Native Vegetation Scientific Expert Panel **report**

#32504 | 0123

Queensland Government

Acknowledgement of Country

The Native Vegetation Scientific Expert Panel members acknowledge the Country and people of Queensland's First Nations. We pay our respect to Elders, past, present and future.

We acknowledge the continuous living culture of First Nations Queenslanders—their diverse languages, customs and traditions, knowledges and systems.

We acknowledge the deep relationship, connection and responsibility to land, sea and sky and Country as an integral element of First Nations peoples' identity and culture.

This Country is sacred. Everything on the land has meaning and all people are one with it.

We acknowledge First Nations peoples' sacred connection as central to culture and being.

First Nations people speak to Country, listen to Country, sing up Country, dance up Country, understand Country and long for Country.

We acknowledge and thank First Nations peoples for the enduring relationship connecting people, Country and ancestors—an unbreakable bond that safely stewarded and protected the land, waters and sky for thousands of generations.

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Cover image: *Acacia falciformis*, Central Queensland sandstone belt.

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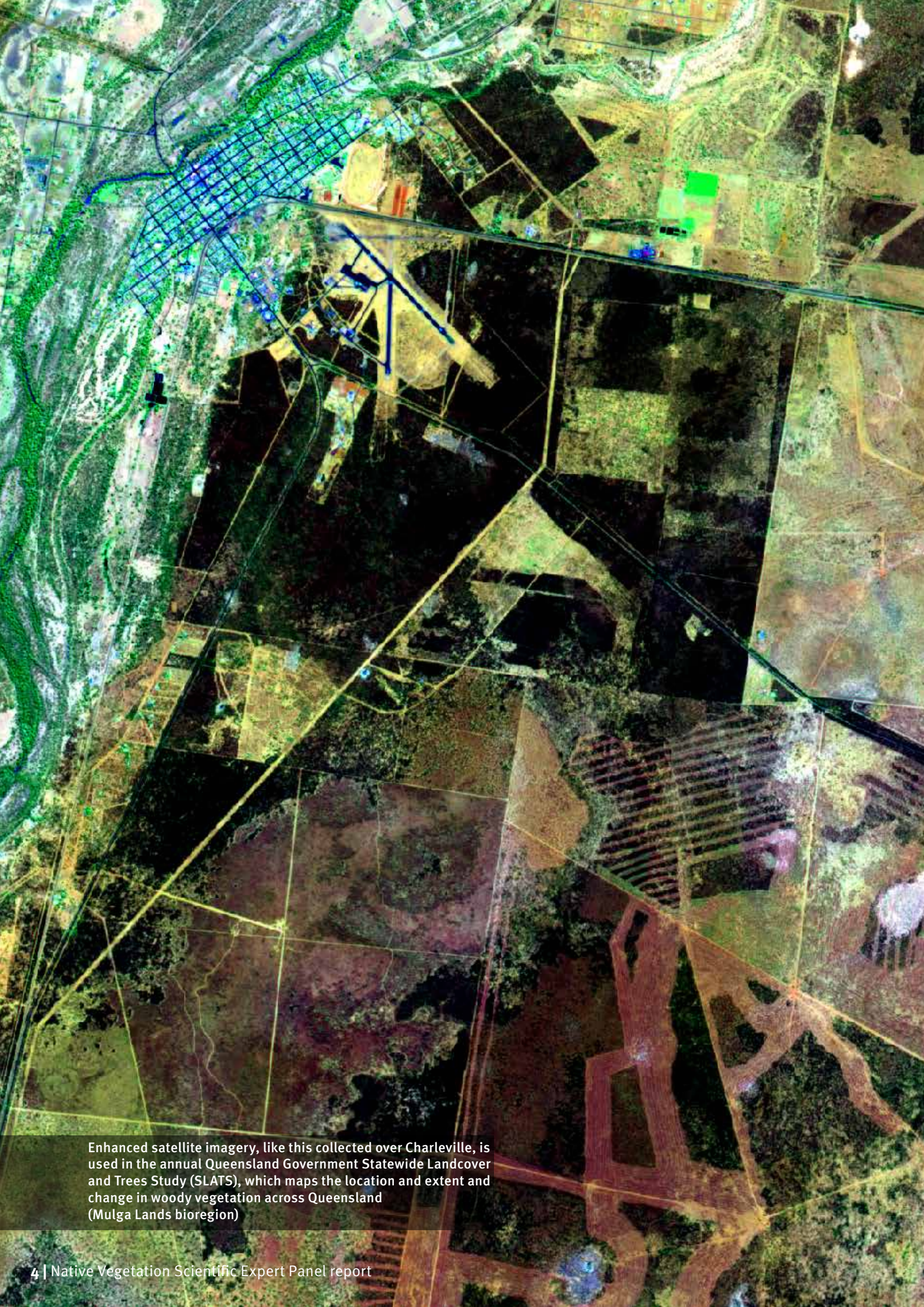

Enhanced satellite imagery, like this collected over Charleville, is used in the annual Queensland Government Statewide Landcover and Trees Study (SLATS), which maps the location and extent and change in woody vegetation across Queensland (Mulga Lands bioregion)

Executive summary

This report, by the Native Vegetation Expert Panel (the Panel), details the findings of an independent review of the factors behind the native vegetation clearing and re-clearing (henceforth 'clearing') identified in the Queensland Government Department of Environment and Science (DES) 2018–19 Statewide Landcover and Trees Study (SLATS) report (released 30 December 2021).

The 2018–19 SLATS report showed that 680,000 hectares (ha)[1] of woody vegetation were affected by clearing activity during the 12-month period.

Most of the clearing (about 480,000ha, or 71% of the total) was on land mapped as likely to have been previously cleared (Category X) which is either regulated by landholder-scale agreements called Property Map of Assessable Vegetation (PMAV) or by the annually updated Regulated Vegetation Management Map (RVMM) and Vegetation Management Supporting Map. The remaining 200,000ha involved the clearing of regulated remnant vegetation, high-value regrowth or regrowth in watercourse areas.

Within areas of mapped remnant vegetation (29%, or about 200,000ha of total clearing activity[2]), about 180,000ha (90% of mapped remnant clearing) was in areas that contained Least Concern regional ecosystems and about 19,000ha (9.5% of mapped remnant clearing) was in Of Concern regional ecosystems. About 5,100ha (2.5% of mapped remnant clearing) was in Endangered regional ecosystems.

About 64,000ha, 9.4%, of the total clearing (32% of clearing in regulated remnant vegetation) was 'unexplained', possibly illegal.

In addition to providing a better understanding of these SLATS numbers,[3] the objectives of the review were to help understand the drivers contributing to clearing and re-clearing in Queensland and identify pathways to protect, restore and manage native vegetation for multiple benefits, especially biodiversity.

The overall recommendations of this review are to:

1. maintain a stable, ecologically robust regulatory framework that provides security and confidence to landholders and the general public, and
2. implement a suite of educational, financial and motivational measures that will further advance the ecological objectives outlined by the Panel, and be consistently applied over at least 15 years.

1 All figures in this report are reported to two significant figures (2 s.f.) to improve communication and understanding. As a result, there will be minor rounding errors and figures may sometimes not appear to exactly add up.

2 *Regulated remnant vegetation* is Category B under the *Vegetation Management Act 1999* (VMA) framework, while mapped remnant vegetation includes small amounts of remnant vegetation in other categories. For example, some Category X land meets the definition of remnant vegetation (see glossary) but, because it is mapped as Category X on a PMAV, it is not regulated under the VMA. In 2018–19, about 3.6 % of the clearing on Category X land was in areas of mapped remnant vegetation.

3 See Appendix 5 for a full summary of the 2018–19 SLATS report.

The following specific recommendations by the Panel provide a pathway towards a future for the Queensland land management sector that will improve the implementation of the *Vegetation Management Act 1999* (VMA), support the protection and recovery of biodiversity, and be more economically and socially resilient.

We note that the issue of vegetation management in Queensland has been contentious and complex for several decades. We have taken a future-focussed approach, but we recognise that the challenges we seek to address have long-standing and complex histories. We have recommended, what we believe to be, some win-win and low-risk directions. This has been achieved in a very short period of time with negligible committee resources. No one recommendation on its own is a 'quick fix' for this challenge; instead, a suite of responses, with sustained commitment and resourcing, will be essential. Interactions among the recommended responses are complex and human behaviour is unpredictable. As such, several of our suggestions will require more detailed analysis, as well as careful monitoring to evaluate their adequacy and effectiveness at achieving the ecological objectives identified by the Panel.

Summary of recommendations

R1 **Maintain regulatory stability**

The Queensland Government should not change the regulation of Category X land covered by a PMAV. The current system, whereby the only way to change the mapping of Category X areas on a PMAV is with the landholder's consent, remains appropriate and provides consistency. Such certainty will reduce volatility in clearing levels. The environmental and other impacts of the recently revised Accepted Development Vegetation Clearing Codes (ADVCC) should be monitored over an extended period (see R10).

R2 **Improve extension, information and demonstration**

Fund and support an improved extension service to landholders, with a focus on consultation, engagement and information on ways landholders can enhance biodiversity while maintaining or improving agricultural productivity and profitability, including through accessing environmental markets and related government programs. The service should be provided by locally-based, well-respected extension officers within appropriate regional organisations such as Indigenous land councils, natural resource management (NRM) organisations and local governments. The extension service should deliver a program to help landholders identify—easily and with minimal risk—opportunities to protect, restore and manage native vegetation while generating on-farm income, including through engagement with relevant programs and initiatives (see R3 and R4).

R3 Launch an environmental stewardship scheme

Design and establish a stewardship program that complements R2 and seeks to raise awareness of the benefits of, and reward landholders for, integrating biodiversity into land management/farming systems. There are different options for how the scheme could be designed, and the Panel recommends a range of 'entry-points' that suit the circumstances of different land owners, from low-obligation reward programs with minimal administrative burden that seek to engage landholders in biodiversity conservation, through to higher-obligation programs that provide landholders with longer term payments for improving the condition of remnant vegetation or establishing and managing private protected areas. All program options would be voluntary, with a strong emphasis on active landholder engagement (see R2).

R4 Enhance carbon market opportunities

R4.1 Encourage the Australian Government to introduce an Emissions Reduction Fund (ERF) method that provides carbon credits for the avoidance of clearing on Category X land that is at high risk of being re-cleared in the foreseeable future. The intent is to provide landholders with the option of earning income from the retention and management of regrowth vegetation on Category X land, particularly in areas that are less productive for agricultural purposes and that can assist in the conservation of biodiversity and threatened regional ecosystems.
The Australian Government should also be encouraged to:

a. allow high-integrity vegetation projects under the ERF to receive extended crediting periods to support their ongoing management
b. modify existing methods to allow revegetation projects to combine plantings and human-induced regeneration.

R4.2 Modify the Land Restoration Fund (LRF) to focus it on projects that protect and restore areas of high-conservation significance that have previously been cleared (for example, endangered regional ecosystems or habitat for threatened species). The LRF payments should be calibrated to ensure the returns from carbon projects involving the avoidance of clearing and/or restoration of native vegetation in areas of high-conservation significance are competitive relative to alternative productive land uses. To help achieve this, the LRF should include options for landholders to receive upfront payments (or loans) for carbon credits and projected biodiversity improvements. All LRF-funded projects should have 100-year permanence periods.

R5 **Clearer reporting and communication of SLATS**

Release annual standardised and carefully interpreted SLATS report cards that include state-wide data and data breakdowns by Interim Biogeographic Regionalisation for Australia (IBRA) regions and show the full balance sheet of native vegetation, with clearing, re-clearing and recovering vegetation explicitly defined and accounted. Also include clear explanations and SLATS Compliance Analysis Network (SCAN) data on clearing under the vegetation management framework to provide detailed information on the reasons why clearing is occurring. A fixed release date is also recommended to provide transparency in the process and confidence in the data.

R6 **Enable better enforcement**

Increase funding and resources to the Department of Resources to improve the enforcement of the VMA and allow for increased early engagement and intervention.

R7 **Better regional planning**

Consider further, finer-scale regional planning in South East Qld, Wet Tropics and Brigalow Belt bioregions to understand and plan for current and emerging threats and opportunities to native vegetation (particularly Endangered and Of Concern regional ecosystems and areas that provide habitat for threatened species) from urban development, infrastructure and energy and mining projects.

R8 **Review exemptions for clearing in threatened ecosystems**

Review the exemptions under the VMA framework for urban development, infrastructure and resource activities (including in relation to Priority Development Areas) that allow clearing (full and partial) in Endangered and Of Concern regional ecosystems, and areas that provide habitat for threatened species, to ensure clearing in these ecosystems is avoided wherever possible. Where avoidance is impossible, a rigorous assessment consistent with SDAP, State Code 16 is preferable to an outright exemption.

R9 **Review forestry in threatened ecosystems**

Review private native forestry practices that result in full and partial clearing in Endangered and Of Concern regional ecosystems, and areas that provide habitat for threatened species, to identify appropriate measures to minimise and, ideally, avoid such clearing.

R10 **Establish a standing advisory committee**

The Queensland Government forms a standing expert advisory committee that meets periodically to investigate and advise on issues of native vegetation management in the state, and help progress the recommendations of this review.

1. Purpose and context

This report details the findings of an independent review of the factors behind the native vegetation clearing and re-clearing (henceforth 'clearing') identified in the Queensland Government Department of Environment and Science (DES) 2018–19 SLATS report (released 30 December 2021).

The 2018–19 SLATS report showed that 680,000 hectares (ha) of woody vegetation were affected by clearing activity during the 12-month period (560,000ha of full clearing and 120,000ha of 'partial clearing', where some woody vegetation remains).[4]

At first glance, this number represents a significant increase from the 390,000ha reported in the 2017–18 SLATS report. However, importantly, the 2018–19 SLATS reporting has a revised method from previous years, with changes including the use of higher-resolution satellite imagery (improved from 30 metres to 10 metres) meaning that the clearing rates reported are not directly comparable to those of 1999–2018.

In 2018–19, most of the clearing was on Category X land, which has been mapped as likely to have been previously cleared (about 480,000ha, or 71% of the total). These Category X areas are either regulated by landholder-scale agreements called PMAV or by the annually-updated Regulated Vegetation Management Map (RVMM) and Vegetation Management Supporting Map (see Section 1.1). Sixteen per cent of this 480,000ha was on land without a PMAV in place.

The remaining 200,000ha (29%) involved the clearing of regulated remnant vegetation, high-value regrowth or regrowth in watercourse areas.

About 26% or 180,000ha of the total clearing activity was in Category B areas (regulated remnant vegetation) with the remainder mostly in Category C (regulated high-value regrowth vegetation) areas (1.6% or 11,000ha of the total) and Category R (regulated regrowth watercourse area) (0.44% or 3,000ha of the total) areas.

Within areas of mapped remnant vegetation (29% or 200,000ha of total clearing activity[5]), about 180,000ha (90% of mapped remnant clearing) was in areas that contained Least Concern regional ecosystems and about 19,000ha (9.5% of mapped remnant clearing) was in Of Concern regional ecosystems. About 5,100ha (2.5% of mapped remnant clearing) was in Endangered regional ecosystems.

About 9.4% (about 64,000ha) of the total clearing (32% of clearing in regulated remnant vegetation) was not permitted ('unexplained').

4 All figures in this report are reported to two significant figures (2 s.f.) to improve communication and understanding. As a result, there will be minor rounding errors and figures may sometimes not appear to exactly add up.

