administrative assistance from the Western Australian Department of Aboriginal Affairs (known as the Department of Indigenous Affairs since 2011).

Land Administration Act 1997

This Act enables Management Orders over Crown reserves (Aboriginal reserves) to be granted to the WA ALT. The Act also enables pastoral leases and general purpose leases to be granted to the WA ALT. Pastoral leases can also be granted to individual Indigenous corporations under the Act.

Conservation and Land Management Act 1984

This Act enables land that is owned by Aboriginal groups in Western Australia to be leased to the state government to be jointly managed as a National Park. The Act also enables formal co-management agreements to be made between the government and the Indigenous community over government-owned National Parks and other nature conservation reserves.

References

ABARES (Australian Bureau of Agricultural and Resource Economics and Statistics) 2014a, *Forests of Australia (2013)*. Spatial dataset, National Forest Inventory, ABARES, Canberra

—— 2014b, *Tenure of Australia's forests (2013)*. Spatial dataset, National Forest Inventory, ABARES, Canberra.

—— 2014c, *Australia's Indigenous forest estate (2013)*. Spatial dataset, National Forest Inventory, ABARES, Canberra

Australian Forestry Standard (2013) Sustainable Forest Management. AS4708-2013. Australian Forestry Standard Limited, Yarralumla, ACT.

Commonwealth of Australia 1998, *A framework of regional (sub-national) level criteria and indicators of sustainable forest management in Australia*. Australian Government Department of Primary Industries and Energy, Canberra.

—— 2008, *Australia's Sustainable Forest Management Framework of Criteria and Indicators 2008: Policy Guidelines*. Commonwealth of Australia, Canberra.

FAO (Food and Agriculture Organization of the United Nations) 2010, *Global Forest Resources Assessment 2010. Country Report, Australia*. Forestry Department, FAO, Rome 2010

—— 2012, *FRA 2015 Terms and Definitions*. Forest Resources Assessment Working Paper 180, FAO, Rome. Accessed on 27 Jan 2015 at fao.org/docrep/017/ap862e/ap862e00.pdf

MIG (Montréal Process Implementation Group for Australia) 2008, *Australia's State of the Forests Report 2008*. Bureau of Rural Sciences (BRS), Canberra.

MIG (Montréal Process Implementation Group for Australia) & NFISC (National Forest Inventory Steering Committee) 2013, *Australia's State of the Forests Report 2013*. Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), Canberra.

Montréal Process Working Group 2009a, *Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests*. The Montréal Process, 4th edition.

—— 2009b, *Technical Notes on Implementation of the Montréal Process Criteria and Indicators*. Montréal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests, 3rd edition.