

PROJECT PHOENIX



EVERYTHING YOU WANTED TO KNOW ABOUT ACCESS TO LAND FOR NATIVE SEED COLLECTION

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Project Phoenix

Greening Australia (National Office)

Level 3, 349 Collins Street

Melbourne VIC 3000

Tel: 1300 886 589

Email: phoenix@greeningaustralia.org.au

Website: www.greeningaustralia.org.au

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Author: Zoe Birnie, Technical Lead, Greening Australia

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Australian Government



Across all of our Project Phoenix activities and actions we pay respect to the Traditional Owners and Custodians of the lands and waters on which we work. We honour the resilience and continuing connection to country, culture and community of all Aboriginal and Torres Strait Islander people across Australia. We recognise the decisions we make today will impact the lives of generations to come.

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CONTENTS

Executive summary	5
Introduction	6
Objectives.....	8
1 Land tenure across Australia	9
1.1 Australian national datasets.....	9
1.2 Australian state-based datasets	13
2 Seed collection legislation and policy instruments	20
2.1 Key federal legislation	20
2.2 Key state-based legislation.....	20
2.3 National and State Parks	21
2.4 Conservation covenants	21
2.5 Crown land	22
2.6 Travelling Stock Reserves	22
2.7 Roadsides	23
2.8 Carbon planting sites.....	24
2.9 Water reservoirs and dams	25
2.10 Forestry	25
2.11 Mine rehabilitation sites	26
3 Enablers and detractors	30
3.1 Increasing the supply of native seed across land tenures	30
4 Recommendations	32
References.....	35
Appendix A	38

EXECUTIVE SUMMARY

In response to a declining state of environments globally, 2021–2030 has been declared as the United Nations Decade on Ecosystem Restoration. A recent paper by Bergstrom *et al.* (2021) provides a stark assessment of collapse in 19 ecosystems (terrestrial and marine) spanning Australia to Antarctica. Ecosystem collapse and environmental degradation more broadly are being driven by several pressures including but not limited to rising air and ocean temperatures and extreme weather events such as bushfires and storms as a result of climate change, in addition to large scale land clearing and land-use change.

Australia has one of the highest land clearing rates in the world, with approximately 44 per cent of forests and woodlands cleared since European settlement (Metcalf & Bui, 2016). Rates of land clearing vary across Australian states with the highest clearing of primary forest occurring in Queensland followed by New South Wales, Western Australia and Victoria between 2010 and 2018 (Department of Industry, Science, Energy and Resources, 2018).

Over recent decades, the rates of land clearing and land degradation have coincided with an increase in land revegetation and restoration driven by biodiversity concerns and more recently carbon sequestration and storage as a nature-based solution to climate change. However, the native seed sector faces a number of challenges to scaling up to meet revegetation and restoration goals. The access and supply of native seed is one of these challenges, which is predicted to become increasingly difficult as temperatures rise, precipitation decreases (Broadhurst *et al.* 2017) and bushfires become more frequent and intense due to climate change (Nolan *et al.* 2020).

This research aimed to review land tenures and land use across Australia to identify the enablers and detractors to increasing the supply of native seed for revegetation and restoration at the landscape scale and make recommendations in recognition of bushfire affected areas and vulnerable landscapes.



In summary, land is managed at the state level and land tenure and land use varies in extent across Australian states. Although various titles are used, the legislation governing key land tenures is consistent across jurisdictions. At a broad level, there are few legislative and policy provisions in place that prohibit native seed collection on land tenures. The exception to this is carbon offset plantings, within which commercial seed collection is prohibited under the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth).

The lack of specific legislative prohibitions has been identified as an enabler for native seed collection which may be supported through the introduction of baselines for seed collection and Land Access Agreements/Memoranda of Understanding. Furthermore, it was identified across conservation covenants and reserves and water reservoirs that even though seed collection does not typically occur on these lands currently, there is an appetite for strategic

seed collection and/or the development of seed orchards/Seed Production Areas. This would need to be assessed on a case-by-case basis, however the development of criteria upon which to assess access would be required and again, Land Access Agreements/Memoranda of Understanding may strengthen and streamline these arrangements.

Conversely, a detractor for increasing the supply of native seed identified in this research is the increasing degradation and collapse of ecosystems across Australia increasing the perceived and actual risk of native seed harvest adversely impacting natural regeneration of wild populations. Increased access to land tenures is not likely to be sufficient to supply a significant scaling of revegetation and restoration and therefore seed orchards/Seed Production Areas need to play a bigger role. High quality seed with sufficient genetic variation is required to establish seed orchards/Seed Production Areas, and this is most likely to come from intact populations within protected areas such as National and State Parks. Improved access to native seed for these purposes should be arranged through Land Access Agreements or Memoranda of Understanding.

As a result of the enablers and detractors identified above, the following key recommendations are proposed:

- 1. Identify core species required in priority restoration locations (e.g. bushfire recovery and vulnerable landscapes) to build incentives and capacity for the development of seed orchards and Seed Production Areas in strategic locations.**
- 2. Development of seed collection baselines to reduce unintended consequences of wild seed collection on native vegetation.**
- 3. Develop Land Access Agreements and Memoranda of Understanding (MOU) across key land tenures in priority areas.**
- 4. Build land tenure maps into interactive maps that can be utilised by various stakeholders within the native seed sector to identify areas where access is permitted and any requirements to access a particular area. This would be particularly useful for climate-adjusted seed collection which may sit outside of a regular seed collection area.**
- 5. Access historical seed collection data and implement an integrated data system that provides collation of data to a single source to build a robust dataset for seed collection that is species and location specific.**

INTRODUCTION

Environments across the globe are under stress. Native vegetation has historically been cleared and degraded across the Australian landscape for various reasons including land use change for agriculture, mining and urbanisation (Metcalf & Bui, 2017). Land degradation and fragmentation have adverse impacts on biodiversity and ecosystems. For example, fragmentation may reduce biodiversity by up to 75% (Haddad *et al.* 2015) and reduce ecosystems' resilience to disease, invasive species and further degradation. A recent paper by Bergstrom *et al.* (2021) provides a stark assessment of the collapse in 19 ecosystems (terrestrial and marine) spanning Australia to Antarctica.

'Ecosystem collapse' can be defined as vegetation being degraded beyond a baseline state, loss of extent and key species and in turn, ecosystem services (Bergstrom *et al.* 2021). Australia has one of the highest land clearing rates in the world, with approximately 44 per cent of forests and woodlands cleared since European settlement (Metcalf & Bui, 2016). The decline in Australia's environment has coincided with a marked increase in restoration activities, however the restoration and native seed sector is still facing a suite of challenges to massively scale up revegetation and restoration.

The United Nations has declared 2021–2030 as the Decade of Ecosystem Restoration, aligned to the deadline of the Sustainable Development Goals and emphasising the important role ecosystems play in creating a sustainable future (United Nations, 2019). The magnitude of this task is in the range of hundreds of millions of hectares of land restoration. This is a massive scale in and of itself that is heightened by insufficient political support and the technical capacity required to scale restoration initiatives worldwide.



The supply of native seed is a core concern for the restoration sector, particularly considering ecosystem decline and genetic diversity concerns of harvesting seed from small, fragmented populations (Broadhurst *et al.* 2015).

In addition to the human-induced destruction of native vegetation and soils, climate change adds an extra layer of complexity as we seek to restore our landscapes. We cannot simply aim to restore landscapes to their historical structure and composition as the species of that particular landscape may not be able to adapt to the current and future climatic conditions. However, there are things we can do to increase the genetic resilience of our restoration plantings including:

- incorporating climate-adjusted provenance by sourcing seed from hotter/drier and cooler/wetter regions and
- considering planting different native species that are more adapted to projected climatic conditions.

With the increasing awareness and implementation of guidelines (e.g. DELWP guidelines in Victoria) for implementing climate-adjusted genetic provenance into restoration programs, it will be important that seed from the required provenance can be sourced. The Australian Native Plant Survey Report suggests that native seed is being used in projects beyond what is considered to be local provenance (Hancock *et al.* 2020). The lack of availability of high quality seed is considered a strong driver of this.

This report aims to review land tenures across Australia to identify key land access mechanisms that are enablers or detractors to large-scale seed collection and production. To our knowledge, this is the first report of its kind that attempts to identify these mechanisms across a broad range of land tenures.

OBJECTIVES

The objective of this research is to identify the *detractors* and *enablers* for the access and supply of native seed for large scale restoration projects across Australia. Additionally, this research will focus on the supply of native seed for bushfire recovery in response to the Black Summer bushfire burn and the consequent restoration and revegetation of vulnerable landscapes.



It is suggested that this report be read in conjunction with *Psst... Everything you wanted to know about seed licensing* (Birnie 2021).

This report will first identify land tenures and land use across Australia with more detailed datasets provided at the state-level for each jurisdiction. Secondly, key pieces of legislation will be identified for several key land tenures (National Parks, public roadsides, Crown land and mine rehabilitation sites amongst others) to understand the detractors and enablers for future seed supply for restoration. Knowledge of where seed is or is not currently collected will be incorporated into this analysis. Lastly, a summary of the detractors and enablers for the supply of native seed will be outlined followed by a series of recommendations through the lens of scaling landscape restoration to meet international sustainable development goals.

1 LAND TENURE ACROSS AUSTRALIA

1.1 Australian national datasets

Over 42% of the protected area estate within Australia is publicly owned and managed by the Australian Federal Government or state/territory governments. This equates to more than 63 million hectares across 6,686 protected areas, and over 8.3% of Australia's land (CAPAD, 2018).

Joint and private ownership is much less, comprising 2,232 and 2,968 protected areas to a total of 12 and 8 million hectares and representing 1% of Australia's land respectively (CAPAD, 2018).

At a broad scale, Australia's land tenure has been summarised in **Figure 1** below (data in hectares provided in [Appendix A](#)) according to several key categories: leasehold forest; multiple-use public reserve; nature conservation reserve; other Crown land; private forest; and unresolved tenure. As evident in this figure, the extent of these categories varies at the state-level which is outlined quantitatively in **Figure 2**. Broadly, the extent of leasehold forest overlaps with grazing native vegetation shown in **Figure 3**.