5 *Regulated remnant vegetation* is Category B under the VMA framework, while mapped remnant vegetation includes small amounts of remnant vegetation in other categories. For example, some Category X land meets the definition of remnant vegetation (see glossary) but, because it is mapped as Category X on a PMAV, it is not regulated under the VMA. In 2018–19, about 3.6 % of the clearing on Category X land was in areas of mapped remnant vegetation.

Of the State's 13 bioregions, the Brigalow Belt (43% or 290,000ha of the total) and Mulga Lands (42% or 280,000ha of the total) had the majority (a combined 85%) of all clearing activity. These two regions also recorded the highest amounts of clearing of vegetation mapped as remnant (130,000ha in Mulga Lands and 35,000ha in Brigalow Belt).

In addition to providing a better understanding of these SLATS numbers,[6] the objectives of the review were to help understand the drivers contributing to clearing in Queensland and identify pathways to protect, restore and manage native vegetation for multiple benefits, especially biodiversity.

The independent the Panel was established in late March 2022 to conduct the review and the first meeting was held on 25 March 2022. A draft report was provided to the Honourable Meaghan Scanlon MP, Minister for the Environment and the Great Barrier Reef and Minister for Science and Youth Affairs in October 2022. The membership is outlined in section 1.2.

1.1 Native vegetation clearing regulation in Queensland

The VMA regulates the clearing of vegetation across Queensland to, amongst other things, conserve native vegetation and prevent loss of biodiversity. The VMA framework, consisting of the VMA, the *Planning Act 2016* (Qld) and the Planning Regulation 2017 (Qld), prohibits broadscale clearing of remnant and 'high-value regrowth' vegetation. Notably, the VMA definition of 'vegetation' is limited to native woody vegetation other than mangroves, meaning the Act does not regulate the clearing of native grasses and other non-woody plant species. Some clearing is exempt from the regulatory reach of the VMA framework; some clearing activities are permitted if they comply with self-assessable ADVCC; and some activities are classed as assessable development—which means they will need to be assessed in advance by the State Assessment and Referral Agency (SARA) against the State Development Assessment Provisions (SDAP) under the *Planning Act 2016*.

Woody vegetation is classified under the VMA as either remnant or regrowth. The term 'remnant' refers to areas of a regional ecosystem that has characteristics similar to an undisturbed example of that regional ecosystem. Clearing of vegetation classified as remnant can, therefore, include some clearing of previously-cleared vegetation (for example, clearing for fodder of mulga that has regrown to have characteristics similar to mature stands of mulga). Similarly, clearing of vegetation classified as regrowth can include some clearing of vegetation that would meet the definition of remnant (for example, older regrowth in Category X areas on a PMAV).

6 See Appendix 5 and Appendix 6 for a full summary of the 2018–19 SLATS report and additional graphics.

Regrowth vegetation (3–5 years) near Blackall, Queensland (Brigalow Belt bioregion)

High value regrowth brigalow vegetation near Duaringa, Queensland (Brigalow Belt bioregion)

Remnant brigalow forest in Boondandilla State Forest, near Moonie, Queensland (Brigalow Belt bioregion)

Areas mapped as Category X include vegetation mapped as previously cleared as well as areas of no native vegetation. Category X areas on a PMAV are generally not regulated by the VMA framework, even if the vegetation regrows to maturity (see section 2.3.4). Only Category X areas that are not under a PMAV can be reclassified as regulated vegetation, for example, if it regains the characteristics of remnant or high-value regrowth vegetation.[7]

The VMA regulatory requirements extend over approximately 80% of the state's landmass (›140 million ha).[8] The remaining 20% (about 33 million ha) is mapped as Category X and clearing in such areas is generally exempt under the VMA framework.

The DES-administered program SLATS monitors woody vegetation as defined in the VMA. The Department of Resources administers the SLATS SCAN program, which interprets SLATS data against the VMA framework to classify the regulatory pathways under which different areas of woody vegetation were cleared. The 2018–19 SCAN data documented that 91% of the total clearing activity (620,000ha) was 'permitted'—either exempt from the VMA, approved under development approvals, or likely to be compliant with a self-assessable code or area management plans. The remaining 9.4% (about 64,000ha) of the total clearing activity—32% of clearing in regulated remnant vegetation—was unexplained (potentially illegal) clearing.

1.2 Independent expert panel

The Panel's terms of reference were to help understand the drivers contributing to native vegetation clearing and re-clearing in Queensland and identify pathways to protect, retain and regenerate native vegetation (see Appendix 2).

It was specifically tasked to identify incentives or other mechanisms that can be used to help avoid clearing and advise if additional measures are needed. The following Panel objectives are drawn from the terms of reference.

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7 Note that there are limited situations where Category X areas on PMAVs are regulated under the VMA framework. These areas could be reclassified as regulated vegetation where unlawful clearing has occurred. Landholders can also voluntarily request their Category X areas on a PMAV be changed to Category A areas to provide greater protection to vegetation.

8 The VMA applies to all clearing of vegetation other than vegetation on:
(a) a forest reserve under the *Nature Conservation Act 1992*
(b) protected areas under the *Nature Conservation Act 1992* including national and conservation parks and resource reserves
(c) state forests or timber reserves under the *Forestry Act 1959*
(d) a forest entitlement area under the *Land Act 1994*. This land is mapped on the regulated vegetation management map as remnant vegetation (Category B), high-value regrowth vegetation (Category C), riparian vegetation in a Reef catchment (Category R); and vegetation in an area subject to special management requirements (Category A). The definition of 'vegetation' regulated under the VMA is a native tree or plant other than: grass or non-woody herbage; mangroves which are protected under the *Fisheries Act 1994*; and a plant within a grassland regional ecosystem prescribed in Schedule 5 of the Vegetation Management Regulation 2012.

Panel objectives (PO)

PO1 Better understand the drivers, behaviours and causal factors contributing to the latest land clearing rates and trends in Queensland.

PO2 Review available information and engage with key stakeholders and communities to identify pathways to protect, retain and regenerate native vegetation and associated biodiversity and carbon while supporting sustainable economic productivity.

PO3 Identify appropriate incentives, carbon farming and natural capital programs, and any other income streams to help avoid clearing.

PO4 Make recommendations on policy and other measures to improve the retention and restoration of native vegetation.

As per these objectives and its terms of reference (see Appendix 2), the Panel focused on Queensland Government legislation and this report does not discuss Australian Government legislation, including the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth).

The Panel comprised ten members, with recognised expertise in vegetation management, biodiversity conservation, natural resource and offset economics, behavioural and social sciences, natural capital and climate change sciences, First Nations perspectives and government and policy (see Appendix 3).

Members

Professor Hugh Possingham, The University of Queensland and former Queensland Chief Scientist (Chair)

Dr Philippa England, Griffith University

Dr Andrea Leverington, independent member

Professor Andrew Macintosh, Australian National University

Professor Martine Maron, The University of Queensland

Mr Nigel Onley, landholder

Dr Stuart Whitten, CSIRO

Dr Beth Woods, independent member

First Nations panel members included:

Mr Jim Walker, The University of Queensland.

Ms Shilo Villaflor, Aboriginal Carbon Foundation[9]

Note: The Chair and Panel members did not receive remuneration for their involvement.

9 Attended Panel meeting #2 (April 2022) but due to commitments was not able to continue beyond May 2022.

1.3 Independent review process

The independent review process was led by the (then) Queensland Chief Scientist, Professor Hugh Possingham, supported by the Office of the Queensland Chief Scientist.

Following the formation of the Panel and terms of reference, six meetings were held which supported information gathering, presentations, discussions, analysis and planning. In addition, during the review period the Panel travelled to the Taroom region of the Brigalow Belt bioregion. They received tours of five properties and discussed on-the-ground issues with landholders and invited local experts (see Appendix 4).

The Panel also consulted with peak groups across five sectors (agriculture and forestry, environment, First Nations organisations, resources and infrastructure, and local government and NRM groups).

During this stakeholder engagement more than 40 organisations were consulted, and the Panel received at least 20 written submissions, including more than 75 solutions-based suggestions for the Panel to consider.

An interagency technical advisory group provided the Panel with information, monitoring data and analyses, and assisted with understanding the policies and programs associated with the protection of native vegetation, biodiversity and conservation strategies, natural capital and emissions reduction, climate action and Great Barrier Reef protection plans.

The Panel was supported by a dedicated project manager, Mark Grant, who helped undertake research, prepare papers and presentation materials, engage with stakeholders, report writing and acted as a conduit between the Panel and the interagency technical advisory group.

2. The opportunity

Queensland's native vegetation is among its more precious assets. It supports human wellbeing through many ecosystem services, as well as the rich and unique biodiversity that makes Queensland an internationally significant tourism destination and a beautiful place to live. Much of this biodiversity is found nowhere else on the planet, and Queensland has the privilege and responsibility to manage and protect it for future generations.

Eighty per cent of Queensland (140 million ha) is mapped as regulated vegetation. This represents an important achievement and provides the state with a significant stock of natural capital.

The remaining 20% of Queensland (33 million ha) is mapped as Category X (exempt from clearing regulations under the VMA) land and is primarily managed for agriculture. The productivity of agricultural land is vital to Queensland's economy and provides the state, nation and world with essential food and fibre.

Now more than ever, Queensland's farmers have a unique opportunity to further enhance the sustainability and climate resilience of their land and diversify income streams by integrating native vegetation and biodiversity conservation into their production systems.

By protecting, restoring and managing the environmental values of native vegetation, there is an opportunity to maximise its benefits to the state—and demonstrate to the world—sound environmental credentials. As the primary managers of regulated land, landholders are well placed to facilitate a balanced approach to the stewardship of this land.

Because of preferential clearing in particular ecosystems, little remains of particular ecosystems. For example, there are 51 endangered regional ecosystems with less than 10% estimated to remain in remnant state.[10] The Panel views this as, among several matters, of particular concern and this report includes measures to help protect and restore depleted ecosystems, and retain and manage other important native vegetation.

This report recommends enhanced pathways for landholders managing both regulated and unregulated land to unlock opportunities to receive benefits from environmental stewardship. It presents a suite of financial incentives and policy, educational and other measures for Queensland, intended to both improve the protection and restoration of regulated land, and to encourage the retention, restoration and sustainable management of more native vegetation.

10 Queensland has 1449 regional ecosystems legislated under the VMA.

2.1 Policy objectives

Landscape management in Queensland is a complex story of competing interests that include population pressure and urban expansion, resource extraction, industrialisation, food production and conservation.

Over the past two decades, most land clearing in Queensland has involved the re-clearing of non-remnant regrowth vegetation in areas not regulated by the VMA framework (480,000ha or 71% of the total clearing activity in 2018–19), and the permitted harvesting of mulga for fodder in regulated remnant vegetation (about 77,000ha or 11% of the total in 2018–19).

Approximately 180,000 hectares (about 26%) of the total clearing in 2018-19 involved the clearing of regulated remnant vegetation (Category B). The major part of this clearing (100,000ha) was in accordance with recently revised[11] ecologically driven ADVCCs, with 69% of the 100,000 hectares cleared for fodder in mulga ecosystems not of concern. Around 32% (58,000ha) of the total clearing in remnant vegetation was attributed as 'unexplained', possibly illegal, clearing.

Clearing of Queensland's remnant vegetation reduces the state's natural capital and its valuable ecosystem services, including biodiversity, carbon capture, water quality, flood protection and the condition of the Great Barrier Reef (GBR).[12, 13] It may also affect future trade relationships.[14]

The Panel sees the loss of remnant vegetation, and particularly old-growth vegetation, as a particularly urgent issue. Old growth vegetation contains irreplaceable values, and the habitat values of older vegetation can be very slow to replace. The significance of the values associated with old growth vegetation is somewhat reflected in the VMA, which primarily focuses on the regulation of the clearing of remnant woody vegetation. Reflecting this, under the VMA, regrowth that is more than 15-years old can also be subject to regulation, unless it is on Category X land and covered by a PMAV. However, the SLATS data do not identify how much native vegetation in Queensland is old-growth vegetation, or how much has characteristics of remnant vegetation.

11 The review of the managing a native forest practice ADVCC is not yet completed.

12 In Great Barrier Reef catchments where adequate ground cover to limit runoff is not maintained.

13 The Panel has reviewed the report on *The joint World Heritage Centre/IUCN Reactive Monitoring Mission to the Great Barrier Reef (Australia)* and note that its general conclusions and specific recommendations apply across Queensland and are consistent with the report's recommendation on native vegetation management (Recommendation P4).

14 Examination of the European Union's recently introduced 'deforestation-free' regulations is noteworthy in this regard, although individual Panel members note that the existing Queensland VMA framework appears to deliver the desired outcomes. Individual major buyers of, or investors in, food and fibre could bring in more specific requirements habitat loss in the future.

Across Queensland, approximately 116 million hectares of woody vegetation is classed as regulated remnant vegetation (Category B) and 1.7 million hectares of vegetation is classed as regulated regrowth vegetation (Category C, Category R and Category A). Queensland Government mapping estimates that significant areas of woody vegetation that has had no recorded major disturbance for at least 15 years exist on Category X land with PMAVs in place. There are opportunities to further improve environmental outcomes through the voluntary protection and management of mature vegetation on Category X land by working with landholders.

The Panel believes there are opportunities to enhance the existing approach to the management of native vegetation through a range of measures, including greater use of positive financial incentives coupled with improved extension services. These new measures should focus on enhancing the protection, restoration and management of native vegetation. Protecting, restoring and managing Queensland's ecosystems will ensure a suite of flow on benefits for the state, including the conservation of its threatened species, the enhancement of biodiversity, and the reduction of land degradation. The Panel's recommendations are built around these ecological objectives (EO).

EO1 Protection

Reducing the loss, and risk of loss, of intact ecosystems, particularly Endangered and Of Concern regional ecosystems, through imposition of long-term restrictions on land use and land-use change by:

- eliminating, so far as possible, the clearing of remnant vegetation in regional ecosystems classed as Endangered or Of Concern
- preventing any more regional ecosystems becoming classed as Endangered or Of Concern due to clearing or re-clearing
- incentivising the retention of regrowth vegetation, particularly Endangered or Of Concern regional ecosystems
- identifying, protecting and maintaining old-growth vegetation, as many of its critically important habitat components (such as large old trees, natural hollows, and intact ground layer structure) are essentially irreplaceable once lost
- preventing the loss and degradation of all remaining examples of native vegetation with an intact, native ground layer[15]
- protecting remnant and high-value regrowth vegetation to prevent land degradation, enhance biodiversity, and provide wildlife habitat (especially for threatened species), while sequestering carbon, and improving agricultural productivity and profitability.

15 Once weeds and pasture species such as buffel grass (*Cenchrus ciliaris*) invade the understorey or introduced amongst native vegetation, the process is essentially irreversible. For instance, many of the threatened flora and fauna of the brigalow belt rely on relatively intact understorey and ground cover; such sites are now rare.

EO2 Restoration

Restore ecosystems that have been lost because of past clearing by:

- incentivising the regeneration or replanting of Endangered or Of Concern regional ecosystems
- incentivising the regeneration or replanting of native vegetation in strategic locations to protect soil, watercourses, and provide wildlife habitat (especially for threatened species), while sequestering carbon, and improving agricultural productivity and profitability.

EO3 Management

Improve the condition of areas of remnant and regrowth vegetation by:

- incentivising improved management of remnant vegetation and high-value regrowth, including potential habitat for threatened species, to enhance biodiversity and environmental outcomes.

2.2 Drivers of vegetation clearing and re-clearing

In accordance with its Terms of Reference, the Panel has broadly reviewed the drivers, behaviours and causal factors contributing to the 2018–19 clearing rates and trends in Queensland. We note that a deep analysis of fundamental drivers would require historical exploration of the role of regulation, markets, attitudes and behaviours; given the short time and limited resources available, we focus primarily on the contemporary context and the more proximate purposes of clearing.

2.2.1 SLATS landcover replacement classes

Annual SLATS reports provide an indication of the purpose for which the vegetation was cleared as landcover replacement classes. The attribution of these classes is primarily based on visual interpretation using satellite imagery, with reference to ancillary data sources. It is important to note that the landcover replacement class attribution does not consider permits, exemptions, code-based practices or any other regulatory, policy or legislative mechanism. Additional detailed analyses of SLATS clearing activity data is undertaken by DES and the Department of Resources independent of SLATS reporting for the purposes of understanding the clearing activity in the context of the VMA (see Section 2.2.2).

In the 2018–19 SLATS report, about 93% (630,000ha) of the total clearing activity was attributed to the ‘pasture’ landcover replacement class, which includes clearing and re-clearing in grazing areas and other general land management activities such as clearing for fence lines, property tracks and fire breaks. SLATS also attributes fodder harvesting to this class.

The second largest SLATS landcover replacement class was 'forestry' (1.8% or 12,000ha of the total). This is defined as timber harvesting on state- or privately-owned lands where it can be verified as a forestry practice, primarily in the imagery used by SLATS, or where an authoritative data layer (i.e. plantations data and tenure data relating to state forests and timber/forest reserves) can be used to attribute this class.

As SLATS does not use any VMA or *Forestry Act 1959* notifications data in the assignment of the landcover replacement class, private native forestry activity which cannot be verified is usually attributed as partial clearing activity and assigned to the 'pasture' landcover replacement class. This is because these clearing events appear similar to other thinning or selective removal clearing activities and are most commonly on land used for agricultural purposes, particularly grazing, and that will still be the primary practice undertaken on the land following the partial clearing activity. Additional analyses of SLATS data for the purposes of the VMA does provide information regarding those private native forest areas which were notified in accordance with the ADVCC (see Section 2.2.2).

Table 1: Clearing by SLATS landcover replacement class in 2018–19 (2 s.f.)

Landcover replacement class	Area cleared (ha)	% of total
Pasture	633,000	93.0
Forestry	12,000	1.8
Infrastructure	1,800	0.3
Mine	6,400	0.9
Crop	7,000	1.1
Settlement	920	0.1
Other	19,000	2.8
TOTAL	**680,000**	

2.2.2 SLATS Spatial Compliance Analysis Network (SCAN)

As mentioned in Section 2.2.1, additional detailed analyses of SLATS clearing activity data are undertaken by DES and Department of Resources for the purposes of understanding the clearing activity in the context of the VMA. This is completely independent of SLATS reporting and is often referred to as SCAN. The analyses involve intersecting SLATS data with 'lot on plan' data and various notifications and permit information to provide detailed breakdowns of the purposes of the clearing under the VMA, and to help identify unexplained clearing which may include potentially unlawful clearing activity. Due to the various data analysis routines required for SCAN, the clearing figures reported from this process can differ to those reported by SLATS. The following figures are derived from SCAN results.

Clearing under the self-assessable ADVCC on regulated land accounted for about 15% or 100,000ha of the total clearing activity—the second largest category behind exempt Category X vegetation clearing (Figure 1). 98% of this ADVCC clearing was in remnant vegetation. Within the 100,000ha, the instruments under which most clearing was done were fodder harvesting (69% or 69,000ha) and multiple purposes (for instance, both fodder harvesting and infrastructure) (20% or 20,000ha).

Remnant semi-evergreen vine thicket on a grazing property near Taroom (Brigalow Belt bioregion)

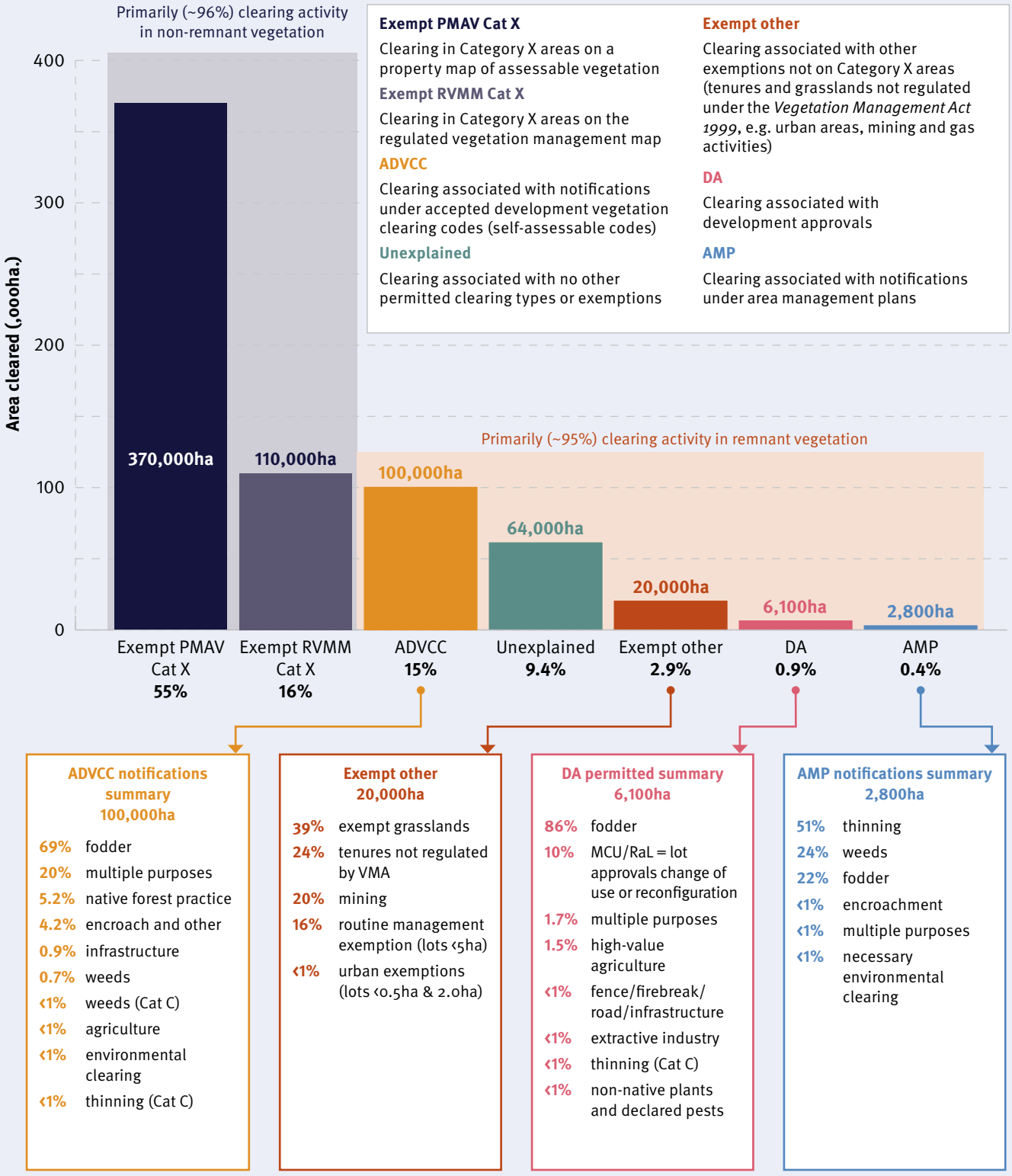

Figure 1 **SLATS 2018–19 total full and partial clearing (680,000ha) under the vegetation management framework (SCAN data 2 s.f.)**

Note: About 96% of all clearing for Exempt PMAV Category X and Exempt RVMM Category X is in vegetation mapped as non-remnant. About 95% of all clearing for DA combined, ADVCC and AMP is in Category B areas (regulated remnant vegetation).

Table 2 2018–19 clearing in Category B (regulated remnant vegetation) by regional ecosystem status (SCAN data ha. 2 s.f.)

Non-remnant includes categories C, R and X areas

Type	Sub type	Remnant endangered	Remnant of concern	Remnant least concern	Remnant total	Remnant per cent
PERMITTED	ADVCC	740	7,700	92,000	100,000	55%
UNEXPLAINED	UNEXPLAINED	2,600	9,700	46,000	58.000	32%
EXEMPT	EXEMPT OTHER	660	1,100	16,000	18,000	10%
PERMITTED	DA	43	160	5,800	6.000	3.3%
PERMITTED	AMP	—	1,400	1,300	2,700	1.5%
TOTAL		**4,000**	**20,000**	**160,000**	**180,000**	**100%**

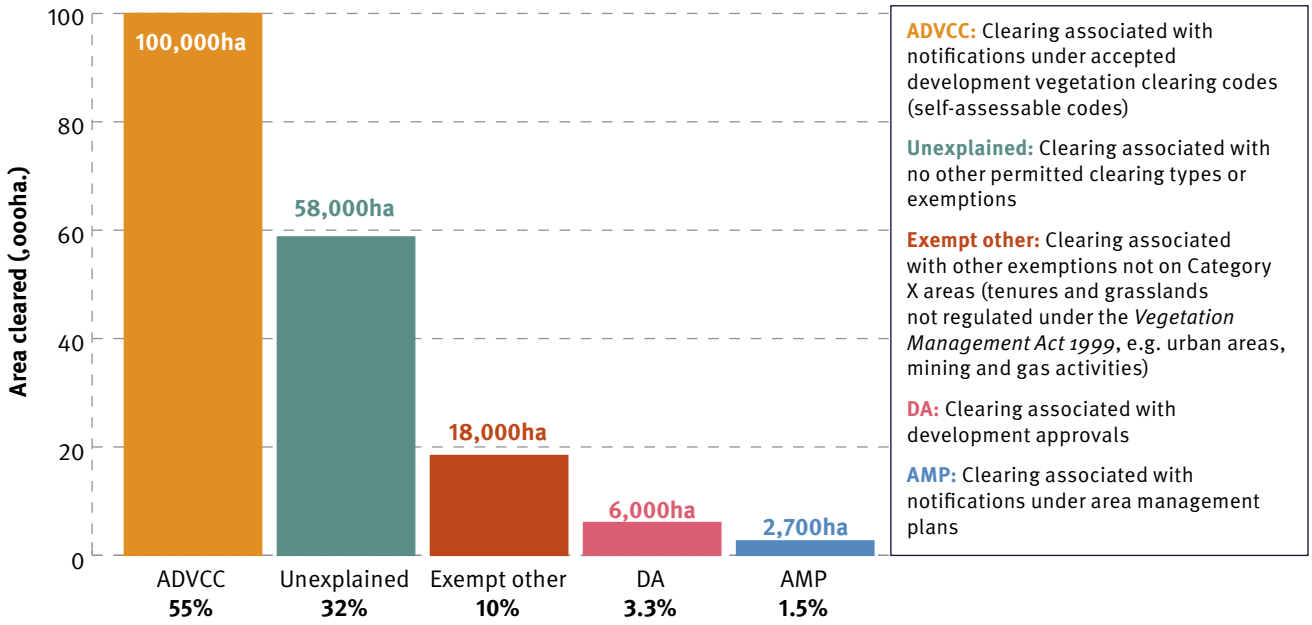

Figure 2 2018–19 clearing in Category B (regulated remnant vegetation) by regional ecosystem status (SCAN data 2 s.f.)

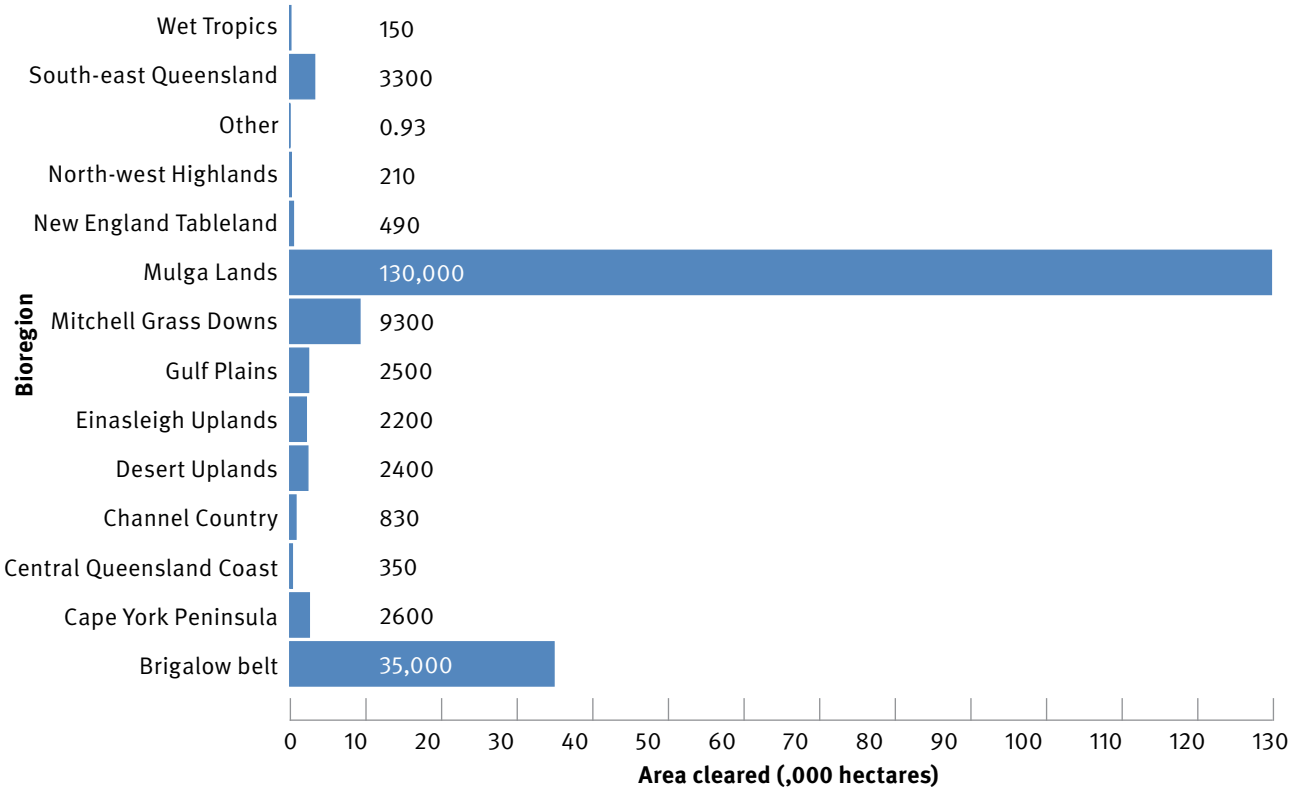

Figure 3 SLATS 2018–19 total full and partial clearing of regulated remnant vegetation (Category B) in Queensland bioregions (SLATS data 2 s.f.)[16]

The Panel reviewed all the purposes for clearing and re-clearing, but the discussion presented in this section focusses on clearing and re-clearing for agricultural purposes—by far the largest driver of clearing. Here we highlight just some of the many, well documented, reasons why landholders clear woody vegetation on their land.