FIGURE 1. TENURE OF AUSTRALIAN FORESTS COMPILED BY THE AUSTRALIAN BUREAU OF AGRICULTURAL AND RESOURCE ECONOMICS AND SCIENCES (ABARES) FOR THE NATIONAL FOREST INVENTORY (NFI)

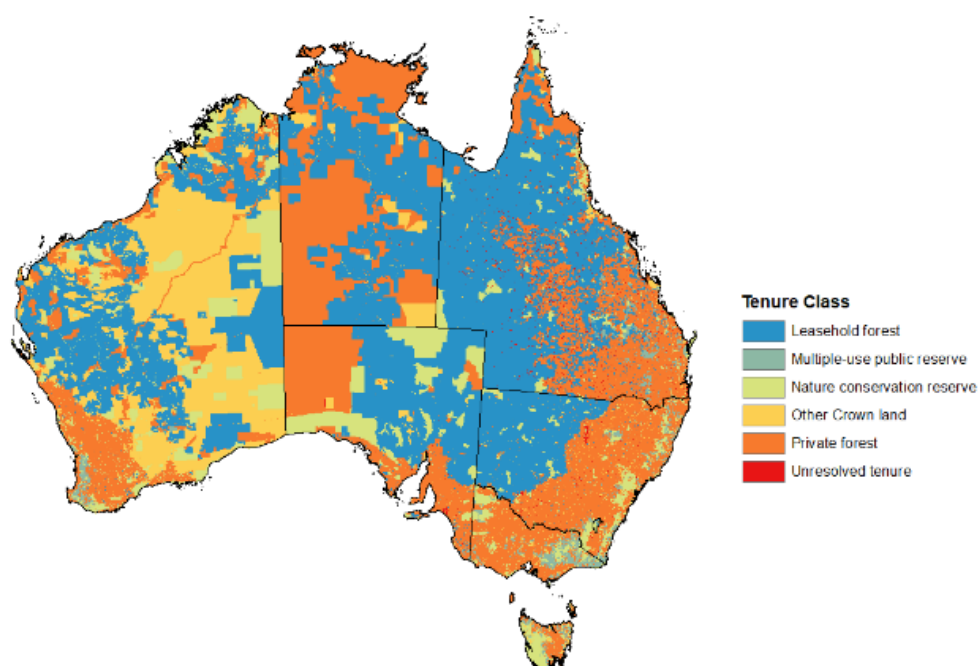
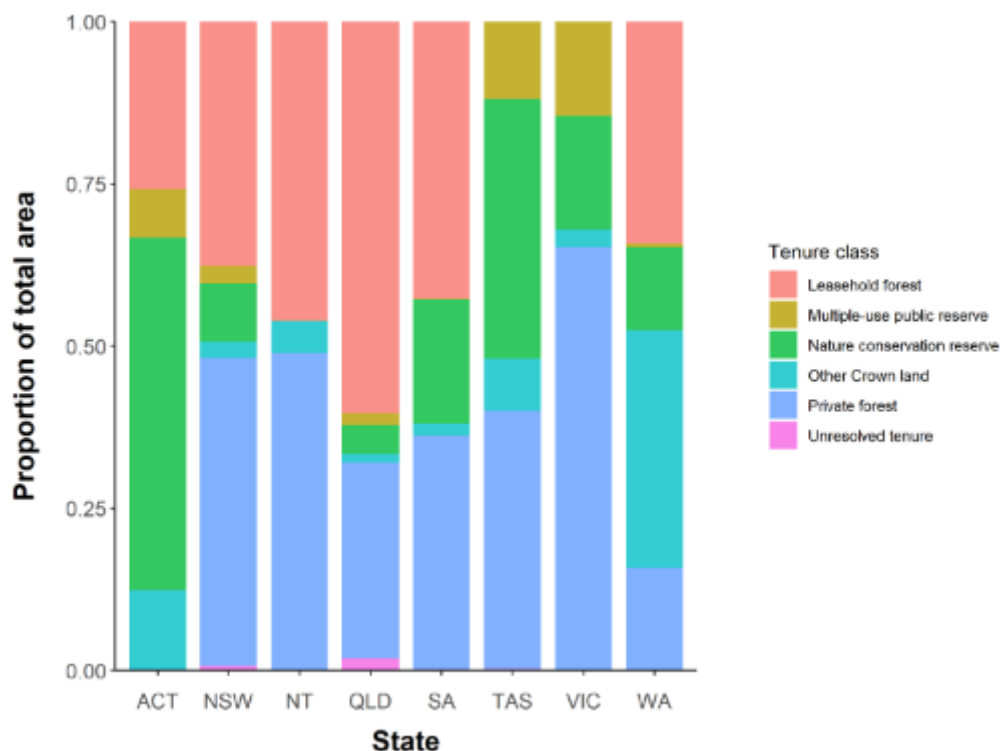


FIGURE 2. PROPORTION OF TOTAL AREA BY TENURE CLASS FOR EACH STATE AND TERRITORY EXTRACTED FROM THE AUSTRALIAN BUREAU OF AGRICULTURAL AND RESOURCE ECONOMICS AND SCIENCES (ABARES) FOR THE NATIONAL FOREST INVENTORY (NFI) DATASETS



The dominant land use (total extent) is livestock grazing which accounts for 54.1 per cent (grazing of natural vegetation 49.9 per cent; grazing of modified pasture 9.2 per cent) of Australia's total land area (**Figure 3**). In comparison, nature conservation and protected areas (including the National Reserve System and Indigenous uses) account for 23 per cent. Other land tenures of note include dryland cropping (3.6 per cent), production native forests (1.3 per cent), plantation forests (0.3 per cent) and water (1.6 per cent).

Australia's National Reserve System itself covers approximately 20 per cent of the total land area. The governance of protected areas in the National Reserve System is shown in **Figure 4**.

Furthermore, Indigenous Australians own 75 protected areas to a total of 66 million hectares and 8.7% of Australia's land (CAPAD, 2018). **Figure 5** outlines several datasets relating to native title across Australia.

FIGURE 3: AUSTRALIAN LAND USE 2010–11 (AUSTRALIAN BUREAU OF AGRICULTURAL AND RESOURCE ECONOMICS AND SCIENCES, LAND USE OF AUSTRALIA 2010–11)

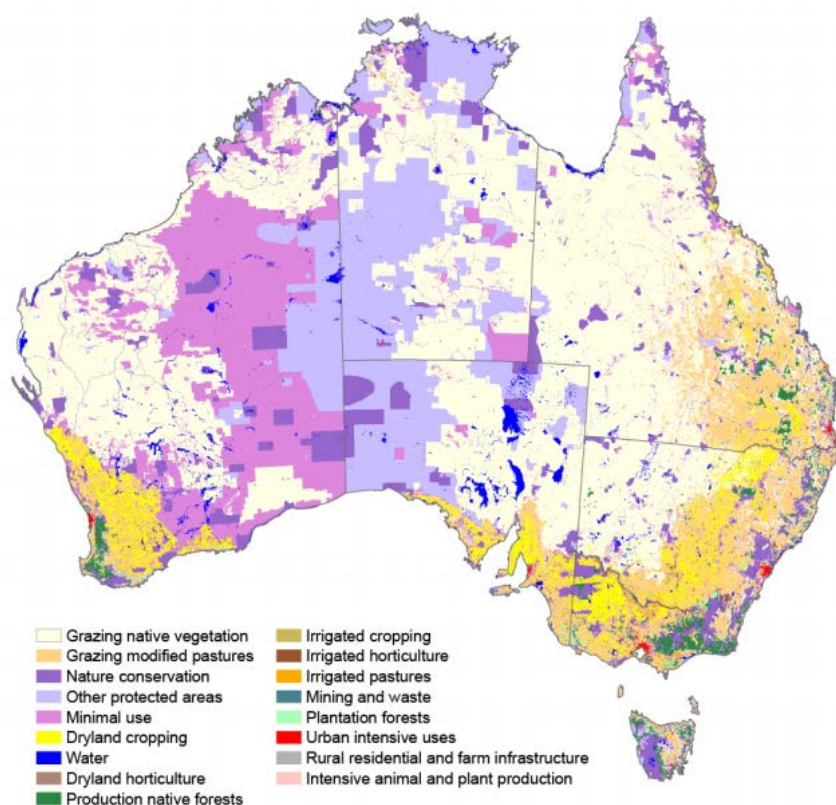


FIGURE 4. NATIONAL RESERVE SYSTEM (NRS) ACROSS AUSTRALIA CATEGORISED ACCORDING TO GOVERNANCE. COMPILED USING THE COLLABORATIVE AUSTRALIAN PROTECTED AREAS DATABASE (CAPAD) 2018 — TERRESTRIAL

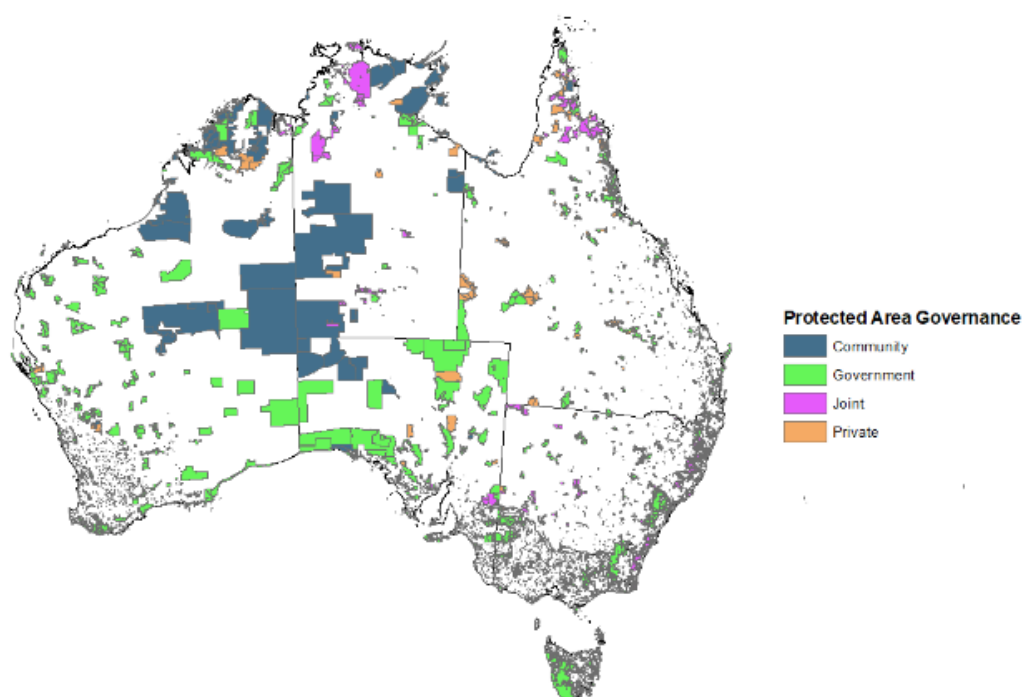
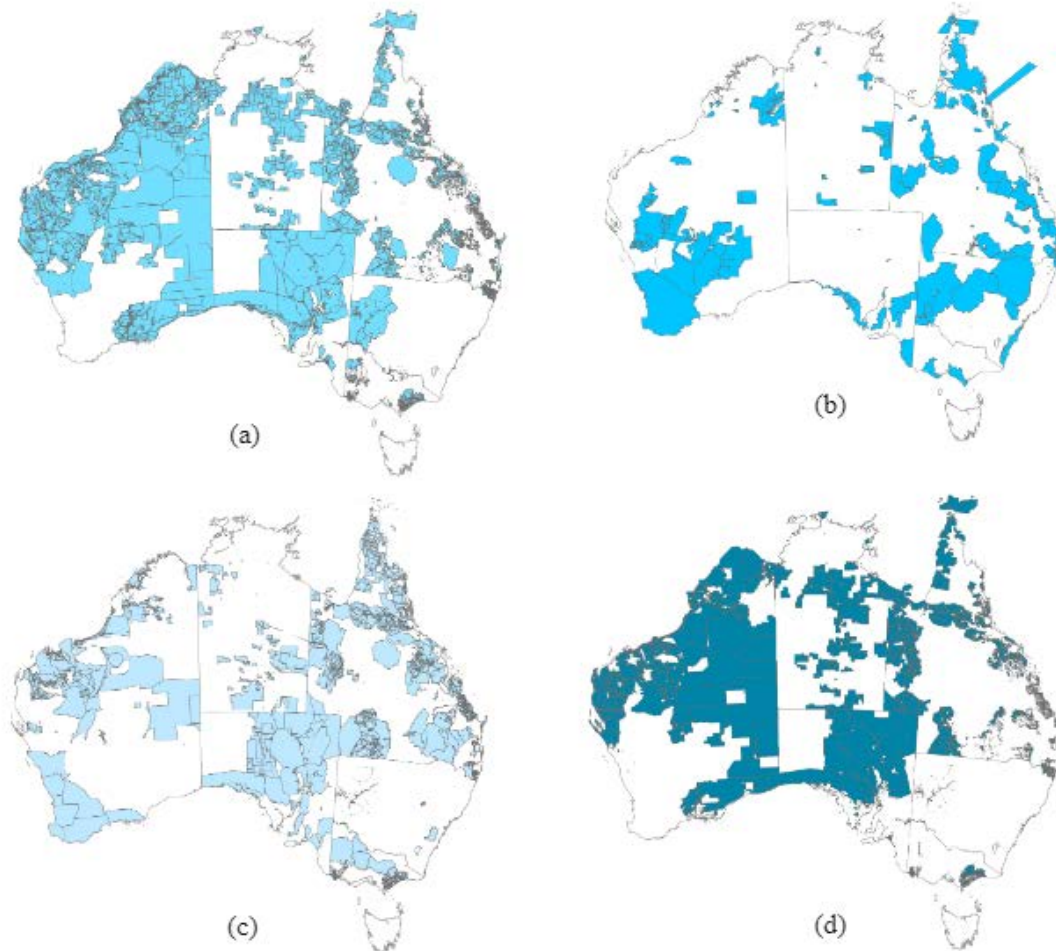


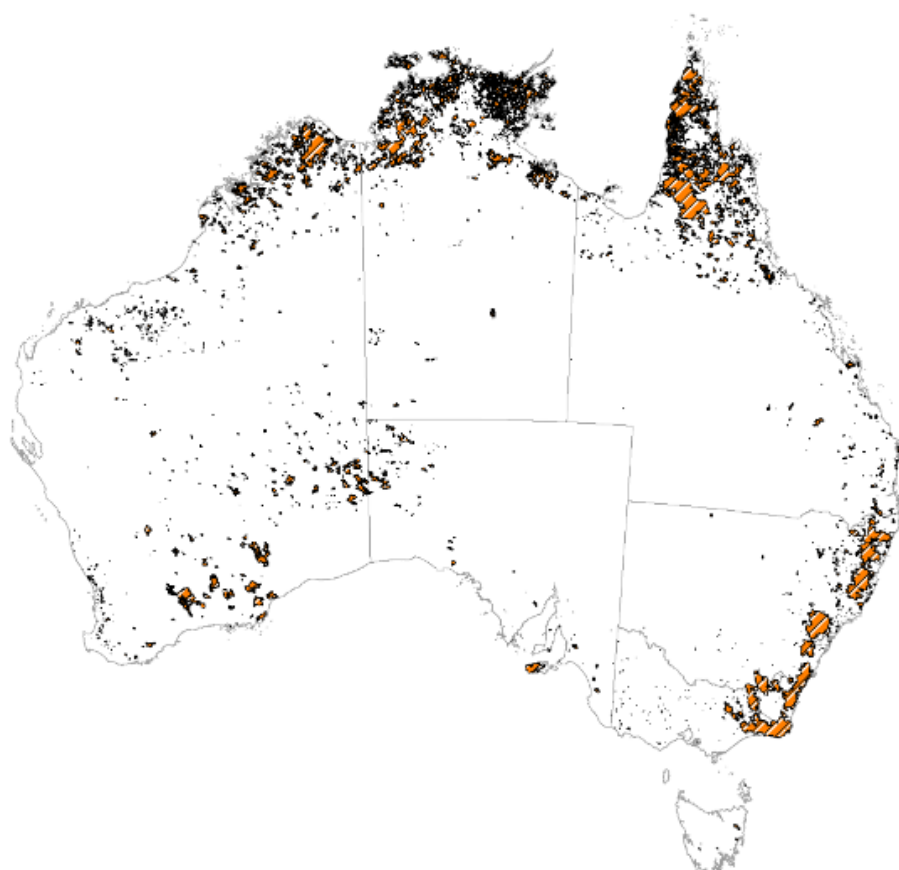
FIGURE 5. NATIONAL NATIVE TITLE TRIBUNAL SPATIAL LAYERS WHERE (A) OUTLINES THE NATIVE TITLE DETERMINATION OUTCOMES; (B) SCHEDULE OF NATIVE TITLE DETERMINATION APPLICATIONS; (C) INDIGENOUS LAND USE AGREEMENTS; AND (D) REGISTERED NATIVE TITLE BODIES CORPORATE. COMPILED FROM SEVERAL NATIONAL NATIVE TITLE TRIBUNAL DATASETS.



The Black Summer bushfires that occurred over the 2019–20 summer burnt the landscape at an unprecedented scale and intensity. The burn extent from the 2019–20 bushfire season is shown in **Figure 5** below. The bushfire season occurred during a period of record-breaking temperatures and low rainfall (Filkov *et al.* 2020), resulting in intense bushfires that burnt over 19 million hectares, destroying vast areas of habitat and killing billions of animals. Australia was already facing widespread ecosystem decline and the intense bushfires have added further pressure to these ecosystems. For example, 486 plant taxa, out of a total 26,062 that were assessed, have been prioritised for immediate action to support bushfire recovery efforts. These taxa were prioritised because they had more than 80% of their range burnt, were listed as Critically Endangered or Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (*EPBC Act 1999*) or equivalent state-based legislation or were categorised as high risk under two or more prioritisation criteria (Gallagher, 2020).

Comparing **Figure 6** to **Figure 1** above identifies that the bushfires broadly raged across various land tenures including leasehold forest, private forest, multiple use public reserve and nature conservation reserve. Section [1.2](#) below provides a breakdown of the bushfire impact at the state level.

FIGURE 6. EXTENT OF BURNT AREA ACROSS AUSTRALIA IN THE 2019–20 BUSHFIRE SEASON. DATA SOURCED FROM THE NATIONAL INDICATIVE AGGREGATED FIRE EXTENT DATASETS (NIAFED)



1.2 Australian state-based datasets

This section aims to provide greater detail of land tenure at the state level using available spatial layers for key tenures including protected areas, native title, forestry and utilities. It is evident that each state is comprised of each land tenure to varying extents. For example, the Australian Capital Territory has a large nature conservation reserve network with little private forest (**Figure 7**) while Victoria has vast expanses of private forest (**Figure 8**) and Tasmania is broadly categorised by Crown Land and Freehold Title (**Figure 9**). Furthermore, Western Australia's land tenure is arranged as more of a mosaic of leasehold forest, private forest and Crown land (**Figure 10**).



These state level datasets help to tell a story of the landscapes across each state and identify areas where seed collection would be more or less accessible according to state-based licensing arrangements. In addition, it helps to identify the land tenures most affected by the 2019–20 bushfires (**Figure 6**). For instance, in Victoria the burn area was concentrated around multiple-use public reserves, nature conservation reserves and private forest (**Figure 8**).

Restoring areas within the Victorian burn extent that may not naturally regenerate due to the increased fire frequency and intensity will require high quality local and climate adapted seed in line with the 70% local/20% hotter and drier/10% cooler and wetter approach (DELWP, 2020). Alpine Ash (*Eucalyptus delegatensis*) is a prime example of this threat due to multiple burns across Alpine Ash forests since 2000 (Bowman *et al.* 2013). This highlights the importance of shifting from a reactive response to a proactive management framework for landscape scale restoration and resilience.

A proactive management framework would require firstly the identification of priority and at-risk species and ecological communities (completed, refer to: Legge *et al.* 2020; Gallagher 2020; Keith *et al.* 2020) and secondly, an outline of the seed harvest required for future restoration scenarios. This information will then inform which areas we need to progress land access agreements and the development of seed orchards/Seed Production Areas.

FIGURE 7. LAND TENURE ACROSS THE AUSTRALIAN CAPITAL TERRITORY. COMPILED FOR (A) USING TENURE OF AUSTRALIAN FORESTS DATASETS (CC-BY 4.0), AND (B) USING THE AFOREMENTIONED DATASET IN ADDITION TO NIAFED FIRE EXTENT 2019/20

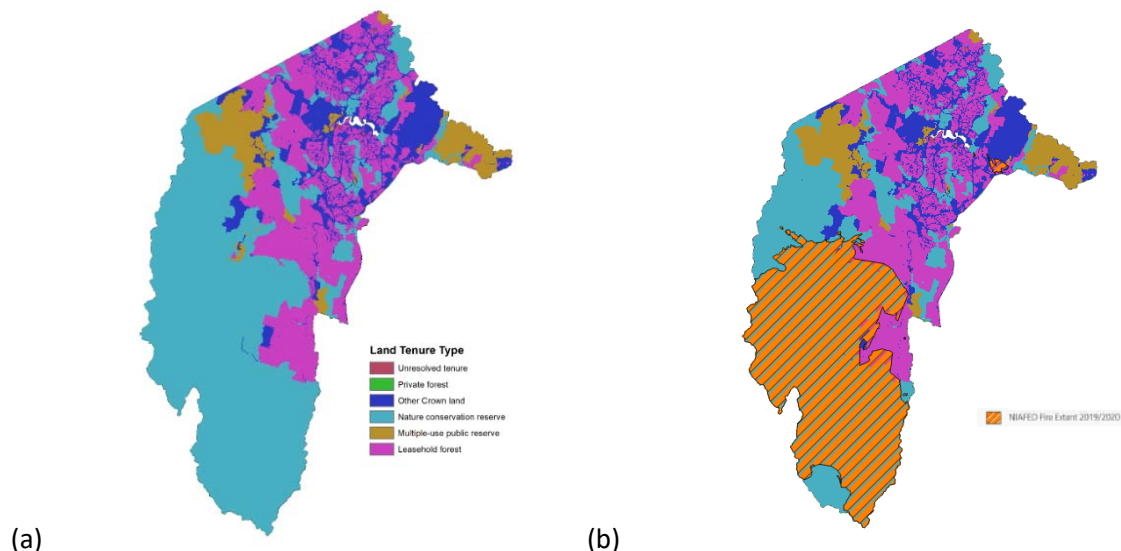


FIGURE 8. LAND TENURE ACROSS VICTORIA. COMPILED FOR (A) USING TENURE OF AUSTRALIAN FORESTS DATASETS (CC-BY 4.0); (B) USING THE AFOREMENTIONED DATASET IN ADDITION TO THE NIAFED FIRE EXTENT 2019/20; (C) PROTECTED AREA BY TYPE ACROSS VICTORIA USING CAPAD (2018) DATASETS