2.2.3 Economic drivers

The greatest motivation for clearing and re-clearing on agricultural land is to maintain or increase productivity (Rolfe, 2002) and make the most out of an expensive land asset. Productivity maintenance and improvements are essential to the competitiveness and profitability of the agricultural sector. Clearing and re-clearing native vegetation to increase or maintain a property's 'usable' area (i.e. arable area for grazing or cropping) can increase productivity, but often at the cost of reduced biodiversity and ecosystem services, such as carbon storage and flood mitigation.[17]

16 Due to the processing of various spatial and numerical data sets involved in this analysis and the rounding of numbers, clearing figures reported here may vary marginally from those reported by SCAN data in Table 2 and Figure 3.

17 Given that productivity often can be maintained, and resilience enhanced, by enhancing on-farm biodiversity (Food and Agriculture Organization of the United Nations (FAO), 2019), the Panel sees education and engagement as central measures to strengthen landholder knowledge and influence decision-making on native vegetation management.

Market drivers, especially land values, livestock and crop prices also have a significant influence on rates of clearing (Evans, 2016; Heagney et al., 2021). Areas containing significant amounts of woody vegetation are often given a lower financial asset value by purchasers and land valuers, which incentivises the clearing of land to maximise land values. Even where landholders have no intent of selling their land, the financial value of the land affects their ability to access capital from banks and other financiers.

High agricultural commodity prices combined with good weather seasons are one of the most significant drivers of property development, including clearing. For example, record beef prices and positive long-term weather forecasts may be providing financial incentives for famers to clear or re-clear their land.

The various vegetation clearing methods have different costs per hectare, operate at different scales, have varying long-term results, and impacts on stocking rates during and after clearing. Clearing costs can range from $30 per hectare (clearing using fire) to $230 per hectare (broadacre herbicide), with 'pulling' (chain strung between two bulldozers to clear re-growth vegetation) somewhere in the middle (Gowen & Bray, 2016).[18] Whilst not insignificant, these costs are minor compared to the higher net financial asset value that properties with larger cleared areas of Category X land have over those properties with large areas of uncleared land that is not Category X.

2.3.4 Regulatory drivers

Regulatory instability is the source of much landholder angst, confusion and distrust in government processes and has been linked to increased rates of clearing and re-clearing for pasture (Rolfe, 2002; Simmons et al., 2018).

Amendments to the VMA in 2018 mean that for landholders who do not have a PMAV over their land, any regrowth vegetation on Category X land may be re-mapped as high-value regrowth vegetation (Category C) after 15 years. Most landholders do have a PMAV in place, and only around 16% (110,000ha) of the total vegetation clearing in 2018–19 was attributed to Category X land where no PMAV is in place (Figure 1 Exempt RVMM Category X). In these locations where there is no PMAV, when high-value regrowth vegetation (Category C) reaches 70% of the undisturbed vegetation's height and 50% of the undisturbed predominant canopy typical for the regional ecosystem in the bioregion, it may be re-mapped as regulated remnant vegetation (Category B) under the VMA (this is not the case where a PMAV is in place). The Panel heard anecdotal evidence there is an attitude of 'get it down before it is too late' or else risk a decline in the land's market value. For landholders without a PMAV, that is a real and ongoing risk. For landholders with a PMAV, there is ongoing fear that government will act to override the current protections afforded to land covered by a PMAV (Rolfe, 2002; Simmons et al., 2018).

18 The cost of diesel, machinery, herbicides and labour have changed since these costs were derived.

2.3.5 Other drivers

Fodder harvesting, particularly of mulga (*Acacia aneura*), is an important agricultural management practice used over a large area of south-western Queensland, particularly during dry periods. The ADVCC for managing fodder harvesting was amended in May 2018 with key changes to area limits, auditing and vegetation retention. The 2018–19 SLATS and SCAN data reflect the period immediately following the revision of the code, and fodder harvesting accounted for around 11% or 77,000ha of the total clearing activity. It also accounts for 38% of the regulated remnant vegetation clearing in 2018–19 (71,000ha under ADVCC and 5,000ha under development approvals and <1000ha under area management plans) with the majority occurring in the Mulga Lands bioregion. The vast majority of clearing attributed to the ADVCC for managing fodder is of remnant vegetation. However, to ensure the retention of the remnant regional ecosystem and sustainability of the fodder resource, the ADVCC requires that vegetation regrows to 'remnant' status, before being re-cleared for fodder harvesting.

2018–19 was a period of severe drought (negative standardised precipitation index (SPI) figures in the Mulga Lands bioregion during the entire period) and this was probably the main driver for the large amount of clearing attributed to fodder harvesting during the period. The current code for managing fodder harvesting (and previous codes) does not require areas to be drought declared before harvesting can occur.

Additional drivers of clearing, re-clearing and thinning include perceived increased soil erosion in areas dominated by woody vegetation, difficulties mustering cattle from densely vegetated areas, increased fire potential, and responses to incursions of feral animals and weeds.

A stand of remnant mulga (*Acacia aneura*) near Toompine, Queensland (Mulga Lands bioregion)

3. Recommendations

The Panel recognises the VMA has been controversial and unpopular with many landholders and has impacted some landholders more than others. It also notes the policy and market context for clearing, reforestation and restoration has changed dramatically in the past twenty years.

There are increasing opportunities for landholders to derive an income stream from providing ecosystem services; a greater emphasis on producers' social licence to operate; growing calls for agriculture to rapidly realise carbon neutrality as well as help offset carbon emissions in other sectors of the economy; potential biodiversity markets, potential international trade restrictions, and increasing information on the ways that biodiversity contributes to healthy and resilient production systems.

The Panel believes the time has come to better align Queensland's vegetation management framework with emerging opportunities. To this end, it proposes an overarching strategic vision for native vegetation management in Queensland in which we:

Engage:

- Partnerships between production and conservation interests are forged, fostered and encouraged to flourish.

Inform:

- Ongoing consultation, extension and education play a much more prominent role in achieving environmental objectives associated with the management of native vegetation.

Incentivise and reward:

- Effective regulation paired with positive incentives and rewards underpin an evolving, holistic and more cohesive approach to land management for production and environmental outcomes.

In pursuit of this 'engage, inform, incentivise and reward' strategic vision and in accordance with the Terms of Reference (see section 1.2), the Panel's recommendations involve a suite of financial incentives and policy, educational and other measures to both improve the protection and management of regulated land; and to encourage the retention and restoration of more native vegetation on Category X land.

Queensland farmers have a unique opportunity to diversify income streams by integrating native vegetation and biodiversity conservation into their production systems (grazing property Brigalow Belt bioregion)

Recommendations in detail

R1 Maintain regulatory stability

The Queensland Government should not change the regulation of Category X land. The current system, whereby the only way to change the mapping of Category X areas on a PMAV is with the landholder's consent, remains appropriate at this time. Monitor the environmental and other impacts of the ADVCC over an extended period.

Observations and findings

PMAVs, which 'lock in' areas of Category X were introduced to the VMA to provide some certainty to landholders so that they could continue to manage their existing, largely previously cleared, areas, with the hope that these areas would not be cleared unnecessarily. Landholders are very apprehensive about the prospect of changes to the VMA that would restrict clearing in these areas.

Throughout consultation, the Panel heard repeatedly that people do not want native vegetation legislation to continually change. Legislative instability is the source of much landholder angst, confusion and distrust in government processes, and uncertainty can lead to more clearing. To address these issues, the Panel recommends the Queensland Government should not change the way Category X land on PMAVs is regulated.

The Panel recognises the biodiversity and wider environmental benefits of retaining more vegetation on Category X land, particularly where that retention can contribute to the ecological objectives outlined in Section 2.1. Nevertheless, we believe it is essential to provide regulatory stability with respect to Category X land covered by a PMAV for the following reasons.

First, there is clear evidence that regulatory instability drives panic clearing, or anticipatory clearing, of native vegetation for the purpose of avoiding possible or pending legislative changes. For instance, total clearing spiked from around 400,000ha in 1998–99 when the VMA was introduced to around 700,000ha in 1999–2000 when the VMA was proclaimed. Panic clearing may also be a factor driving land clearing rates (particularly of vegetation more than 15 years of age) in the 2018–2019 period. This scenario is bad for business—due to the unnecessary costs incurred by landholders—and bad for the environment. It is a lose-lose scenario.

Second, this Panel recognises that over the past twenty years new research and many new opportunities have arisen to demonstrate the value of carbon friendly and nature positive farming. The financial and other benefits of this type of farming accrue to landholders, the environment and the broader community. We believe the momentum to adopt carbon neutral and biodiversity friendly farming is increasing. To help drive this momentum, we propose measures to further stimulate and broaden the appeal of integrating biodiversity into robust and resilient farm production systems.

With 56% of its land mass already covered with woody vegetation, Queensland has an opportunity to become a world leader in carbon- and biodiversity-friendly farming and to realise a significant market advantage as a result.

Third, we recognise the shift to carbon- and biodiversity-friendly farming will entail a significant change in current and past practices for some landholders. We believe dialogue, extension, ongoing support and collaborative learning are central to achieving long term, behaviour change across the whole community. However, for these pathways to succeed there needs to be an element of trust, confidence and mutual respect between landholders and the broader community. We recognise the history of the VMA has been characterised by conflict and division. Many landholders have been alienated by continual legislative change and divisive polarisation. Now is the time to put this divisive history behind us and to work towards a more conciliatory and respectful resolution of the outstanding issues.

For these reasons, the Panel believes the current system, whereby the only way to change the mapping of Category X areas on a PMAV is with the landholder's consent, should remain in place. Landholders without a PMAV should be encouraged (via R2) to apply for one. Regulatory stability will prevent unnecessary clearing and engender an environment conducive to trust and respect, essential precursors to the behaviour change we hope to achieve.

The Panel notes the importance for the Queensland Government to be continually measuring the success, or otherwise, of the accepted development vegetation clearing codes (ADVCC) including whether operations designed to safeguard or promote environmental values are effective. It notes past code reviews and the update to the managing fodder harvestin' code in 2018 and 2019, and the extensive scientific analyses and expert advice that have led to the refinement of the clearing codes. Since 2018, all of the ADVCC have been reviewed against the objectives of the VMA (noting that the review of the native forest practice ADVCC is not yet complete).

The impact on clearing rates from changes to ADVCC take time to become evident in the monitoring and compliance data, as landholders adjust their management actions to new rules. The panel was not able to explore these issues in detail. As such, the environmental and other impacts of all the codes should be closely monitored, assessed and regularly reported on for several years (see R5 and R10). The community is entitled to know and understand the costs and the environmental and other impacts of these measures.

R2 Improve extension, education and demonstration

Fund and support an improved extension service to landholders, with a focus on consultation, engagement and education on ways landholders can enhance biodiversity while maintaining or improving agricultural productivity and profitability, including through environmental markets and related government programs.

The service should be provided by locally-based, well-respected extension officers within appropriate regional organisations such as Indigenous Land Councils, Natural Resource Management organisations and local governments.

The extension service should deliver a program to help landholders identify, easily and without risk, opportunities to protect, restore and manage native vegetation while generating on-farm income, including through engagement with relevant programs and initiatives.

Observations and findings

Throughout consultation meetings and discussions with landholders, the most consistent request (across all sector groups) was for better extension and dialogue between the Queensland Government and landholders on vegetation management.

Achieving the transition to better environmental stewardship will require more than just new or better economic incentives and tighter regulation and compliance. Any positive financial incentives that aim to retain and manage native vegetation cannot work unless landholders are aware of them, understand them, and they are easy for landholders to engage with and participate in (i.e. low transaction costs). Building awareness of the tangible and intangible benefits and values of biodiversity requires much more, and much better-quality, engagement. Behaviour change requires strengthening dialogue between landholders and regional experts, and better support services (Beedell & Rehman, 1999; Simmons et al., 2018). Without education, dialogue and engagement, and government support, only sub-optimal outcomes will result from any new economic incentives.

Queensland needs more environmental and agricultural extension officers to provide on-property assistance to landholders to help them plan for and realise the benefits of retaining biodiverse native vegetation.

A network of on-the-ground extension officers, who are separate from compliance officers (in the Department of Resources), would enable open discussions on production and biodiversity without fear of negative consequences.

This could be implemented by regional or local groups, such as NRM groups, Indigenous land councils, local councils or non-governmental organisations, or models such as Sustainable Farms[19] which play a pivotal role in advising on the benefits of conservation in production systems and are generally well respected in local communities. Department of Agriculture and Forestry extension officers could also form part of the broader extension network.

Behaviour research repeatedly indicates rural landholders learn best from their own peer group and when they can experiment on a small parcel of land with a view to scaling up their interest if the evidence supports it (Pannell & Vanclay, 2011). Workshops and demonstration events that involve a range of experts, including extension officers, Departmental staff, and consultants are recommended. An approach similar to the Sustainable Farms program in New South Wales and Victoria could be used. This extension service uses expert, regionally-based ecologists to engage with farmers and community to demonstrate how healthy natural capital supports biodiversity and landscape function, which in turn underpin production systems.

The Panel notes the complexity and costs for producers trying to work with the many systems and programs on land management for multiple outcomes (including productivity improvements and industry development, carbon and conservation certification programs, biodiversity and tourism values including Great Barrier Reef protection, etc.). Many landholders are either not aware of these options, do not understand them or are overwhelmed by all the different initiatives and their pros and cons and requirements. Information and extension efforts could assist landholders to identify specific programs that will suit their circumstances.

The incentive programs for promotion could include the Queensland Government's Land Restoration Fund, NatureAssist, Nature Refuge Landholder Grants, the Natural Resources Recovery Program, Carbon Farming Advice Rebate Program, Farm Management Grants; and the Australian Government's Agriculture Biodiversity Stewardship Package's Enhancing Remnant Vegetation and Carbon + Biodiversity pilots.

Panel members note that there may also be scope for better linkages between landholders and the DES-administered Environmental Offset Fund. Specifically, increased information provision on offset market prices (i.e. historical prices paid, where and for what) and better engagement with landholders on offset requirements and tender opportunities would be beneficial.

19 See https://www.sustainablefarms.org.au

R3 Launch an environmental stewardship scheme

Design and establish a stewardship program that complements R2 and seeks to raise awareness of the benefits of, and reward landholders for, integrating biodiversity into land management/farming systems.

There are different options for inclusion in the scheme and the panel recommends a range of 'entry-points' that suit the circumstances of different landowners, from low-obligation reward programs with minimal administrative burden that seek to engage landholders in biodiversity conservation through to higher obligation programs that provide landholders with longer term payments for improving the condition of remnant vegetation or establishing and managing private protected areas. Offering a range of options is important to meet the different perspectives and priorities of different landholders.

All program options would be voluntary with a strong emphasis on active landholder engagement.

Observations and findings

Biodiverse, healthy and resilient ecosystems are the foundation for sustainable land management, agricultural enterprise, and healthy and resilient communities (IUCN, 2020). The economic and environmental significance of the world's finite nature capital resource base is being increasingly recognised in international and domestic literature (Dasgupta, 2021). Queensland cannot afford to ignore these developments. In line with the Panel's strategic vision (see section 1.2), and to complement the proposed extension and information program (R2), we recommend the Queensland Government establishes an environmental stewardship scheme that seeks to raise awareness of the benefits of, and reward landholders for, better integrating biodiversity management and conservation into land management/farming systems.

The Panel notes that, compared to other Australian states, Queensland is in a unique position. It hosts more than 96 million ha of woody vegetation—meaning about 56% of the state is covered by vegetation identified as woody vegetation in the SLATS reporting system. At the same time, Queensland has only 8.3% of its land mass in protected areas,[20] the least of any Australian state.[21] Therefore, the vast majority of Queensland's woody vegetation is managed by private landholders.[22]

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20 As of 8 September 2022, 8.26% of Queensland's land mass was in protected areas (State of Queensland, 2022). This does not include state forests nor Indigenous Protected Areas (IPAs).

21 As of 2018, Western Australia has protected approximately 23% of its land, the Northern Territory 25% and South Australia 30% (Our Living Outback, 2018).

22 By way of contrast, an estimated 66% of Victoria's native vegetation has been cleared. Of the remaining 34% it is estimated that 7.4 million hectares are located on public land and approximately 1.1 million hectares are found on private land (Victoria's Native Vegetation Management : A Framework for Action—Summary, 2002).

Many landholders across Queensland manage a considerable stock of natural capital which supports much of the state's biodiversity.[23] Recognising this context, we propose measures to improve engagement with and incentives for landholders to value and manage existing native vegetation for improved biodiversity and broader natural capital benefits.

The Panel recognises the Queensland Government already supports the Land Restoration Fund and the Private Protected Areas Program. These programs are significant and valued investments, but their overall impact is limited to a relatively small proportion of Queensland's land mass. The Private Protected Areas Program extends to approximately 4.5 million hectares (2.4% of total land mass); and the first investment round of the LRF secured around 360,000ha (less than 0.2% of the total land mass) for regeneration or carbon farming purposes. Many landholders are either ineligible, unable or reluctant to engage with these programs (McRobert et al., 2020). The VMA, on the other hand, extends across 80% of Queensland's land mass (140 million ha) and impacts most rural landholders to varying degrees. Our recommendations for a proposed environmental stewardship scheme take this Queensland-specific context into account.

There are different options for how the proposed environmental stewardship scheme could be designed. The table below includes five options developed by the Panel for further consideration. Additional details on these options are provided in Appendix 1. The options are not necessarily mutually exclusive. An effective stewardship scheme would need to address multiple issues, potentially necessitating different streams targeted at specific needs. To address the different circumstances, perspectives and constraints of landholders, the Panel agrees that there is a need for a range of environmental stewardship measures to effectively tackle the range of issues identified whilst appropriately targeting public funding and complementing other initiatives. As such, a mix of entry-level, intermediate and advanced environmental stewardship scheme options is proposed.

The options range from low-obligation, broad-based reward programs with minimal administrative burden for landholders to bring on board the currently disengaged, to ones that pay landholders to manage priority high value remnant vegetation with the aim of maintaining and/or improving its condition, to long-term commitments of establishing and managing a private protected area in perpetuity. All options would be voluntary, with strong focus on growing engagement and building on R2. Data on biodiversity status, which uses the regional ecosystem vegetation management classes plus information about ecosystem condition, including degradation and threatening processes such as weed invasions, could be used to identify and prioritise incentives in environmentally sensitive areas.

23 Across Queensland, 49% of rural lots consist of more than 30% native vegetation; 44% of rural lots consist of more than 40% native vegetation and 39% of lots consist of more than 50% native vegetation. See, Accad et. al. (Accad et al., 2022) intersected with DCDB (Lot on Plan › 100ha).

The proposed options could be implemented individually or as a more complete stewardship scheme that enables participants to engage at their chosen level and gradually progress from entry-level to advanced streams as they engage with the benefits of on-property conservation.

While there was consensus amongst Panel members about the need for the proposed environmental stewardship scheme to be designed in a way that is sympathetic to the needs and preferences of landholders, there was disagreement about the merits of the low obligation options presented below (options 1 and 2).

Panel member opposition to these options was on the grounds that they are likely to be ineffective in reducing clearing and enhancing environmental outcomes and could amount to actionable subsidies under international law.

In relation to option 1, the primary concern was that, because of the difficulty in identifying remnant vegetation that is at risk of clearing or other degradation and the small quantum of the incentive payment, such a program is unlikely to be effective. Most of the funding was thought likely to go to landholders who never intended to clear the land and where the incentive payment does little to change their management behaviours.

In relation to option 2, the concern was that the program was not sufficiently targeted and unlikely to be cost-effective. Additionally, the substantial administrative and transaction costs that would be associated with operating such a program was a concern.

Other members of the Panel, however, felt it was important to include easily accessed and inclusive measures to encourage engagement and help reorient long-standing controversies into positive dialogue. The value of pursuing such low-obligation approaches was proposed as a broader strategy that accrues benefits well beyond the site in question, through providing an entry point to positive interactions over well-managed vegetation.

Panel members suggested such measures could be designed relatively simply to minimise cost and maximise their value. For example, option 1 could aim to target high-condition vegetation which is at risk of degradation, and reward landholders who maintain that high condition, hence ensuring it achieves results of value. Option 2 could utilise existing datasets (for example, Accad et al. (2022) and annual SLATS data) and existing processes (such as the notification process for complying with self-assessable ADVCCs).

Possible environmental stewardship program stream	Accessibility	Landholder commitment
Option 1 A 'Nature Rewards Program' with minimal administrative burden for landholders as a pathway to better engagement and start positive conversations about biodiversity and the value of native vegetation in Queensland. Modest annual payments to landholders for the effective stewardship of very good condition, intact remnant vegetation. It could target threatened ecosystems, or particular bioregions, or both, via a payment on delivery of results with limited administrative burden.	Entry-level	Low-obligation, payment on delivery of results.
Option 2 A stewardship scheme comprising the annual distribution of environmental stewardship vouchers to all landholders with a certain percentage of their property under woody native vegetation (whether regulated vegetation or not). Vouchers would be redeemable in full or part payment for particular, pre-identified activities that serve to improve environmental outcomes for woody native vegetation. Primarily targeted at landholders who are already managing a significant amount of regulated woody vegetation to recognise their existing contribution to biodiversity outcomes and, at the same time, secure enhanced environmental outcomes for the benefit of the whole community.	Entry-level	Low-obligation, payment on delivery of results.
Option 3 A clearly prioritised and targeted grants-based scheme for natural capital or biodiversity management projects requiring greater capital investment. Such projects could include fencing native vegetation areas to improve stock management; fencing to exclude cattle from riparian corridors and water holes; and environmental plantings to provide habitat and restore cleared ecosystems.	Entry-level	Medium obligation, payment on successful application.
Option 4 A clearly prioritised and targeted stewardship payment program that pays landholders to maintain and improve the condition of remnant native vegetation for terms of between 10 and 30 years.	Intermediate	Medium-obligation, 10–30-year commitment
Option 5 A stewardship payment program that pays landholders to establish and manage private protected areas over areas of high conservation significance that are under-represented in the protected area estate, typically on a long-term or perpetual basis.	Advanced	High-obligation, permanent commitment

Note: Additional details on these options are provided in Appendix 1.

Well-managed ecosystems can benefit productivity and biodiversity (grazing property Brigalow Belt bioregion)

R4 Enhance carbon market opportunities

R4.1 Encourage the Australian Government to introduce an Emissions Reduction Fund (ERF) method that provides carbon credits for the avoidance of clearing of regrowth on Category X land that is at high risk of being re-cleared in the foreseeable future.

The intent is to provide landholders with the option of earning income from the retention and management of regrowth, particularly in areas that are less productive for agricultural purposes and that can assist in the conservation of biodiversity and threatened regional ecosystems. The Australian Government should also be encouraged to: (a) allow high-integrity vegetation projects under the ERF to receive extended crediting periods to support their ongoing management, and (b) modify existing methods to allow revegetation projects to combine plantings and human-induced regeneration.

R4.2 Modify the Land Restoration Fund (LRF) to focus it on projects that protect and restore areas of high conservation significance that have previously been cleared.

LRF payments should be calibrated to ensure the returns from carbon projects involving the avoidance of clearing and/or restoration of native vegetation in areas of high conservation significance are competitive relative to alternative productive land uses. To help achieve this, the LRF should include options for landholders to receive upfront payments (or loans) for carbon credits and projected biodiversity improvements. All LRF-funded projects should have 100-year permanence periods.

Observations and findings

Throughout consultations, all landholders the Panel spoke to indicated—on their own initiative—a growing interest in measuring (and often increasing) their carbon storage and/or sequestration.

The carbon market can provide financial incentives for landholders to protect, restore and manage native vegetation (see section 2—ecological objectives) and provides a good route to fostering more interest in regenerating and conserving native vegetation.

There are two distinct aspects to the carbon conversation. First, and we believe uppermost in the minds of many producers, is the need to rapidly de-carbonise producers' own land management and production operations to secure ongoing access to international markets. Some recommendations for identifying and promoting nature-positive and carbon-friendly operators are included in R2 and R3 (Appendix 1).

Second is the growing opportunity to exchange carbon storage and sequestration activity—by restoring native vegetation on cleared land—in the various carbon market/offset schemes. There are currently four main ERF methods that could be used for these purposes: Avoided Clearing; Human-induced Regeneration (HIR); Native Forest from Managed Regrowth; and Environmental Plantings (see glossary).

There are two main problems with the incentives provided by these existing methods:

1. There is insufficient incentive for landholders to retain native vegetation once it has regenerated, which is a product of the strict eligibility requirements that apply under the Avoided Clearing method.
2. There is insufficient incentive for landholders to properly restore native vegetation after it has been cleared, which is a product of the high upfront costs of restoration, the relatively low carbon price, the absence of mature mechanisms that incentivise projects that maximise biodiversity outcomes, the nature of the planting requirements under the Environmental Plantings method (i.e. there is a low bar for what constitutes an environmental planting) and the returns from alternative land uses.

Incentivising protection of regrowth through the ERF

To overcome the limitations of the existing Avoided Clearing method, the Australian Government should develop a new method that provides carbon credits to landholders that voluntarily agree to retain and manage regrowth vegetation on Category X land, thereby allowing it to continue to sequester carbon and provide associated biodiversity benefits.

The most significant integrity risk associated with such a method is that carbon credits could be issued for the protection of regrowth vegetation that was not going to be cleared. Measures would be needed to address this risk, which should include the following.

- Eligibility should be confined to Category X lands that are covered by a PMAV, as of a defined historical date. This is necessary to increase the chances of confining eligibility to lands that are likely to be cleared if they do not receive carbon credits and avoiding regulatory additionality complications associated with the VMA.
- Areas containing regrowth woody vegetation should only be eligible if:
  - they have been cleared in the 20 years preceding the commencement of the project
  - are identified as being of high risk of subsequent clearing, having regard to relevant variables such as slope.[24]

Crediting of carbon benefits on eligible land should further be scaled relative to modelled re-clearing risk, rather than making an assumption that all areas would be re-cleared in the counterfactual scenario. To further mitigate integrity risks, all projects under the method should be required to have 100-year permanence periods (i.e. proponents should not be given the option of choosing a 25-year permanence period).

24 Eligibility would be confined to areas that have a significant amount of woody biomass at commencement (e.g. greater than 10–20% crown cover).

Incentivising further protection and restoration through the LRF and ERF

The LRF has now run two funding rounds offering premium prices for new ERF projects, including on Category X lands. It has had some success but has not been overwhelmed with offers, which suggests the economic incentives offered by the LRF could be improved for Category X lands.

Under the ERF, carbon credits are supposed to be issued after the abatement has occurred. This can give rise to a mismatch between project expenditures and revenues, particularly for projects involving the restoration of native vegetation, which can render carbon projects uneconomic.

To be viable, carbon projects involving the avoidance of clearing and restoration of native vegetation typically need to outperform the alternative productive land use (where outperformance includes stable income streams relative to other options). This involves considering both the likely operating surplus from the alternative productive land use and any adverse impacts that permanence obligations might have on land values.

With existing and likely near-term carbon prices, there is a high risk that carbon projects involving the avoidance of clearing and/or restoration of native vegetation may be uncompetitive relative to alternative productive land uses.

To address this, co-payments could be made to support projects in areas of ecological significance. This could be done through a broadened version of the LRF, where co-payments are offered through three program streams:

1. Queensland Government purchases Australian Carbon Credit Units (ACCUs) and provides co-payment on delivery of ACCUs (as currently occurs)
2. Queensland Government provides upfront co-payment (partially covering establishment costs) and leaves ACCUs with landholder, and
3. Queensland Government provides a co-payment as an upfront loan that is repaid with carbon, either via ACCUs or 'virtually' (i.e. without registration of ERF project).[25]

The provision of co-payments through the three streams is intended to accommodate a greater range of landholder preferences regarding debt and risk, and thereby help promote uptake across a broader range of landholders.

In addition to offering the three streams, the LRF could be more tightly targeted towards supporting the restoration and retention of regional ecosystems of high conservation significance.

25 Note that (c) should be designed to align with (b)—e.g. in (c), the landholder receives upfront payment plus a loan to cover establishment costs and only the loan component should be repayable.

Two other complementary measures could be pursued by the Queensland Government to further support the development of carbon projects that will assist in the restoration of regional ecosystems of high-conservation significance.

1. Recommend that the Australian Government introduces an ERF method for combined HIR and environmental plantings carbon to facilitate more cost-effective restoration/revegetation projects.
2. Recommend that the Australian Government allow high-integrity vegetation projects to receive extended crediting periods. At present, projects involving the avoidance of clearance are credited for the total amount of on-site biomass that would be cleared in the counterfactual. In contrast, projects involving the restoration of native vegetation are only credited for 25 years of growth. This typically results in projects receiving around 40–60% of the sequestration that is likely to result from the restoration and long-term retention of native vegetation. The incentive to undertake restoration projects could be enhanced by providing these projects with an extended crediting period that allows them to be credited for the full amount of carbon they are likely to sequester over their permanence periods. Providing extended crediting periods for these projects would also ensure there is an ongoing source of funding for management.

The National Stewardship Trading Platform, which will integrate spatial information alongside buyer and seller information for transparency and credibility, should be promoted in Queensland as a way for farmers to connect with buyers of biodiversity outcomes and kick-start private sector biodiversity markets.

R5 Clearer reporting and communication of the SLATS

Release annual standardised SLATS report cards that include state-wide data and data breakdowns by IBRA regions. Also include clear explanations and data on clearing under the vegetation management framework (SLATS SCAN data) to provide the full view of the context. A fixed release date is also recommended to provide transparency in the process and confidence in the data.

Observations and findings

SLATS data inform a range of land management, biodiversity and conservation initiatives in Queensland including vegetation management, Great Barrier Reef (GBR) catchment programs, the Land Restoration Fund, fire management and conservation planning.

SLATS data also provides a valuable tool to support economic and investment activity in emerging natural capital markets such as carbon farming, biodiversity trading and offsets, including reef credits.

As such, effective communication of SLATS findings and all the accompanying data is of the utmost importance. Good communication and the provision of all the relevant information will help people understand the issue's complexity and that there is more to the story than the headline number. The standing committee envisaged at R10 can help to realise the intent of this recommendation.

Annual SLATS reports have several layers of complexity, and a lot of work goes into producing analyses and communicating the results. In addition to annual SLATS reports and detailed SLATS spatial data products, DES publicly provides breakdowns of clearing in mapped remnant and non-remnant areas, regulated vegetation categories and vegetation management classes, Interim Biogeographic Regionalisation for Australia (IBRA) bioregions and subregions, drainage divisions, catchments, GBR and non-GBR areas, NRM regions, and local government areas. However, when this information is released via departmental or ministerial media releases, much of the necessary detail is lost and statements fail to report the numbers in an easy-to-understand way. Data summary infographics and regional breakdowns are lost, buried in reports or online data portals.