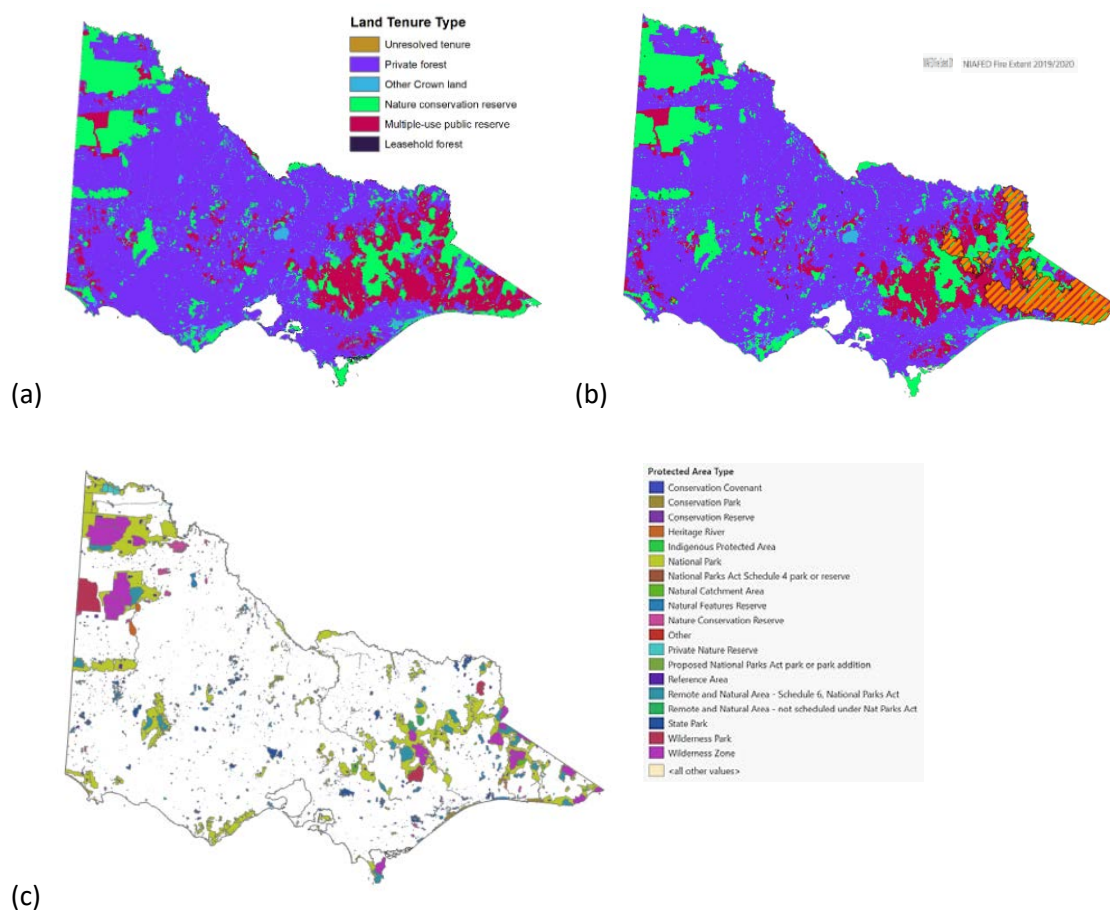


FIGURE 9. LAND TENURE ACROSS TASMANIA COMPILED FOR (A) USING CADASTRAL LAND PARCELS FROM LAND TASMANIA (CC-BY 4.0) AND (B) USING THE AFOREMENTIONED DATASET IN ADDITION TO NIAFED FIRE EXTENT 2019/20.

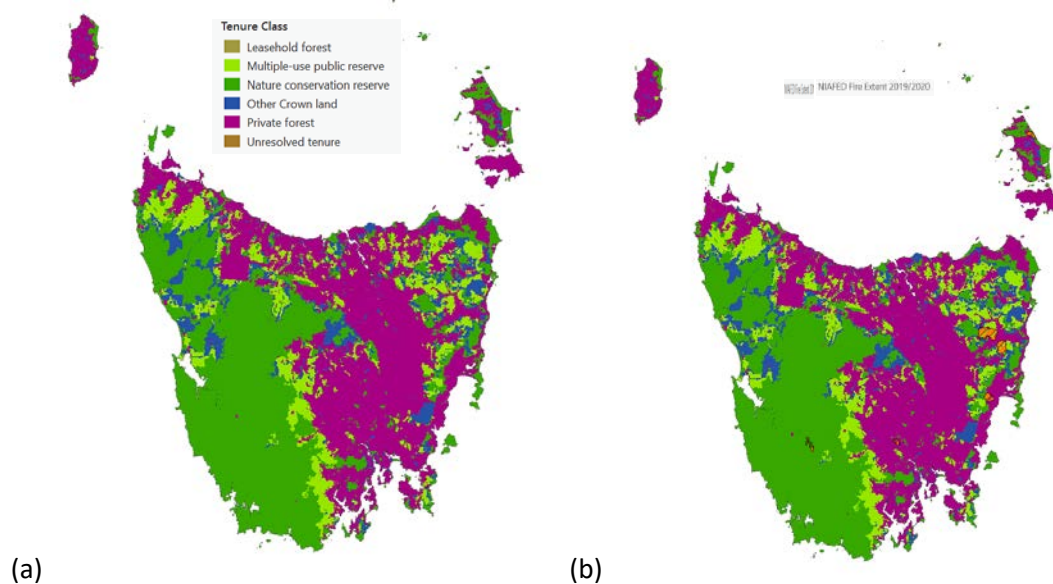
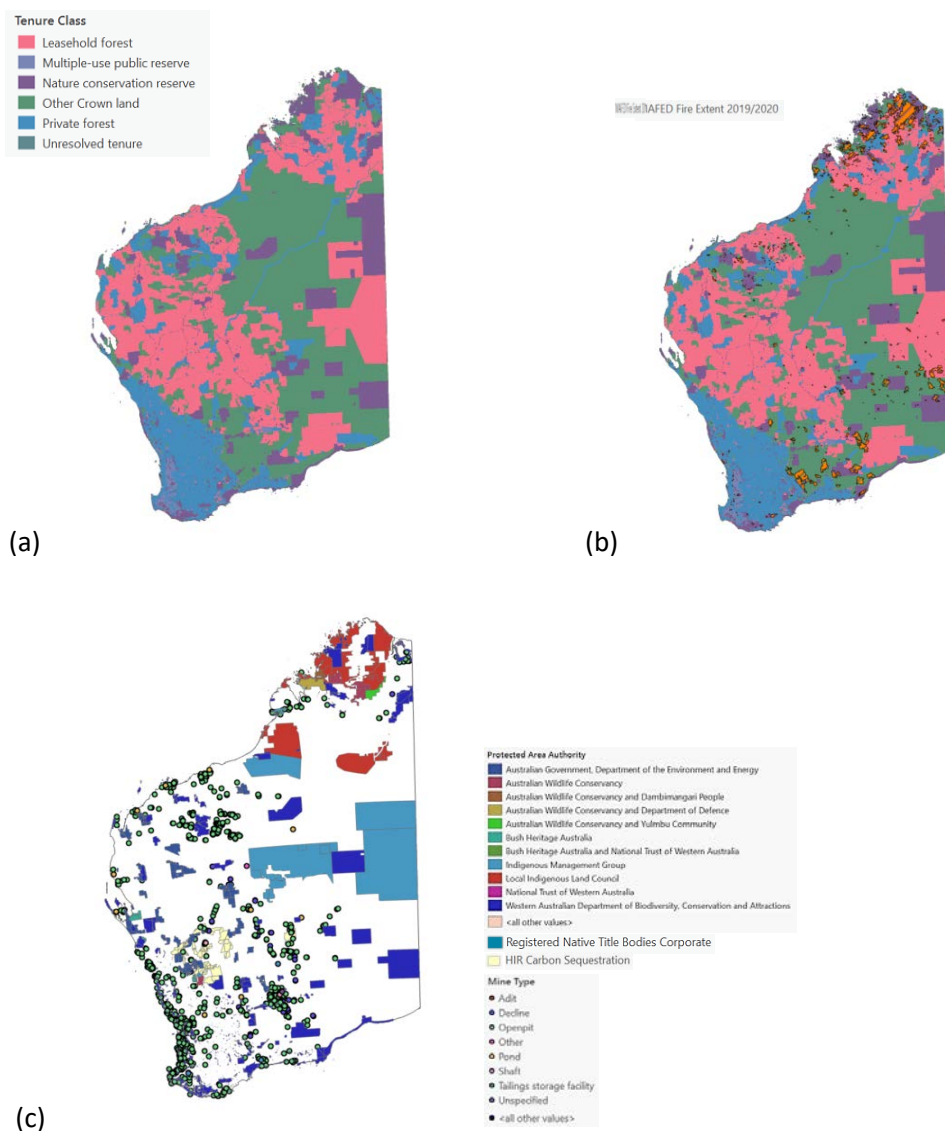


FIGURE 10. LAND TENURE ACROSS WESTERN AUSTRALIA COMPILED FOR (A) USING TENURE OF AUSTRALIAN FORESTS DATA (CC-BY 4.0); (B) USING TENURE OF AUSTRALIAN FORESTS DATA IN ADDITION TO NIAFED FIRE EXTENT 2019/20 AND (C) PROTECTED AREAS (CAPAD 2018), HUMAN-INDUCED REGENERATION (HIR) CARBON SEQUESTRATION FROM THE WA DEPARTMENT OF PLANNING, LINES AND HERITAGE (CC-BY NON-COMMERCIAL) AND OPERATING MINES FROM THE WA DEPARTMENT OF MINES, INDUSTRY REGULATION AND SAFETY (CC-BY 4.0)



Land tenure across New South Wales is shown in **Figure 11** below in greater detail than the above states. This allows us to identify more precisely the types of land tenure we might consider seeking opportunities to build seed harvest capacity through either: (i) increased access agreements; or (ii) through the development of seed orchards/Seed Production Areas. It is recommended that this land tenure data be used in conjunction with spatial data identifying priority restoration areas and species-level data to identify the appropriate land tenure opportunities. Once priority restoration areas and species are identified, climate-adjusted provenance mapping should be completed to triangulate key source locations for native seed.