Additionally, when SLATS data are released, very little accompanying information is provided on the drivers and causes of the clearing. SLATS provides basic information on the purpose for which the vegetation was cleared (replacement landcover classes as interpreted from satellite imagery and other sources by DES scientists) but lacks necessary detail under the vegetation management framework (see section 2.2) on the reasons for clearing and whether it was permitted or not. For example, Figure 1 of this report (a detailed breakdown of total clearing under the vegetation management framework) is essential to understanding and communicating the situation but no similar figure is currently included in annual SLATS reporting.

The Panel recommends that SLATS SCAN data are released annually to coincide with the SLATS report and help provide nuanced interpretation of the clearing data.

The Panel supports the continuation of the detailed SLATS reports and provision of data products but would like to see additional easy-to-understand communication via infographics and report cards.

It also supports the co-publication of compliance summaries under the VMA (SCAN data), including data on clearing under the accepted development clearing codes.

Such reporting and communication will allow everyone to see exactly what is happening, where it is happening and why it is happening. Joint or simultaneous releases of SLATS and SCAN data will provide stakeholders with enhanced information, but the Panel notes that the provision of additional clarity on the, often non-aligning, terminology and definitions will be required, for example, 'mapped remnant vegetation' and 'regulated remnant vegetation'.

The panel also noted that there is no attempt to distinguish 'old growth' or never before cleared vegetation from regrowth vegetation, and that the term 'remnant' is used under the VMA in ways quite different to the intuitive meaning of the term.

A fixed release date is also recommended to provide transparency in the process (from data collection to the timing of media releases) and confidence in the data. The Panel also notes that the significant delay in the release of SLATS data (i.e. 2018–19 data were released in December 2021) compromises the Department of Resources' compliance response (see R6) and that all efforts should be made to release SLATS reports as soon as possible following data collection.

More targeted and effective reporting is needed with clearly demarcated categories of reporting, including but not limited to:

- Overall lawful clearing and unlawful clearing, including the unlawful component of 'unexplained' clearing
- Lawful clearing (i.e. permitted clearing to maintain agricultural productivity or facilitate permitted development activity) broken down into:
  - Clearing on Category X land
  - Clearing and re-clearing under development approvals
  - Clearing and re-clearing under area management plans
  - Clearing and re-clearing under ADVCCs (include all relevant data relating to the implementation of revised ADVCC as per R1)
- For categories B, C and R vegetation: clearing of Endangered and Of Concern vegetation—reasons why and where Endangered and Of Concern vegetation was cleared.
- Amount of clearing on different types and ages of vegetation.
- Amount of clearing in mapped threatened species habitat.

- How much land entered the regulated remnant category so both the increases and decreases in 'remnant' by regional ecosystem are transparent.
- Carbon sequestration from new growth; carbon storage from existing cover; carbon emissions from full clearing; and carbon emissions from partial clearing.

These figures help explain what is going on and what the trends are over time. They provide all stakeholders with more meaningful information, including on whether legislation (including revised ADVCC) is working properly or not, and will help identify whether any current or future education or incentive program is having an impact (see R1, R2 and R3).

R6 Enable better enforcement

Increase funding and resources to the Department of Resources to improve the enforcement of the VMA and allow for improved and increased early detection, engagement and intervention.

Observations and findings

In 2018–19, 9.4% of the total clearing and re-clearing (64,000ha—including 2,600ha in remnant Endangered regional ecosystems) was attributed as 'unexplained' (see Table 2). Around 29% (59,000ha) of the total clearing in remnant vegetation was attributed as 'unexplained'.

Unexplained is clearing associated with no obviously permitted or exempt purposes (such as clearing not associated with accepted development clearing codes, development approvals, area management plans or known exemptions). Once identified, the Department of Resources undergoes processing and management of the dataset, prioritisation and further analysis to determine if clearing is likely explained and no further action required, or likely unexplained (i.e. potentially unlawfully cleared) and subject to further investigation and enforcement.

Table 3: Clearing and re-clearing in 2018–19 attributed as 'unexplained' by regional ecosystem status (hectares, 2 s.f.)

Type	Sub type	Remnant endangered	Remnant of concern	Remnant least concern	Regulated Regrowth	Other	Total (ha)	Percent (%)
Unexplained	Unexplained	2,600	9,700	46,000	5,400	0	64,000	9.4%

As the breakdown of likely unlawful clearing within the unexplained category is not published in annual SLATS or SCAN reports, or elsewhere, the public may assume that the total figure (i.e. 64,000ha) is all unlawful clearing. Quickly reducing the amount of unexplained clearing and re-clearing, especially unlawful clearing, is in the state and national interest as overseas trading partners move towards only sourcing agricultural products that they can be sure don't contribute to unsustainable/unlawfully cleared native vegetation removal.

The Panel highlights the need to monitor and publicly report trends in unlawful clearing over time and set a target to reduce the amount/proportion of unlawful clearing (however small in the overall scheme of things). It also recommends that appropriate penalties are enforced to send an appropriate signal to the sector, noting that high commodity prices and weak enforcement strategies may increase the temptation to do the wrong thing. Penalties should reflect the cost to the community of monitoring and enforcing the existing regulation in line with the increasing interest of overseas trading partners in the matter of unlawful clearing. Individuals who break the law put at risk the reputation of all landholders and may negatively impact the trading opportunities available to Queensland.

Department of Resources uses the annual SLATS reports as one of the tools to monitor vegetation clearing in Queensland where it provides comprehensive long-term monitoring. In addition, the Early Detection System (EDS) is the Department of Resources' primary tool for rapidly detecting vegetation canopy cover change (every 16 days) within regulated vegetation areas providing timely monitoring, and the opportunity for early engagement with landholders if unexplained clearing is identified. The Panel supports such early engagement with landholders in accordance with its recommendation for strengthened dialogues on vegetation management (see R2). It recommends the allocation of additional resources to this task to allow for improved and increased early detection, engagement and intervention.

The vegetation management framework (the VMA, the *Planning Act 2016* and associated regulations) has an extensive range of statutory and non-statutory compliance and enforcement tools and outcomes available to help prevent and respond to unauthorised clearing of native vegetation. These tools include (in order of severity):

- education activities to encourage voluntary compliance
- audits
- advisory letters
- warning letters
- stop work and show cause notices
- penalty infringement notices (PINs)
- securing regulation of an unlawfully cleared area by making the area a Category A area on a PMAV
- restoration notices
- enforcement notices
- enforceable undertakings (negotiated outcomes)
- prosecution, including enforcement orders.

In 2018–19 the Department of Resources conducted 61 audits of vegetation management activities, sent 297 advisory letters to landholders to support and educate them to understand their obligations and to encourage compliance, served eight penalty infringement notices for vegetation clearing offences, 15 vegetation restoration notices and secured 14 compliance PMAVs (13,000ha of native vegetation was secured and restored).

During the same period, only two prosecutions were finalised, resulting in total fines of $480,000, and costs awarded for approximately $19,500.

The Panel acknowledges that prosecution carries risk and is not that cost effective in practice because legal processes might take two or three years, cost millions and the state might not get the outcome that it expects.

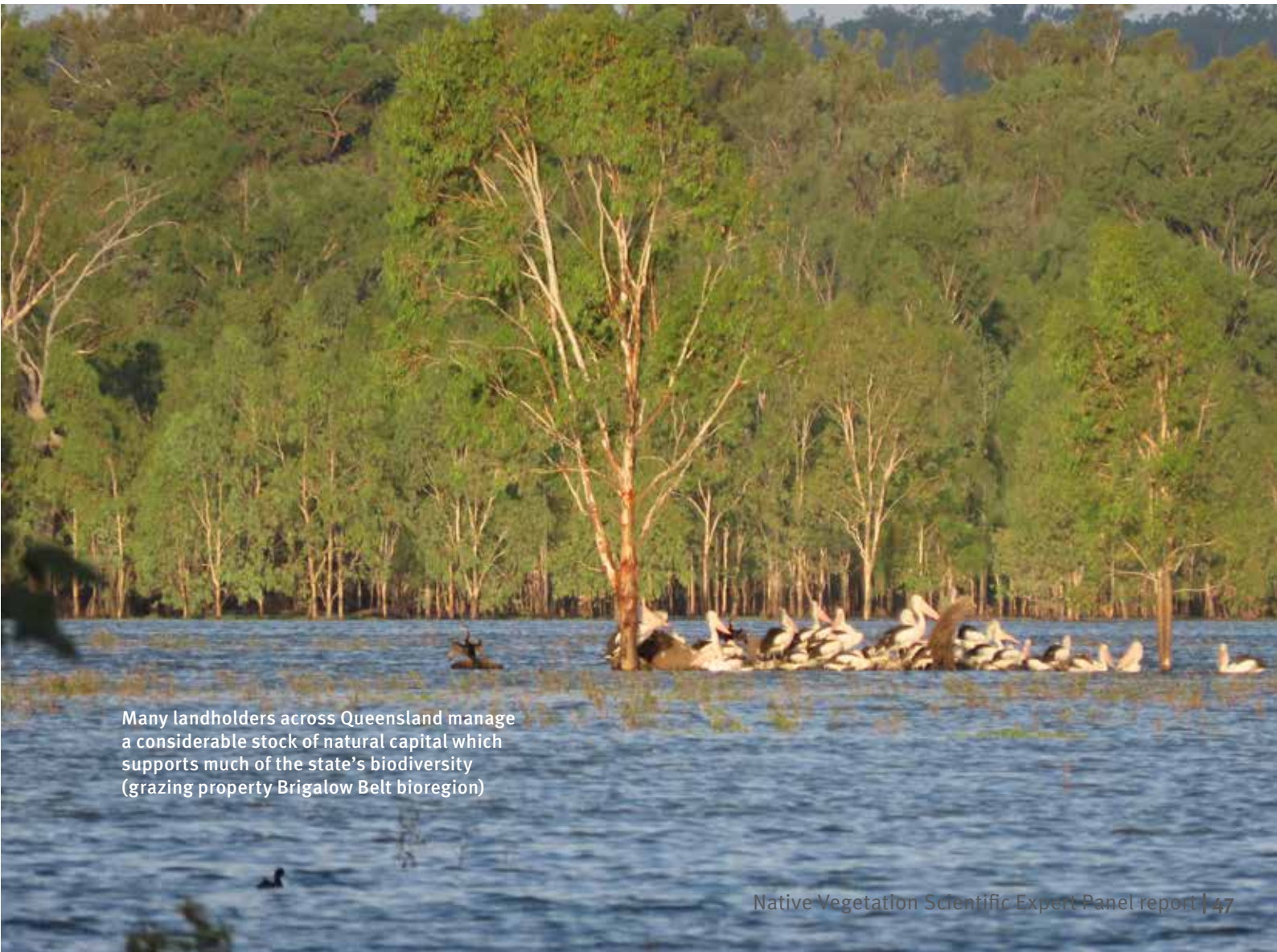
The Department of Resources makes decisions regarding commencing a prosecution in accordance with the department's prosecution policy that requires the delegate to consider both:

1. sufficiency of evidence
2. whether commencing a prosecution would be in the public interest.

This is an appropriate approach. However, there are several criteria used to limit which incidents are investigated in the first place that are instead related to limited resourcing.

The Panel recommends the allocation of additional funding to the Department of Resources to enhance the full spectrum of compliance activities, including prosecution. It feels that the Queensland Government has the appropriate tools at hand; however, to achieve the objectives (Terms of Reference and ecological objectives) of this review, a higher intensity of compliance effort is needed.

The success of this recommendation is highly dependent on the implementation of recommendation 2—Improve extension, education and demonstration (R2).



Many landholders across Queensland manage a considerable stock of natural capital which supports much of the state's biodiversity (grazing property Brigalow Belt bioregion)

R7 Better regional planning in fragmented bioregions

Consider further, finer-scale regional planning in South-east Queensland, Wet Tropics and Brigalow Belt bioregions to understand and plan for current and emerging threats and opportunities to native vegetation (particularly Endangered and Of Concern regional ecosystems) from urban development, infrastructure, and resource projects (including renewable energy projects). The Panel notes that South-east Queensland and the Wet Tropics are globally recognised biodiversity hotspots and contain world heritage areas.

Observations and findings

Despite representing just 0.59% (about 4,000ha) of the total clearing in 2018–19 (about 3,400ha under exemptions and 560ha under development approvals), permitted and exempt clearing for urban and rural residential development was revealed during consultation meetings as a major concern to multiple stakeholder groups, in part because it is highly visible to a large population and it often happens in areas of high biodiversity. Similar concerns about clearing for mining (0.57% or 3,900ha of total clearing activity) were also expressed by stakeholders.

Despite representing less than 1% of the total clearing in 2018–19, clearing for urban and rural residential development, as shown here near Cairns in the Wet Tropics bioregion, was revealed as a major concern to multiple stakeholder groups.

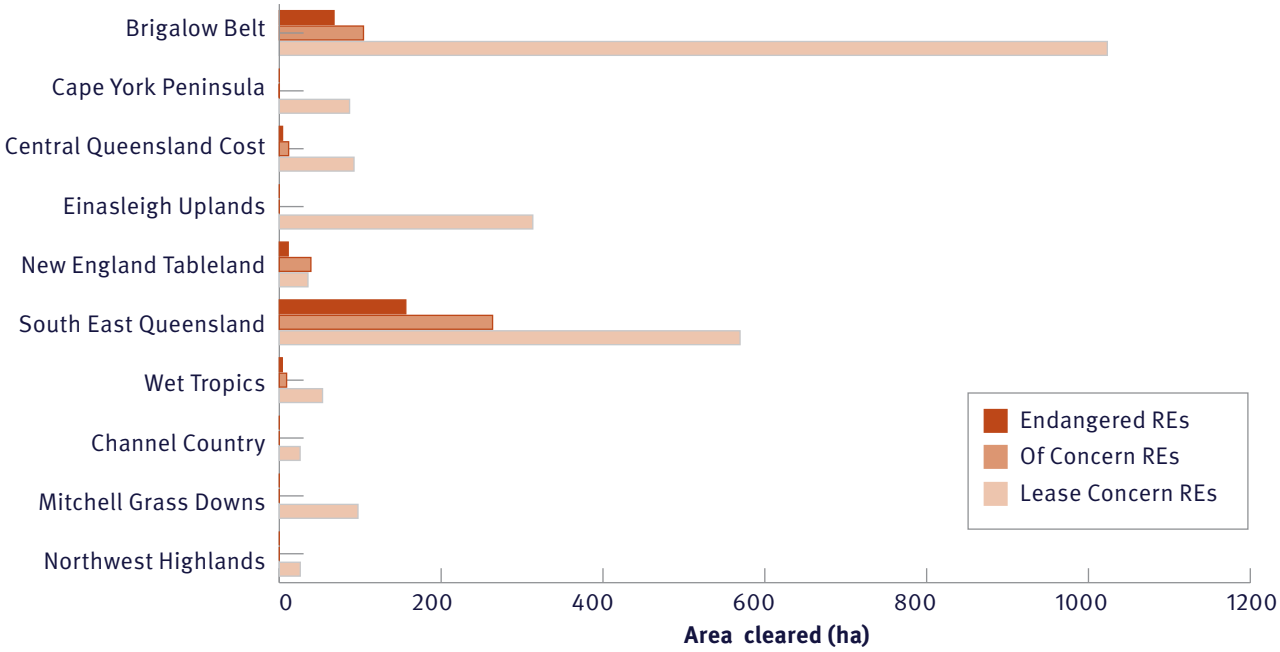


Figure 4: Clearing in remnant ecosystems in 2018–19 for urban and rural residential development exempt under the VMA framework (excluding exempt clearing in Priority Development Areas—see Table 4).

Note: in an urban area, clearing for urban development in remnant vegetation that is an Endangered regional ecosystem is not exempt.

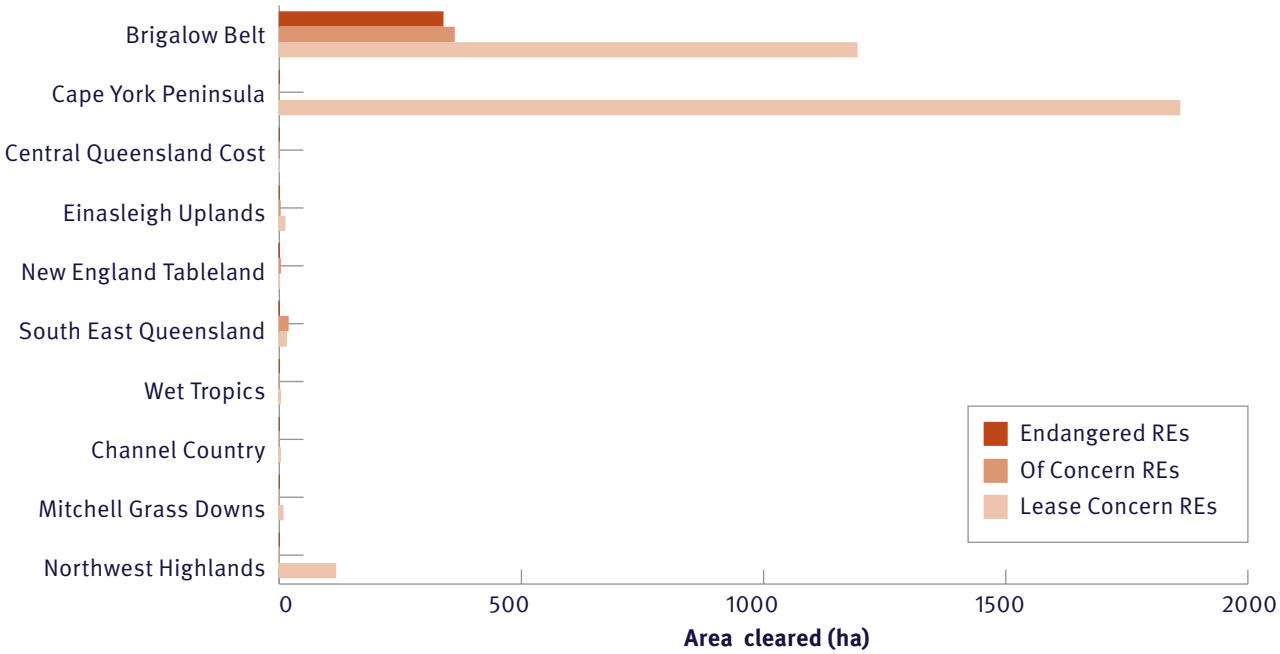


Figure 5: Clearing in remnant ecosystems in 2018–19 for mining purposes exempt under the VMA framework (99.8% of the 340ha of exempt clearing for mining in Endangered regional ecosystems occurred in the Brigalow Belt bioregion)

Table 4: Clearing for urban and rural residential development and mining in 2018–19 exempt or permitted under Development Approvals by regional ecosystem status (hectares, SCAN data, 2 s.f.)

Note: All clearing in Endangered and Of Concern regional ecosystems (exempt or via Development Approvals) is subject to offset requirements.

MCU/RaL: Clearing associated with material change of use or reconfiguration of lot approvals
EXEMPT_U.5: Clearing of vegetation (other than endangered) on lots less than 0.5 ha (aligns with urban exemption)
EXEMPT_U2: Clearing of vegetation (other than endangered) on lots less than 2.0ha (aligns with urban exemption)
EXEMPT_MINING: Clearing identified as mining in SLATS (includes gas and petroleum and coal seam gas infrastructure)
EXEMPT_LPcl_lt5ha: Clearing of vegetation (other than remnant endangered and of concern) on lots less than 5 ha (aligns with routine management exemption) –this category best equates to clearing for rural residential areas.

Category (vegetation assessment code)	Remnant endangered	High-value regrowth endangered	Of concern	High-value regrowth of concern	Least concern	High-value regrowth least concern	Total
Development approvals for lot change of use or reconfiguration (MCU/RaL)	40	—	140	—	380	—	560
Urban exemptions (EXEMPT_U.5, EXEMPT_U2,)	0	0	12	0	41	0	53
Rural residential exemptions (EXEMPT_LPcl_lt5ha)	0	240	0	415	2200	390	3245
Rural residential exemptions within Priority Development Areas (PDA) (EXEMPT_LPcl_lt5ha within PDA)	0	0.2	0	0.9	0.9	0	2.0
Priority Development Areas exemptions (UNEXPLAINED PDA)	3.8	0.2	45	7.9	6.9	0	64
Mining exemptions (EXEMPT_MINING)	253	85	334	50	3122	85	3900
Total	**300**	**330**	**530**	**470**	**5800**	**480**	**—**

SCAN data indicates that the clearing of vegetation for urban development and mining, is greatest in the South East Queensland and Brigalow Belt bioregions. The Panel anticipates increased infrastructure threats along the entire coast.

Consultations revealed that clearing for urban development, mining, and infrastructure including new renewable energy projects is also of significant concern to stakeholders in the Wet Tropics bioregion.

The Department of Energy and Public Works' Electricity Generation Map shows one renewable energy project currently under construction and 17 more proposed in the Far North region (accessed December 2022).[26] Following a 2022 trip to the region, the then Queensland Chief Scientist, Professor Hugh Possingham, indicated that there are many renewable energy projects planned for development in the long-term in the Wet Tropics region (Possingham, H, personal communication, 2022). These projects are, at least in part, driven by the Queensland Energy and Jobs Plan's renewable energy target of 70% by 2032 and 80% by 2035. Such developments need to balance challenging economic, social, agricultural and environmental trade-offs.

Substantial biodiversity losses are still occurring despite the fact regional plans that cover native vegetation management are already in place for all these regions: South East Queensland Regional Plan (2017), Far North Queensland Regional Plan (2019), and the Central Queensland Regional Plan (2013) and Darling Downs Regional Plan (2013) cover the Brigalow Belt bioregion.

We acknowledge that this is a contentious issue across the whole continent, especially in fast-growing peri-urban areas (e.g. western Melbourne and Sydney). Both Queensland laws and the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) struggle to manage the issue of 'death by a thousand cuts' in these areas of infrastructure and urban expansion.

26 Renewable energy projects including solar, wind, hydro, pumped hydro, geothermal, bioenergy, battery, and other.

R8 Evaluate exemptions for clearing in threatened ecosystems

Review the exemptions under the VMA framework for urban development, infrastructure and resource activities (including in relation to Private Development Areas (PDAs)) that allow clearing (full and partial) in Endangered and Of Concern regional ecosystems, and areas that provide habitat for threatened species, to ensure clearing in these ecosystems is avoided wherever possible. Where avoidance is impossible, a rigorous assessment consistent with SDAP, State Code 16 is preferable to an outright exemption.

Observations and findings

The vegetation management framework ensures assessable development that involves clearing native vegetation is assessed against SDAP State Code 16: Native vegetation clearing.

Some development, however, is exempt development meaning any associated clearing of native vegetation is not assessed against this Code. Exempt development includes low risk, routine maintenance and small-scale activities. It also includes some potentially more impactful activities, including resource activities, some infrastructure development, urban development in an urban area and development in a Priority Development Area (Planning Regulation 2017, Schedule 21, Exempt clearing work). Such clearing was regularly raised as a matter of concern with the panel by stakeholders in consultation meetings and submissions.

The Panel notes current exemptions for urban development. These include 'clearing for urban purposes in an urban area'[27] if the vegetation is classified as an Of Concern regional ecosystem and clearing in PDAs in Endangered and Of Concern regional ecosystems.

In 2018–19, about 53 ha of clearing in remnant regional ecosystems (0.027% of the total remnant clearing) was exempt for 'clearing for urban purposes in an urban area' (12 ha in Of Concern regional ecosystems) (see Table 4). Additionally, approximately 420ha was cleared within PDAs (see Table 5), including about 57 ha within Endangered and Of Concern regional ecosystems (see Table 4).

The Panel recognises these activities will be assessed against other criteria and clearing in relation to these activities is a relatively small proportion of overall clearing activity. Nevertheless, the Panel considers it is important to avoid clearing wherever possible in Endangered and Of Concern regional ecosystems and areas that provide habitat for threatened species.[28]

27 In an urban area, clearing for urban development in remnant vegetation that is an Endangered regional ecosystem is not exempt. The 'clearing for urban purposes in an urban area' exemption applies to all high value regrowth (Category C and R) and to remnant vegetation (Category B) that is Least Concern or Of Concern regional ecosystems. An 'urban area' is land identified as being intended for residential, industrial, sporting, recreation and commercial purposes; but not including rural residential, environmental, conservation, rural, natural or wilderness area purposes.

28 See, for example, performance outcome 28, 43 and 59. Note, State Code 16 does not allow offsets for significant residual impacts to matters of state environmental significance in a connectivity area unless the clearing is for development that is a coordinated project, natural channel diversion or contaminants removal (State Code 16, Purpose statement).

Where avoidance is impossible, a rigorous assessment consistent with SDAP State Code 16 would be preferable to an outright exemption. A uniform and transparent assessment regime should help to allay community concerns.

Given the importance of protecting remnant vegetation in these ecosystems, the Panel notes increasing evidence that offsets may not be an adequate or appropriate substitute for avoidance in these ecosystems.

Table 5: Clearing for Priority Development Areas (PDA) in 2018–19 (hectares, SCAN data, 2 s.f.)

Category (vegetation assessment code)	Area cleared (ha)
Category X (EXEMPT_PMAV_X or EXEMPT_RVM_X)	350
Forestry (EXEMPT_FORESTRY)	4.1
Rural residential exemptions within Priority Development Areas (PDA) (EXEMPT_LPcl_lt5ha within PDA)	1.9
Priority Development Areas exemptions (UNEXPLAINED PDA)	64
Total	**420**

The Panel recommends the State Planning Policy and SDAP, State Code 16 should be reviewed to incorporate the following guiding principles:

- In relation to urban development including PDA related development; infrastructure and resource activities, clearing native vegetation in Endangered and Of Concern regional ecosystems or in Essential habitats should be avoided wherever possible.
- In relation to development adjacent to an Endangered regional ecosystem or Essential habitat, clearing should ensure a buffer zone sufficient to protect the integrity of the Endangered regional ecosystem or Essential habitat in perpetuity is created.

These recommendations are not intended to relate to operational work for agriculture on Category X land, development that complies with the ADVCC or other low impact, exempt development.

Brooyar State Forest
(South East Queensland bioregion)

R9 Review forestry in threatened ecosystems

Review private native forestry practices that result in (full and partial) clearing in Endangered and Of Concern regional ecosystems, and areas that provide habitat for threatened species, to identify appropriate measures to minimise and, ideally, avoid such clearing.

Observations and findings

Around 5,300ha of clearing in 2018–19 was attributed to private native forestry (about 0.78% of the total and 2.7% of the remnant vegetation clearing). 75% of this 5,300ha was partial clearing, which is more likely to be the outcome expected if the forestry activity was conducted as permitted under the code (i.e., selective harvesting and retention that endeavours to retain habitat trees and involves ongoing tree growth). However, the Panel notes with concern that around 1,300ha of full clearing was attributed to private native forestry, possibly contravening code regulations. This clearing may be attributed to permitted forestry activities clearing (e.g. clearing for access tracks) but requires further investigation to ensure compliance of regulation (see R6).

Table 6: Clearing and re-clearing in 2018–19 attributed to the 'native forest practice' Accepted development vegetation clearing code (SCAN data, 2 s.f.)

	Full clearing (ha)	Full clearing %	Partial clearing (ha)	Partial clearing %	Total clearing (ha)	% of total clearing in 2018–19
Native forest practice	1300	25%	4000	75%	5300	0.78%

Running parallel to this expert panel review is the review of the 'managing a native forest practice' accepted development vegetation clearing code, in line with the implementation of the Queensland Government's Native Timber Action Plan. Independent technical reviews have been carried out by the Queensland Herbarium and CSIRO and advice on the code is being sought from the Native Timber Advisory Panel.

The Panel supports the current review of the code and recommends that it closely investigates forestry practices that result in clearing and partial clearing in Endangered and Of Concern regional ecosystems. It notes that, under certain circumstances, the current code allows some small-scale harvesting for speciality timber in Endangered regional ecosystems. The need to ensure a continued 'close watch' on any clearing in Endangered and Of Concern regional ecosystems is paramount.

R10 Establish a standing expert advisory committee

The Queensland Government forms a standing expert advisory committee that meets periodically to investigate and advise on issues of native vegetation management in the state, and help progress the recommendations of this review.

Observations and findings

Due to limited time and resources, and the complexity of the data and the legislation and regulations that we have needed to consider, the Panel notes that comprehensive development of its recommendations has not been possible. For example, a detailed analysis of the pros and cons of options (or an integrated program) for an environmental stewardship scheme (R3) considering the range of costs, benefits and complexities under the options available has not been possible. Additionally, to implement an efficient and effective state-wide extension program, significantly more detailed planning (and extensive consultation) than that what has been possible during this review is required. Whist the utmost effort has been made to present the best possible overall strategy and range of options available to the Queensland Government to reduce land clearing and enhance natural capital, the Panel acknowledges that a significant amount of expert advice will be required to further its recommendations and consider whether others may be appropriate.

A standing group of relevant experts could be tasked with further developing the ideas presented in this report, monitoring their effectiveness, and recommending adjustments across all recommendations. For example, a standing expert advisory committee could oversee the impact of the various stewardship options proposed and generally drive greater interest in managing for biodiversity outcomes as well as production outcomes. Additionally, the committee could meet just prior to the public release of the annual SLATS reports to review and interpret data and provide advice. Efficiencies could be gained by having a standing committee, avoiding the delays and costs of reactively establishing temporary advisory panels when issues arise.

A standing advisory committee may also provide the mechanism to work with the Queensland Government on other important vegetation management issues, including:

- ongoing monitoring of the relevant data from DES and the Department of Resources (and others) relating to the implementation of all revised ADVCC (see R1)
- improvement of clarity regarding the biodiversity implications of clearing of different types, and consideration of simplification of terminology
- investigation of how much and where native vegetation in Queensland is old-growth vegetation, and how much has characteristics of remnant vegetation
- ongoing learning about the behavioural and economic drivers of clearing, and evaluation of the effectiveness of relevant policy interventions
- the SLATS data breakdowns that will be most useful and intuitive to the public in understanding the annually-released vegetation clearing data

- an investigation into the adoption of a single conservation status system for regional ecosystems to reduce complexity and administrative costs and ensure alignment with any national systems in development
- the better alignment of the VMA and the Nature Conservation Act
- an investigation into the carbon implications of permanent clearing of mapped remnant vegetation commensurate with the Panel's recommendation for incentives to incentivise locking in carbon sequestered in regrowth (see R4).