FIGURE 11. NEW SOUTH WALES LAND TENURE COMPILED FOR (A) USING THE AUSTRALIAN LAND USE AND MANAGEMENT (ALUM) CLASSIFICATION (CC-BY 4.0); (B) USING THE AFOREMENTIONED DATASET IN ADDITION TO NIAFED FIRE EXTENT 2019/20; (C) USING TRAVELLING STOCK RESERVES FROM THE NSW DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AND (D) LAND USE (ALUM SECONDARY CLASS) FROM THE NSW DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT (CC-BY 4.0)

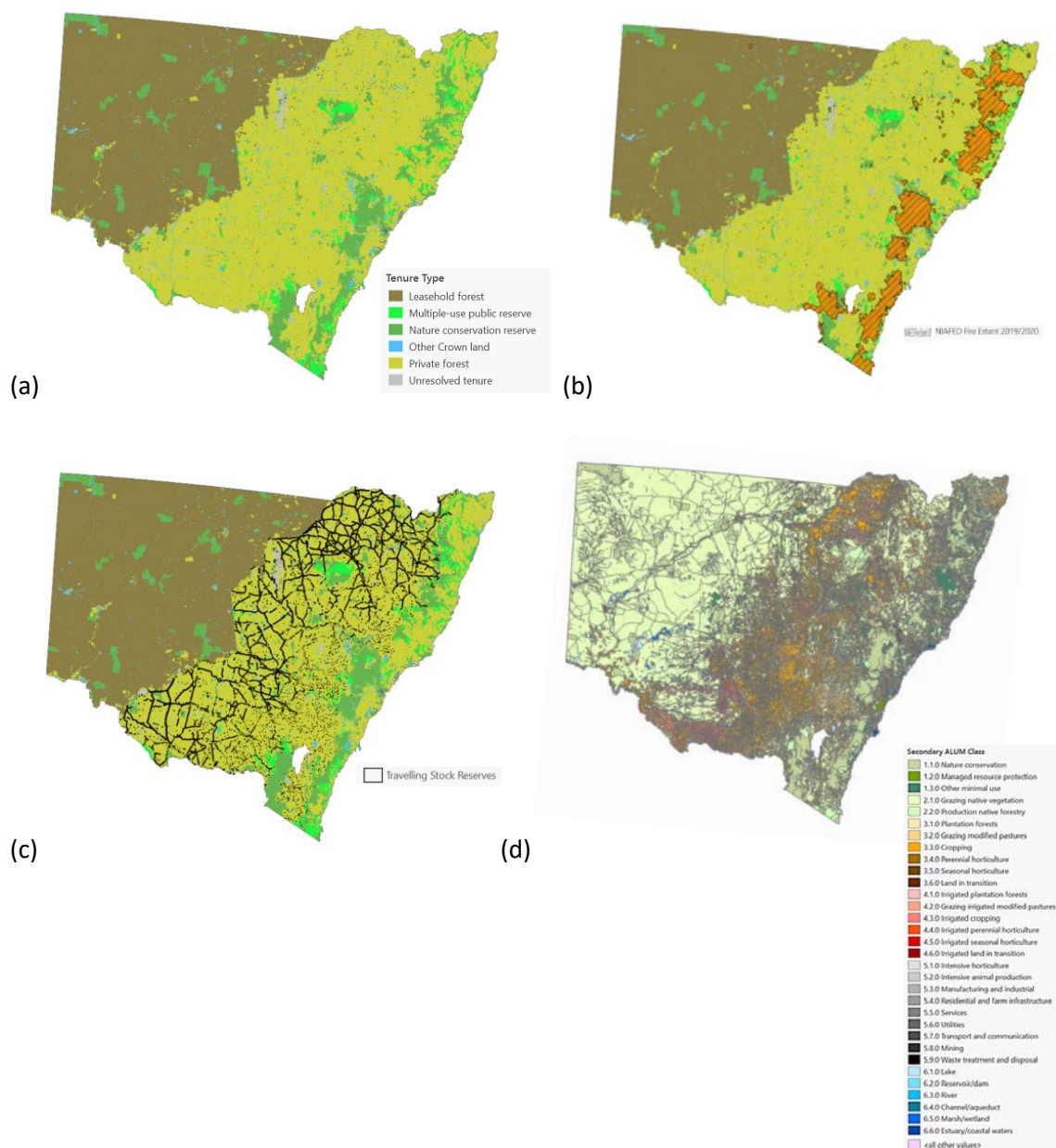


FIGURE 12. QUEENSLAND LAND TENURE COMPILED FOR (A) USING LAND USE OF AUSTRALIAN FORESTS (CC-BY 4.0); (B) NIAFED FIRE EXTENT 2019/20; (C) STOCK ROUTES QLD GOVERNMENT DEPARTMENT OF NATURAL RESOURCES, MINES AND ENERGY (CC-BY 4.0); AND (D) LAND USE BY THE QLD GOVERNMENT DEPARTMENT OF ENVIRONMENT AND SCIENCE (CC-BY 4.0)

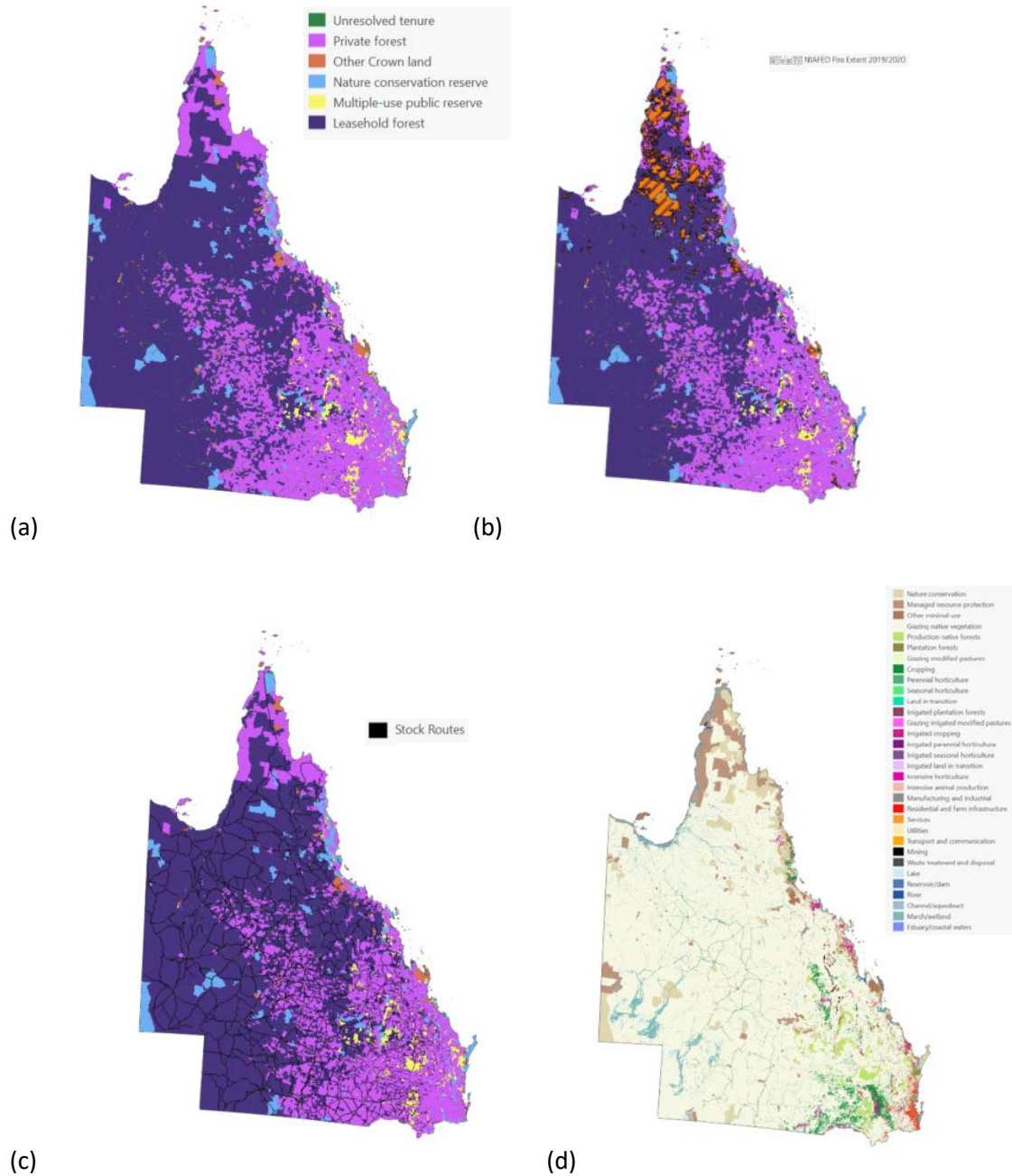
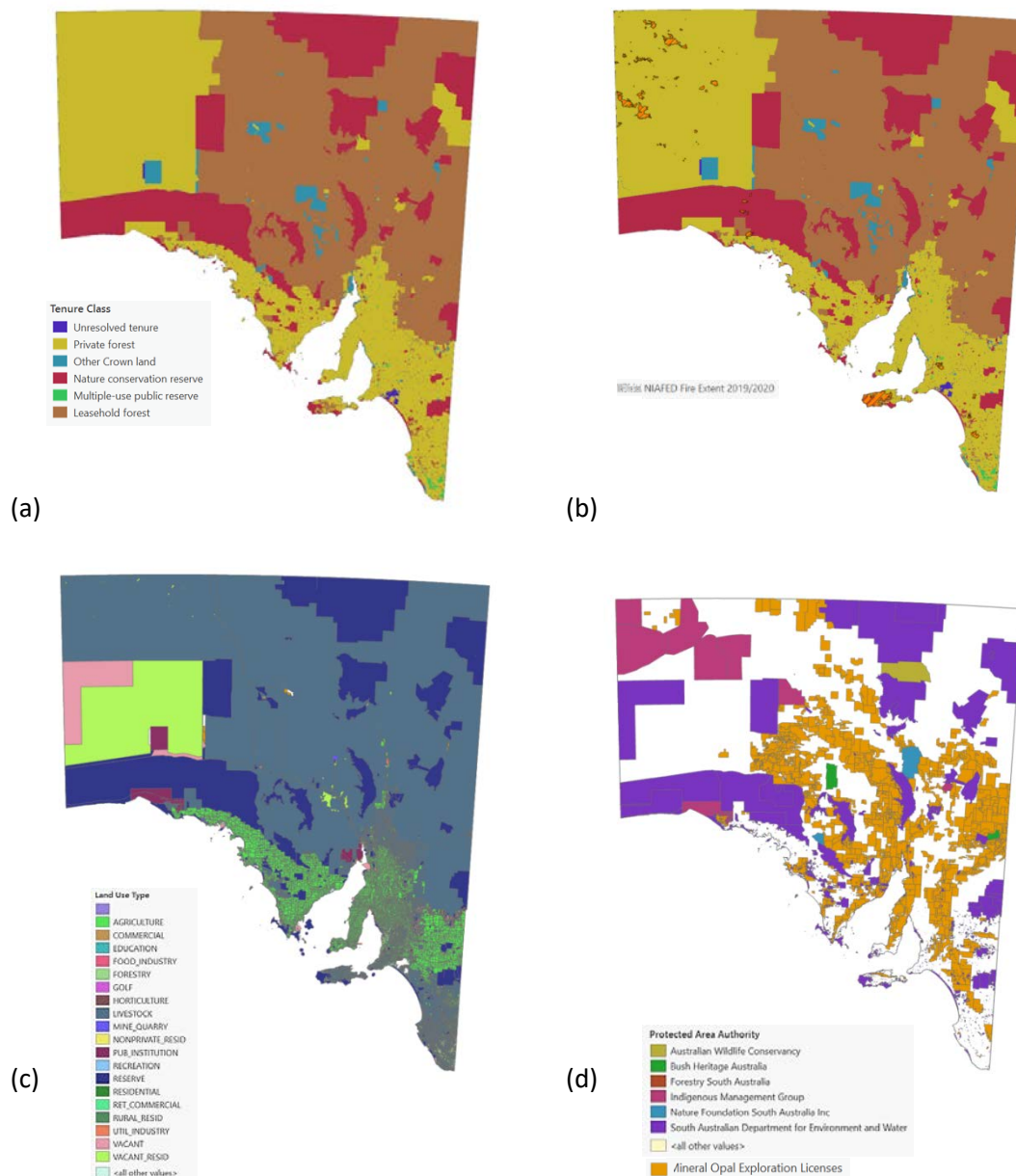


FIGURE 13. LAND TENURE ACROSS SOUTH AUSTRALIA COMPRISING (A) TENURE OF AUSTRALIAN FORESTS (CC-BY 4.0); (B) TENURE OF AUSTRALIAN FORESTS (CC-BY 4.0) AND NIAFED FIRE EXTENT 2019/20; (C) LAND USE BY TYPE FROM THE SA DEPARTMENT FOR PLANNING, TRANSPORT AND INFRASTRUCTURE (CC-BY 4.0); AND (D) PROTECTED AREA BY AUTHORITY COMPRISING CAPAD 2018 AND VEGETATION HERITAGE AGREEMENTS FROM THE SA DEPARTMENT FOR ENVIRONMENT AND WATER (CC-BY 4.0)



2 SEED COLLECTION LEGISLATION AND POLICY INSTRUMENTS

Broadly, seed collection is regulated through state-based licensing systems. However, licensing requirements vary depending on the land tenure that is being harvesting and whether harvest is from a threatened species (as listed under the *EPBC Act 1999* or equivalent state-based legislation) (refer to supplementary report: (Birnie 2021)). Refer to **Table 1** and **Table 2** for key summaries of land tenure legislation.

2.1 Key federal legislation

Environmental Protection Biodiversity Conservation Act 1999 (Cth) (*EPBC Act 1999*) (National)

The *EPBC Act 1999* is Australia's core piece of environmental legislation and broadly protects and manages Australian flora and fauna species and ecological communities of national significance (i.e., threatened on a national scale).

2.2 Key state-based legislation

State-based legislation governing seed collection and licensing systems are summarised in **Table 1** below. In addition, planning legislation may play a role in exempting seed collection licences under specific circumstances. The *Environmental Planning and Assessment Act 1979* (NSW) is a good example of this whereby projects approved under that Act, for example, mine site rehabilitation, may require harvesting of native seed but are exempt from requiring a separate state-based seed collection permit.

TABLE 1. SUMMARY OF LEGISLATION GOVERNING SEED COLLECTION ACROSS LAND TENURE

JURISDICTION	LEGISLATION	CONSERVATION COVENANT
Victoria	<i>Flora and Fauna Guarantee Act 1988</i>	<i>Victorian Conservation Trust Act 1972</i>
Australian Capital Territory	<i>Nature Conservation Act 2014</i>	*
New South Wales	<i>Biodiversity Conservation Act 2016</i>	<i>National Parks and Wildlife Act 1974</i>
Queensland	<i>Nature Conservation Act 1992</i>	<i>Queensland Land Title Act 1994</i>
South Australia	<i>National Parks and Wildlife Act 1972; and Native Vegetation Act 1991</i>	<i>Native Vegetation Act 1991</i>
Northern Territory	<i>Territory Parks and Wildlife Conservation Act 2006</i>	<i>Territory Parks and Wildlife Conservation Act 2006</i>
Western Australia	<i>Biodiversity Conservation Act 2016</i>	<i>Biodiversity Conservation Act 2016</i>
Tasmania	<i>Threatened Species Protection Act 1995</i>	<i>Nature Conservation Act 2002</i>

*The Legislation for covenants in the Australian Capital Territory was not easily identified but may be the *Land Titles Act 1925*

2.3 National and State Parks

National and State Parks are managed under the *EPBC Act 1999* and equivalent state-based legislation. Seed collection is typically prohibited within National and State Parks due to the primary goals of conserving and protecting the native vegetation within the Park and concerns over unintended consequences, for example, adversely impacting the vegetation's ability to regenerate naturally. Permission is granted on occasion if seed collection is of high importance and seed is unavailable from alternative locations, however this typically does not occur for commercial activities.



The key concern over National and State Parks prohibiting more regular seed harvest arrangements is that seed from these locations is likely to be of higher genetic quality when compared for example, to a fragmented roadside and that therefore seed entering the restoration market is of low quality.

In the context of large-scale bushfire recovery, it is important that at the least, we can be proactive enough to collect and store high-quality seed prior to the loss of seed resources in the event of a bushfire. Therefore, it is recommended that agreements be developed for regular seed harvesting from National and State Parks to build the capacity of native seed banks to service restoration activities.

2.4 Conservation covenants

A conservation covenant is a voluntary but legally binding agreement entered into by a landholder and authorised organisation and is an important component of private land conservation. Approximately 77% of Australia's land area is managed by farmers, Indigenous owners and private landholders (Adams, Pressey & Stoeckl 2014), highlighting the importance of this land for biodiversity conservation. A conservation covenant is applied to a property's title, making it forever binding, and has several legal obligations and management requirements (Hardy *et al.* 2016).

Under a conservation covenant, a property is commonly broken up into several parcels of land that have varying levels of management obligations. These are known as tiers (Trust for Nature, 2017). For example, Tier 1 vegetation may be fully protected with no disturbance allowed, whilst Tier 2 may allow some recreational activity and a designated 'domestic area' may have no prohibitions (although regular council regulations apply).



Conservation covenants are managed at the state level and although there is variation between jurisdictions, all aim to conserve an area to its natural state. The governing legislation for each jurisdiction has been summarised in **Table 1** above. After reviewing each of these, it has been identified that several activities are commonly prohibited in a conservation covenant including: removal of native vegetation; introduction of exotic species; grazing; soil disturbance; application of fertiliser; and recreational use of bikes and vehicles. However, there is no clause that prohibits seed collection from land under a conservation covenant, and this would typically be assessed on a case-by-case basis. The approval of seed collection in a

conservation covenant would be dependent on the management plan which is developed specific to each property based on the Conservation Action Planning Standard.

This research did not identify any examples of large scale or commercial seed collection within land managed under a conservation covenant.

2.5 Crown land

Crown land is managed at a state level; therefore, there is some variation in management across different jurisdictions. For example, in Queensland, Crown land is referred to as 'State land' and is managed under the *Land Act 1994* (Qld). In most jurisdictions, permission to collect native seed from Crown land is included in the licence conditions for commercial seed collection. For instance, in South Australia and Victoria, a typical licence for commercial seed collection permits the harvest of native seed on Crown land including roadsides.

Comparatively, in Western Australia, a specific licence is required to collect native flora material on Crown land. Western Australia is the only jurisdiction in Australia that has a specific flora licence for Crown land — Flora Taking (Commercial Purposes) Crown Land Licence. This is likely because Western Australia has over 92 million hectares of Crown land, while states such as South Australia and Victoria have only 1.8 million and 600,000 hectares of Crown land respectively ([Appendix A](#)). These figures for Crown land include non-forest area and therefore cannot be assumed as intact vegetation suitable for harvesting seed.



However, Crown land that has previously been restored or revegetated is likely to be good sources of native seed for the supply of future restoration projects. It is recommended that Crown land be investigated in more detail using species specific location data as required for large scale restoration projects in priority locations.

It was identified that seed collection does occur on Crown land, however this could not be quantified due to insufficient data.

2.6 Travelling Stock Reserves

Travelling Stock Reserves (TSR) in New South Wales make up around 2 million hectares of land that provide important land for farmers to move stock across the landscape. In addition, these parcels of land have been found to hold significant ecological and conservation value. In landscapes that have historically been cleared for agricultural production, TSRs are comprised of small patches of remnant vegetation that are typically less degraded than the surrounding agricultural land (Yates & Hobbs 1997). For instance, most intact endangered woodland communities exist in TSRs (Lindenmayer *et al.* 2010). A research paper by O'Laughlin *et al.* (2017) found that TSRs in New South Wales supported higher native plant species richness and exhibited a higher cover of native shrubs compared to agricultural lands because these TSRs have typically been subject to less grazing pressure. Therefore, TSRs provide important habitat and connectivity for native species and are a valuable source of native seed for restoration projects.

As outlined in **Table 2** below, TSRs in New South Wales are on Crown land owned by the State Government and predominantly managed by Local Land Services. Therefore, the governing legislation would be the *Crown Land Management Act 2016* (NSW). Permits are required to use TSRs for a number of activities including stock movement and grazing, and recreational activities (camping and commercial honey production). Similarly, seed collection activities on TSRs are controlled through a permit and/or permission system. In New South Wales, a state licence is required to collect seed from threatened species or ecological communities across various land tenures and this applies to TSRs. In addition, practitioners are required to contact the Local Land Services as management of TSRs varies regionally and according to the conservation value and vegetation condition of each strip and patch of land (Davidson 2020). Overarchingly, seed collection on TSRs is managed to ensure minimal harm to plants and future natural recruitment opportunity.

Under the *Crown Land Management Act*, the conservation values of TSRs are required to be monitored and reported. A rapid conservation assessment method (RAM) is used to broadly categorise the condition of small land parcels such as TSRs (Davidson 2017). This assessment could be used to determine high quality sources of native seed throughout the TSR network.



Similar to New South Wales, Queensland has an extensive stock route network that totals approximately 2.6 million hectares with the primary function of moving and grazing of livestock and using water facilities. Common to both New South Wales and Queensland TSR networks is that increasing access to remnant vegetation within these areas for seed collection is likely only to cater to small scale restoration projects. Therefore, it is suggested that a proactive approach to revegetate key areas would be required to truly scale seed supply from TSR networks in the future.

It was identified that seed collection does occur on TSRs, however this could not be quantified due to insufficient data.

2.7 Roadsides

Roadsides comes in many shapes and sizes and serve several functions including providing patches of vegetation that are a resource for collecting native seed. In heavily cleared rural, urban and agriculture areas, roadside vegetation may provide the only patches of remnant vegetation in the surrounding landscape. However, roadside vegetation can also be highly degraded (Eco Logical Australia 2020) and of varying quality according to the age of the road (Spooner & Smallbone 2009). In New South Wales, local council roads account for ~2.5 million hectares of roadside vegetation (Duffy 2010 cited in Eco Logical Australia, 2020).

Across Australia, roadsides are managed at the state level. In Victoria, roadsides are managed under the *Road Management Act 2004* (Vic) with the state government responsible for freeways and high-capacity urban roads, while local councils are responsible for local roads (Department of Sustainability and Environment 2012). Roadside vegetation may occur across multiple tenures, which can add complexity to governing legislation and seed collection.

However, typically, in order to collect seed from roadside vegetation, you will be required to obtain: (i) a state-based licence (if you are collecting from threatened species or ecological communities or for commercial sale); and (ii) a council permit.

According to the Australian Native Seed Survey Report, native seed is most commonly collected from private property followed by public reserves and roadside vegetation (Hancock *et al.* 2020). Harvesting seed from often small, fragmented roadside populations raises concerns more broadly of inbreeding depression and that the seed collected will be of poor genetic diversity for restoration (Broadhurst *et al.* 2015).



Increasing the health and extent of roadside vegetation through restoration and revegetation would have a variety of benefits for biodiversity including pollination and providing refuge for native animals (Spooner & Smallbone 2009).

However, it is suggested that there would be significant health and safety implications of increased seed harvest from roadsides. Considering this in conjunction with genetic diversity concerns, increasing seed supply capacity from roadsides has been excluded from further investigation in this research.

It was identified that seed collection does occur on roadsides, however this could not be quantified due to insufficient data.

2.8 Carbon planting sites

In Australia, the Federal Government scheme known as the Carbon Farming Initiative (CFI) allows landowners to earn Australian Carbon Credit Units (ACCUs) by sequestering and storing greenhouse gas emissions in forests. ACCUs can be sold on to businesses to offset their emissions footprint. CFI projects must meet a range of criteria including the permanence of carbon storage in vegetation biomass for at least 100 years, attaining a crown cover of at least 20 per cent and a height of at least 2 metres when mature amongst others.

The *Carbon Credits (Carbon Farming Initiative) Regulations 2011* (Cth) defines a 'permanent planting' as a planting that: (a) is not harvested other than for thinning for ecological purposes, to remove debris for fire management, to remove firewood, fruits, nuts, seeds, or material used for fencing or as craft materials, if those things are not removed for sale, in accordance with traditional Indigenous practices or native title rights; and (b) that is not a landscape planting.



A 'landscape planting' is defined as a planting in an urban centre or locality in a residential place, on the grounds of a sporting facility, factory or other commercial facility, on the grounds of a hospital, school or other institution or in a car park or cemetery.

Under the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth), seed cannot be collected from carbon project sites for commercial activities (i.e. seed that is collected, cannot be sold on). Currently in Australia, this legislation is the key governing legislation relating to seed collection and carbon regulations and there are no state or territory level pieces of legislation of the like.

Therefore, seed collected from carbon plantings is not likely to be a significant source of seed for the restoration sector as the sector aims to scale and require larger, commercial-scale quantities of native seed. However, it is recommended that the appetite to include policy provisions on a site-by-site basis under the current legislation be explored by appropriate organisations such as Greening Australia and Biodiverse Carbon Conservation.

It was identified that small scale seed collection is likely to occur on carbon planting sites, however this could not be quantified due to insufficient data.

2.9 Water reservoirs and dams

Water reservoirs and dams are a significant asset to society, providing high quality drinking water resources, and enhancing natural spaces for the community to enjoy. Water reservoirs and dams typically sit on public land that is managed under state-based legislation. This research did not identify any data of substantial seed collection within water reservoirs and dams for supply to the restoration sector.



However, speaking with water management authorities, it was identified that there may be an appetite to more formally enable seed harvesting to occur within these land uses on a case-by-case basis. This is because the overall health and management of the vegetation would need to be considered prior to providing permission to seed harvesters.

This is not dissimilar from the current process required for seed collection whereby permission from a landholder is required. It is therefore suggested that in locations where seed is in high demand, specific agreements or Memoranda of Understanding be entered between landholders for regular (annual or bi-annual) seed harvesting to occur to build the capacity of seed banks to service the restoration industry. These agreements may have a mutual benefit, whereby for example, seed collectors complete a condition report of the vegetation (using a pre-approved template) or less formally provide the landholder with any observations of weed invasions within the reservoir.

2.10 Forestry

In addition to the core function of collecting seed for regrowing timber forests, forestry has the potential to supply excess seed to the restoration sector. For example, VicForest in Victoria works with the Department of Environment, Land, Water and Planning to supply a large quantity of seed for bushfire recovery efforts. Over 11,000 hectares of Ash forest impacted by the Black Summer bushfires have been targeted for regeneration through this partnership (VicForest 2020).

Seed collection for regrowing forest coupes is typically covered under separate licensing when compared to a typical contractor carrying out wild seed harvest. The capacity for forestry to supply native seed to the restoration sector is likely to be limited to *Eucalyptus* species' seed and therefore may not provide a scalable solution to the restoration sector's seed supply issues.



It is proposed however, that there is an opportunity to work with forestry organisations on the revegetation of retired coupes as seed orchards and Seed Production Areas in strategic locations. This should be developed according to priority regions and climate-adjusted provenance research.

2.11 Mine rehabilitation sites

In Victoria, the *Mineral Resources (Sustainable Development) Act 1990* (Vic) (MRSDA) requires that any work proposed under a mining or exploration licence must submit a workplan that includes a rehabilitation plan. The rehabilitation plan will be developed according to, and later monitored against 'completion criteria' — a set of measurable criteria to determine whether rehabilitation objectives have been met.

Legislation pertaining to mine rehabilitation is complex. An example (Victoria) of the various pieces of legislation is outlined below. Note that these do not necessarily relate directly to the legal requirements to harvest seed on a mine rehabilitation site.

- *Minerals Resources (Sustainable Development) Act 1990* (MRSDA)
- Memorandum of understanding in place with *WorkSafe (Occupational Health and Safety Act 2004* and the *Occupational Health and Safety Regulations 2017*)
- Memorandum of understanding in place with the Environmental Protection Authority (*Environmental Protection Act 2017*)
- Memorandum of understanding in place with the Department of Environment, Land, Water and Planning
 - *The Wildlife Act 1975* and *Flora and Fauna Guarantee Act 1988*
 - *Heritage Act 2017*
 - *Native Title Act 1993* (Commonwealth) and *Traditional Owner Settlement Act 2010* (Victoria)
 - *Environmental Effects Act 1978*
- Permit may be required from Catchment Management and Water Authorities (*Water Act 1989*)
- *Aboriginal Heritage Act 2006*
- Local government may issue planning permissions (*Planning and Environment Act 1987*)

A rehabilitation plan must include post-mining land uses for each rehabilitation domain (regulation 43(2)(c) in the MRSDA). Therefore, there is an opportunity to propose that a rehabilitation domain be designated as a seed orchard or Seed Production Area as a post-mining land use. However, this could be constrained by the ongoing maintenance and monitoring required to maintain a genetically diverse and healthy seed source. As such, partnerships and financial incentives would be key to driving the success of this post-mining land use.

Due to the long period of time it may take for mine rehabilitation sites to meet closure and rehabilitation criteria and taking into consideration the time it may take for a plant species to reach reproductive maturity (i.e. flower and set seed) it is likely that mine site rehabilitation would only become a potential source population for native seed collection after 5–20 years of completion of rehabilitation works.

TABLE 2. SUMMARY OF LAND TENURE GOVERNANCE, LEGISLATION AND LICENCE REQUIREMENTS (NOTING THAT A LICENCE IS ALWAYS REQUIRED IF COLLECTING SEED FROM A THREATENED SPECIES LISTED UNDER THE EPBC ACT 1999 OR EQUIVALENT STATE-BASED LEGISLATION)

LAND TENURE	LANDOWNER	LAND MANAGER	LEGISLATIVE INSTRUMENT	POLICY INSTRUMENT	LICENCES/ PERMIT REQUIRED	SEED COLLECTION FOR COMMERCIAL USE ALLOWED	SEED COLLECTION FOR PRIVATE USE ALLOWED
National Parks	Federal/State Government, Traditional Owners	State-based Parks Department (Government)	<i>EPBC Act 1999</i> and equivalent state-based legislation	State/Territory policy document (e.g. management strategy or sustainable harvest)	✓*	Permission required	Permission required
State Forest	Federal/State Government, Traditional Owners	State-based Parks Department (Government)	<i>EPBC Act 1999</i> and equivalent state-based legislation	State/Territory policy document (e.g. management strategy or sustainable harvest)	✓*	Permission required	Permission required
Traveling Stock Reserves (NSW)	State Government (Crown Land)	Local Land Services	<i>Crown Land Management Act 2016; Biodiversity Conservation Act 2016; Local Land Services Act 2013; Native Title Act 1993</i>	None identified	✓*	Permission required	Permission required
Stock Route Network (QLD)	State Government/Local Government	State Government/Local Government	<i>Stock Route Management Act 2002, Land Act 1994, Transport Infrastructure Act 1994, Stock Act, Biosecurity Act 2014,</i>	None identified	✓*	Permission required	Permission required
Conservation Reserve (with conservation covenant)	Private corporate organisations, conservation organisations, Not-for-profit organisations, non-government organisations	Private conservation organisations, Not-for-profit organisations, non-government organisations	Must comply with <i>EPBC Act 1999</i> and <i>Income Tax Assessment Act 1997</i> as well as equivalent state-based legislation	Seed collection is not strictly prohibited but would be assessed on a case-by-case basis. It was identified that organisation-wide policies are currently not in place.	✓*	Permission required	Permission required
Crown and	State government	State government departments	State-based legislation	Policy for leasing, permits and licences	✓*	Permission required	Permission required

LAND TENURE	LANDOWNER	LAND MANAGER	LEGISLATIVE INSTRUMENT	POLICY INSTRUMENT	LICENCES/ PERMIT REQUIRED	SEED COLLECTION FOR COMMERCIAL USE ALLOWED	SEED COLLECTION FOR PRIVATE USE ALLOWED
Council Roadside	Local government	Local council	<i>EPBC Act 1999</i> and equivalent state-based legislation ¹	None identified	✓ *	✓ **	✓ **
Private Land	Individual/ organisation	Individual/organisation	<i>EPBC Act 1999</i> and equivalent state-based legislation	None identified	✓ *	Permission required	Permission required
Carbon Offset sites	Organisation	Organisation	<i>EPBC Act 1999, Carbon Credits (Carbon Farming Initiative) Act 2011, the Carbon Credits (Carbon Farming Initiative) Regulations 2011</i>	None identified	✓ *	X	Permission required
Mine Restoration Sites	Organisation	Organisation	<i>EPBC Act 1999</i> and state-based legislation (refer to example in the paragraph above)	Post mining land-use (seed harvest not explicitly mentioned)	✓ *	Would need to be listed under the post-mining land use regulations	Would need to be listed under the post-mining land use regulations
Water reservoirs and dams	Organisation, state government, local government	Organisation, state government, local government	<i>Water Act 1989</i> and equivalent state-based legislation	None identified	✓ *	Permission required	Permission required

*Licence required if collecting from a threatened species or ecological community

** Additional permits may be required (e.g. strict Work Health Safety regulations for working on a roadside)

¹ For example, legislation that governs roadsides in NSW includes but is not limited to: *NSW Environmental Planning and Assessment Act 1979*, *NSW Biodiversity Conservation Act 2016*, *NSW National Parks and Wildlife Act 1974*, *NSW Heritage Act 1997*, *NSW Biosecurity Act 2015*, *NSW Protection of the Environment Operations Act 1997*, *NSW Roads Act 1993*,

3 ENABLERS AND DETRACTORS

3.1 Increasing the supply of native seed across land tenures

This research reviewed land tenures across Australia to identify the extent of each land tenure to provide initial context of the sizes of various land tenure and land use. In addition, this research identified the key pieces of legislation that govern various land tenures. In many cases, land tenures are managed at the state level, and thus under state-based legislation, but more broadly come under federal legislation, for example, the legislative equivalent of the *EPBC Act 1999*. With the exception of National and State Parks and carbon offset sites, there are no obvious legislative prohibitions for seed collection or the development of land as a seed orchard/Seed Production Area across the land tenures included in this research.

Based on the research of various land tenures completed for this report, several enablers and detractors for native seed collection have been identified and are outlined below. Bushfire risk and impact can act as both an enabler and detractor for increasing access to native seed. The threat of increasing intensity and frequency of bushfires under climate change scenarios and the devastating impacts of the Black Summer bushfires in 2019–20 highlight the need to harvest and store seed as a proactive measure for bushfire recovery. Therefore, there is a tension created by the increasing intensity and frequency of bushfires that likely to:

- reduce seed availability due to multiple burns before it reaches reproductive maturity, for example Alpine Ash (*Eucalyptus delegatensis*) and
- increase the pressure on National and State Parks and other protected area for the collection of native seed.

According to the land tenure mapping (**Figures 7, 8, & 11**), conservation reserves, private forests and multiple-use public reserves were the key land tenures burnt across the Australian Capital Territory, New South Wales and Victoria.

3.1.1 What are the detractors in land access for native seed collection?

- The areas where revegetation is required are typically within degraded or cleared landscapes. Therefore accessing high quality seed in commercial scale quantities that is local to the area is likely going to be difficult, depending on the extent of clearing and degradation. Therefore, seed from a broader than local (10km) provenance may be required.
- Australia's environment is in an overall state of decline with widespread land clearing causing increased fragmentation of vegetation (Melcalfe & Bui 2017). There is a concern that collection of wild seed will not be sufficient to service the growing demands of the restoration industry, particularly in alignment with international restoration goals.

The current model of seed supply for restoration is largely reactive, such that seed is typically collected to order and this is perpetuated by the licensing systems. Therefore, the focus should be shifted towards a proactive approach where we are actively building more seed resources through the establishment of seed orchards/Seed Production Areas, large scale restoration sites and seed banks. Regulatory support for ongoing seed harvesting will be an important factor to facilitate this.

- We were unable to access key historical seed collection data that is species and location specific for this research. This highlights that data collection and collation (to a single state-wide source) for the quantity and location of seed harvesting was minimal and inconsistent across Australian states and territories. This made it difficult to ascertain areas in our mapping where seed demand is high or low.



However, speaking with on-ground practitioners and according to the *Australian Native Seed Survey Report (2020)*, seed is most commonly collected from private land and least commonly collected from National and State Parks and Reserves.

This is likely due to a number of factors including, not requiring a licence to collect non-threatened species on private land (with the exception of Western Australia, where you are required to have a permit to collect native seed on private land). National and State Parks are likely to contain high quality seed compared to surrounding patches of remnant vegetation, however the risk of over-harvesting and adversely impacting the vegetation's ability to naturally regenerate is a key detractor for suggesting increased access to these protected areas.

- In speaking to land managers, this research identified that collection of native seed from land managed under a conservation covenant or as a conservation reserve has a key detractor — the risk of ongoing harvest causing unintended harm to a vegetation population's genetic diversity and overall health. This is an understandable concern due to the increasing risk of extinction for fragmented populations due to loss of genetic diversity (Ralls *et al.* 2017; Sgro *et al.* 2010).

3.1.2 What are the enablers in land access to collect native seed?

- The enablers in land access have some variation across jurisdictions due to the different composition and extent of land tenures across each state. However, in most cases, there is a lack of legislative prohibitions for seed collection across key land tenures. Therefore, there is potential to influence a policy clause that increases access to native seed resources at a broad level.
- It is likely that access to various land tenures for seed collection, even though not prohibited, would still be assessed on a case-by-case basis due to concerns of vegetation health and future natural recruitment. However, having a foundation of criteria upon which to base access (granted or declined) would be of benefit to the native seed sector and may streamline requests for permission to access a specific parcel of land. A template for such an assessment for native seed collection could be developed in collaboration with various stakeholders across key land tenures.

- Long project lead times and a clear understanding of what species are required for upcoming revegetation and restoration works may help to drive increased access to native seed on various land tenures, for example conservation covenants, water reservoirs and dams and in National Parks. The reasoning behind this is sufficient time to plan and establish clear objectives for projects should improve the ‘business case’ for accessing wild seed.
- As outlined above, native seed for bushfire recovery can act as both a detractor and enabler. It is the position of this report that the scaling of seed orchards and Seed Production Areas for revegetation and restoration of vulnerable landscapes and bushfire affected areas will be key to increasing the supply of native seed.

4 RECOMMENDATIONS

- 1. Identify core species required in priority restoration locations (e.g. bushfire recovery and vulnerable landscapes) to build incentives and capacity for the development of seed orchards and Seed Production Areas in strategic locations.**

This should take into consideration the importance of incorporating climate-adjusted provenance into restoration programs to improve the resilience of vegetation to the unpredictable impacts of climate change. Furthermore, because genetic variation and resilience is so important when establishing a seed orchard or Seed Production Area, access to high quality native seed from National and State Parks is likely to be important. It is suggested that partnerships between Government Departments be investigated to enable the harvest of native seed from these protected areas in a strategic way.

At this point, the land tenure mapping conducted as part of this research will become increasingly valuable to identify land tenures that may be strategically placed in the landscape for a seed orchard/Seed Production Area.

- 2. Development of seed collection baselines to reduce unintended consequences of wild seed collection on native vegetation.**

This research identified that there are concerns about ongoing seed harvesting occurring within National and State Parks, conservation covenants or conservation reserves and reservoirs and dams. The key driver behind this is the risk of causing unintended harm to populations (e.g. reduced capability of vegetation to naturally regenerate by reducing canopy and soil seed banks as well as introduction of weed species). This may be heightened in areas where population genetic diversity is low, or vegetation is fragmented or degraded. This risk is valid and as restoration practitioners, protecting the environment is of the utmost importance.

Therefore, to reduce the risk of causing unintended harm, establishing a standard baseline for seed collection to be permitted is recommended, for example, a minimum population size.

This standard would play an important role in influencing the development and implementation of policy clauses for seed collection across various tenures including conservation covenants and water reservoirs and dams.

3. Develop Land Access Agreements and Memoranda of Understanding (MOU) across key land tenures in priority areas.

In speaking to several landowners across various sectors including water utilities and conservation organisations, it was identified that there is an appetite for increasing access to intact vegetation on these land tenures for seed collection and development of Seed Production Areas (SPAs). Access for seed collection would depend: (i) on the species intended for harvest; and (ii) the health and extent of that species on the land tenure. In order to facilitate access for the supply of high quality native seed for restoration purposes, the following arrangements are proposed:

- Seed collection requirements are discussed with each landowner on an annual basis and/or, in alignment to the local licensing requirements, and access is assessed according to a set of criteria established under an organisational policy.



The benefit of this arrangement is that seed collection practitioners will build relationships with landowners and will be aware of the potential to collect seed from these areas. However, seed collection is often opportunistic (due to various factors including flowering intervals and climatic conditions) and therefore won't always be driven by upcoming project demand, but rather the knowledge that the seed will be used within the next couple of years.

This will be highly varied according to species and seed storage viability. Therefore, relying on approval on an annual basis may delay access and hence missing the window to harvest seed, which is not dissimilar from current barriers to accessing wild native seed.

- A land access agreement or MOU is established to facilitate timely access for seed collectors. The benefit of this arrangement is these agreements can be established for multiple years, provide flexibility and increase the ability to collect seed opportunistically by reducing the permission process. A land access agreement or MOU could be incentivised through a mutual benefits arrangement whereby, for example a condition report of the vegetation being harvested is submitted on completion of harvest or observations of weed species are relayed back to the landowner.

- 4. Build land tenure maps into interactive maps that can be utilised by various stakeholders within the native seed sector to identify areas where access is permitted and any requirements to access a particular area. This would be particularly useful for climate-adjusted seed collection which may sit outside a regular seed collection area.**

This research collated various datasets from government sources to map land tenure and land use across Australian states in addition to burn extent from the 2019–20 bushfires using the NIAFED dataset.

It is recommended that the land tenure maps be further developed into a live, interactive web-based application to complement species distribution mapping. This would be valuable for practitioners to easily identify areas to access for seed collection. For example, if practitioners want to collect *Eucalyptus viminalis* seed, they could search for this species and obtain a distribution output. Clicking on a specific location could then inform them of the land tenure, land use, licensing requirements, who to contact for land access permissions and seed contractors operating in that region.

- 5. Access historical seed collection data and influence the implementation of an integrated data system that improves collation of data to a single source to build a robust dataset for seed collection that is species and location specific.**

In their current state, the maps created (examples provided in section [1.2](#)) are useful to identify the extent of these land tenures and their locality with regards to burn extent from the 2019–20 Black Summer bushfires. However, the usefulness of these maps could be improved by contextualising this mapping with species specific, location seed collection data.

As part of this research, an attempt was made to gather historical seed collection data from state licensing data, however this data was inconsistent across states and ultimately there were too many gaps to integrate into the output presented in this report. It is believed that gathering this data would be useful but would firstly require accessing licensing data from local government offices as this data was typically not collated to a single, state-wide source.

The implementation of integrated data systems to collate local data to a single source would make this data acquisition easier in subsequent years. However, licensing data is not likely to tell the full story of what seed is collected as licensing is not required in all circumstances (e.g. collecting a non-threatened species on private land). Therefore, capturing all seed collection data would require collaboration amongst stakeholders to report annual harvests.

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APPENDIX A

TABLE 3. SUMMARY OF LAND TENURE ACROSS AUSTRALIA (DISPLAYED IN HECTARES)

TENURE CLASS	ACT	NSW	NT	QLD	SA	TAS	WA	TENURE CLASS
Leasehold forest	60,849	30,158,371	62,068,771	104,291,022	42,017,369	29	86,296,782	82
Multiple-use public reserve	17,727	2,183,297	0	3,242,267	129,001	812,314	1,545,562	3,299,237
Nature conservation reserve	128,164	7,172,745	64,687	7,689,581	18,805,444	2,733,612	32,420,545	3,988,343
Unresolved tenure	175	555,664	120,868	3,125,356	195,400	19,529	421	2,405
Other Crown land	28,738	2,038,798	6,780,978	2,337,462	1,823,770	552,211	92,448,044	610,145
Private forest	327	38,021,679	65,802,081	52,316,161	35,458,967	2,711,341	39,990,591	14,841,998