Members of a standing committee would have expertise in respective disciplines relating to vegetation management (including economic, agricultural, environmental and social) in addition to landholder and First Nations representatives. It could include members of this review Panel.

Summary of recommendations

Recommendations	Ecological objectives addressed (approach employed)	Pros	Cons	VMA category clearing targeted	CR*
R1 **Maintain regulatory stability**	Protect, restore (engage and inform)	• Increased assurance of stability in regulation of Category X will reduce incentive to clear in anticipation of future change,	• Some high-value ecosystems will continue to be able to be cleared.	All	R2, R10
R2 **Improve extension, information and demonstration**	Protect, restore and manage (engage and inform)	• Building the systems and skills to better manage native vegetation will deliver more positive community acceptance and greater long-term impact. • Improved access to information, management tools, and integration of native vegetation into farming systems. • Improved understanding of govt policies and programs builds trust and participation; 'knowing who to call' is key • Regional job creation.	• Clearing depends on landholder decisions and may not reduce in first 2–5 years after implementation. • Must be paired with other initiatives to increase impact on clearing and re-clearing decisions. • Dependent on availability of appropriate staff and expert local knowledge —and an appropriate recruitment process. • Additional resources required.	All	R3, R4, R8
R3 **Launch an environmental stewardship scheme**	Protect, restore and manage (incentivise and reward)	• Fills a gap in incentives for management of remnant vegetation. • Create additional farm income streams. • Potential certification to protect export and domestic market access and meet community expectations.	• Must be done in conjunction with R2 and connect with related existing schemes, to support landholders navigating the complex landscape. • Additional resources required. • Needs to be carefully designed to avoid unnecessary overlap with existing initiatives.	B, C, R	R2
R4 **Enhance carbon market opportunities**	Protect and restore (incentivise and reward)	• Facilitate restoration and long-term protection of areas of high conservation value vegetation on Category X land. • Create additional farm income streams.	• Must be paired with R2 to ensure increased landholder understanding and uptake of best-practice advice. • Dependent on Australian Government agreement. • Needs to account for genuine additionality. • Needs to be paired with R2 to ensure increased landholder understanding and uptake of best-practice advice.	X	R2

* Complementary recommendation

Recommendations	Ecological objectives addressed (approach employed)	Pros	Cons	VMA category clearing targeted	CR*
R5 **Clearer reporting and communication of SLATS**	Manage (engage and inform)	• Better public understanding of issue. • Less misrepresentation of information. • Allows trends and targets to be monitored easily. • Increased government transparency.	• Additional human resources required.	N/A	R2
R6 **Enable better enforcement**	Protect and manage (incentivise and reward)	• Reduce unexplained clearing. • Send signals that minimise likelihood of future adverse events.	• Additional human resources required.	B, C, R	R2
R7 **Better regional planning**	Protect, restore and manage (engage and inform)	• Can determine regional-based targets for the reduction of clearing and re-clearing. • Could be used to direct the aims of the Land Restoration Fund. • Support carbon offset activities.	• Plans for multiple bioregions are needed. • No guarantee of plans' impact on clearing.	All	R2, R4, R5
R8 **Review exemptions for clearing in threatened ecosystems**	Protect	• Reduce high-profile clearing in high-value ecosystems.	• Reviews of multiple pieces of legislation required.	B, C, R	R6
R9 **Review forestry in threatened ecosystems**	Protect and manage	• Support parallel private native forestry code review in identifying mechanisms to reduce undesirable outcomes.	• Potential impact on forestry industry and jobs further down the supply chain.	B, C, R	R2
R10 **Establish a standing advisory committee**	Manage (engage and inform)	• Provide timely independent advice to the Queensland Government. • Resource efficient.	• Additional human resources required.	All	R5

* Complementary recommendation

A stand of regrowth vegetation on a grazing property near Gayndah (South East Queensland bioregion)

4. Conclusion

Vegetation management in Queensland is one of Australia's most contentious nature conservation issues. The issues of native vegetation management need to be integrated into a broader narrative about natural capital and its values for production and conservation on site and for the broader community.

The Panel recognises that there are other relevant instruments complementary with existing Queensland Government and Australian Government planning, strategy and policy, including the:

- Queensland Climate Adaptation Strategy
- Advance Queensland and the Queensland Agriculture and Food Research, Development and Extension 10-Year Roadmap and Action Plan
- South East Queensland Koala Conservation Strategy
- Reef 2050 Plan
- Reef Water Quality Improvement Plan
- Environmental Offsets Framework
- Strategy for the conservation and management of Queensland's wetlands
- Queensland's Protected Area Strategy 2020–2030
- Indigenous Protected Areas Program.

The Queensland Government should work towards a more comprehensive, coherent and integrated policy position which recognises the significant role the VMA framework (and impacted landholders) play in the continuum of measures by which biodiversity can be protected and managed. This includes measures on all land tenure types including:

- public protected areas
- private protected areas
- regulated land
- Category X land.

Landholders dealing with all of these land tenure types should have some access to incentives and support, and not just regulation. In Queensland, no other position is tenable.

Such a policy position should also provide a coherent and consistent statement that reconciles perceived inconsistency and competition between the government's stated goals of productivity-and-growth versus biodiversity-and-conservation, which should be adopted and applied consistently across all sectors and departments.

To this end, resolution will require substantial state and federal investment. While this document does not include the budget for each of the possible solution options, we believe that the overall annual budget is in the realm of several hundred millions of dollars of investment from the Australian and Queensland governments in existing or new programs. This is essential to help stabilise the irreversible loss of natural capital.

5. Bibliography

Accad, A., Kelley, J. A. R., Richter, D., Neldner, V. J., & Li, J. (2022). *Remnant Regional Ecosystem Vegetation in Queensland (Version 12.2), Analysis 1997–2019*. Queensland Department of Environment and Science.

Alluvium. (2018). *Wet Tropics Reef Rescue Impact Report 2008–2016 Summary for Terrain NRM*.

Beedell, J. D. C., & Rehman, T. (1999). Explaining farmers' conservation behaviour: Why do farmers behave the way they do? *Journal of Environmental Management*, *57*(3), 165–176. https://doi.org/10.1006/jema.1999.0296

Dasgupta, P. (2021). *The Economics of Biodiversity: The Dasgupta Review*. HM Treasury.

DES. (2020). *Queensland's Protected Area Strategy 2020–2030: Protecting our world-class natural and cultural values*. Department of Environment and Science, Queensland Government.

England, P. (2022). Unfinished Business: A review of the VMA and its future potential. *Environmental and Planning Law Journal*, *39*.

Evans, M. (2016). Deforestation in Australia: Drivers, trends and policy responses. *Pacific Conservation Biology*, *22*. https://doi.org/10.1071/PC15052

Food and Agriculture Organization of the United Nations (FAO). (2019). *The State of the World's Bioadiversity for Food and Agriculture*. Food and Agriculture Organization of the United Nations (FAO). http://www.fao.org/3/ca3129en/CA3129EN.pdf

Gowen, R., & Bray, S. G. (2016). Bioeconomic modelling of woody regrowth carbon offset options in productive grazing systems. *The Rangeland Journal*, *38*(3), 307–317.

Heagney, E. C., Falster, D. S., & Kovac, M. (2021). Land clearing in south-eastern Australia: Drivers, policy effects and implications for the future. *Land Use Policy*, *102*, 105243.

IUCN. (2020). *Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS*. IUCN. https://doi.org/10.2305/IUCN.CH.2020.08.en

McRobert, K., Fox, T., Heath, R., Dempster, F., & Goucher, G. (2020). *Recognising on-farm biodiversity management*. Australian Farm Institute. https://nff.org.au/wp-content/uploads/2020/11/Recognising-on-farm-biodiversity-management_AFI_Aug2020.pdf

Our Living Outback. (2018). *Investing in People and Nature: Strengthening conservation outcomes on Queensland private land*. https://d3n8a8pro7vhmx.cloudfront.net/outbackqueensland/pages/279/attachments/original/1540347293/OLO_nature-report_PRINT_231018_%281%29.pdf?1540347293

Pannell, D., & Vanclay, F. (2011). *Changing Land Management: Adoption of New Practices by Rural Landholders*. CSIRO PUBLISHING. https://books.google.com.au/books?id=2KZCJelx560C

Peeters, P. J., & Butler, D. W. (2014). *Mulga—Regrowth Benefits—Management Guideline*. The State of Queensland (Department of Science, Information Technology, Innovation and the Arts). https://www.qld.gov.au/__data/assets/pdf_file/0025/68191/mulga-management-guideline.pdf

Ponce Reyes, R., Firn, J., Nicol, S., Chades, I., Martin, T., Stratford, D., & al, et. (2016). *Priority threat management for imperilled species of the Queensland Brigalow Belt*. CSIRO. https://doi.org/10.4225/08/58542c54413ee

Rolfe, J. (2002). Economics of vegetation clearing in Queensland. *The Rangeland Journal*, *24*(1), 152–169.

Simmons, B. A., Wilson, K. A., Marcos-Martinez, R., Bryan, B. A., Holland, O., & Law, E. A. (2018). Effectiveness of regulatory policy in curbing deforestation in a biodiversity hotspot. *Environmental Research Letters*, *13*(12), 124003. https://doi.org/10.1088/1748-9326/aae7f9

Somerville, P. (2022, August 28). *Environmental and financial dividends on offer for farmers in carbon reforestation project*. ABC News. https://www.abc.net.au/news/rural/2022-08-28/environmental-financial-gains-from-farm-reforestation-greening/101370270

State of Queensland. (2022). *Nature Conservation (Protected Areas) Amendment Regulation 2022*. https://www.legislation.qld.gov.au/view/pdf/asmade/sl-2022-0126

Victoria. Department of Natural Resources and Environment (Ed.). (2002). *Victoria's native vegetation management: A framework for action—Summary*. Department of Natural Resources and Environment.

White, D. L., & Lloyd, F. T. (1994). *Defining Old Growth: Implications For Management*.

6. Glossary

Term	General meaning
Area Management Plan (AMP)	An AMP is a management plan for a specific area designed to provide a coordinated approach to clearing activities by region rather than by property. AMPs manage clearing activities not covered by an accepted development vegetation clearing code, list the approved purpose and clearing conditions for the areas covered by the plan and relate to particular vegetation categories and regional ecosystems.
Accepted development vegetation clearing codes (ADVCC)	Self-assessable clearing codes for low-risk clearing activities that outline the requirements for clearing vegetation for particular purposes and to achieve the desired environmental outcomes. The codes apply to particular vegetation categories and regional ecosystems.
Avoided Clearing Emissions Reduction Fund (ERF) method	The Avoided Clearing ERF method incentivises the retention of secondary native forests. To be eligible, the land areas must have forest cover (woody vegetation ≥2 metres in height with crown cover ≥20% over an area of 0.2 ha), they must have been cleared twice in the past and must be able to be cleared now without restriction. Land is also only eligible if it is included within a six-year window dictated by the age of the forest when it was last cleared.
Category A area	An area which is: • a declared area • an offset area, an exchange area, an area that has been subject to unlawful clearing or an enforcement notice, an area subject to clearing as a result of a clearing offence or • an area that the chief executive determines to be Category A. Category A areas generally not regulated by the vegetation management laws and are colour-coded red on the regulated vegetation management map.
Category B area	An area which is remnant vegetation shown on a regional ecosystem or remnant map as an endangered regional ecosystem, an Of Concern regional ecosystem or a Least Concern regional ecosystem. Category B areas are colour-coded dark blue on the regulated vegetation management map
Category C area	An area which is high-value regrowth vegetation on freehold land, Indigenous land or land the subject of a lease issued under the *Land Act 1994* for agriculture or grazing purposes or an occupation licence under that Act, in an area that has not been cleared in the last 15 years which is also an Endangered, Of Concern, or 'least concer'n regional ecosystem. Category C areas are colour-coded light blue on the regulated vegetation management map.
Category R area	An area which is a regrowth watercourse and drainage feature area located within 50 metres of a watercourse located in the Burdekin, Burnett–Mary, Eastern Cape York, Fitzroy, Mackay–Whitsunday or Wet Tropics catchments identified on the vegetation management watercourse and drainage feature map. The vegetation management framework regulates clearing of native vegetation within this buffer area. Category R areas are colour-coded yellow on the regulated vegetation management map
Category X area	All areas other than Category A, B, C and R areas. Category X areas are areas where clearing is generally exempt under the vegetation management laws. Category X areas are colour-coded white on the regulated vegetation management map.
Clear	To remove, cut down, ringbark, push over, poison or destroy vegetation in any way, including by burning, flooding or draining; but not including destroying standing vegetation by livestock, or lopping branches from a tree.
Clearing activity	Human activity which results in the full or partial removal or destruction of woody vegetation from an area.
Code	Accepted development vegetation clearing code.

Term	General meaning
DA	Development approval.
DES	Queensland Government Department of Environment and Science.
Endangered regional ecosystem	A regional ecosystem is listed as Endangered under the Act if: • the area of remnant/regrowth vegetation is less than 10% of the pre-clearing extent of the RE, or • the area of remnant/regrowth vegetation is 10–30% of the pre-clearing extent of the RE, and less than 10,000 hectares. In addition to the criteria listed for an Endangered regional ecosystems under the Act, for biodiversity planning purposes a regional ecosystem is listed with a biodiversity status of Endangered if: • less than 10% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss19, or • 10–30% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000ha, or • it is a rare[20] regional ecosystem subject to a threatening process.[21]
Environmental plantings Emissions Reduction Fund (ERF) method	This method incentivises the planting of native trees and shrubs using seedlings and direct seeding. To be eligible, the project area must have been clear of forest for at least five years before the date of the application for registration. The trees that are planted must have the capacity to attain a height of two metres or more and provide crown cover of at least 20% over the planting area.
Environmental offset	An activity undertaken on one site to counterbalance or compensate for a lasting adverse impact on significant environmental matters (e.g. valuable species and ecosystems) on another site. The intent is for no net loss of biodiversity values where an offset is implemented.
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Qld)
Essential habitat	Essential habitat identifies the habitat of endangered, vulnerable or near-threatened wildlife (protected wildlife) prescribed under the *Nature Conservation Act 1992*. Also defined under section 20AC of the Vegetation Management Act.
Fodder harvesting	The clearing of vegetation that predominantly consists of fodder species for use as a food source for livestock. Used as a regular part of land management and/or during droughts, fodder harvesting is typically carried out in strips, blocks or other sections so as to leave a proportion of vegetation uncleared in a given time period, and with the cleared vegetation remaining where it is cleared, for nearby stock to feed on.
Full clearing	A human-induced clearing event which results in the complete removal or destruction of woody vegetation, converting an area from woody to non-woody (i.e. less than 10% woody crown cover remains). These are areas that were mapped as woody in the woody extent map, but the clearing activity has sufficiently removed or destroyed enough woody vegetation to render the location non-woody, thus removing them from the woody extent map. These areas are included as one of the categories of clearing activity reported by SLATS.

19 Severe degradation and/or biodiversity loss is defined as:
- floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or
- soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity, surface compaction, loss of organic matter or sheet erosion.

20 Rare regional ecosystem: pre-clearing extent (less than 1,000ha).

21 Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing5, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.

Term	General meaning
High value regrowth vegetation	Vegetation that has not been cleared (other than for relevant clearing purposes) for at least 15 years, if the area is classed as an endangered, of concern or least concern regional ecosystem.
Human-induced Regeneration and Native Forest from Managed Regrowth Emissions Reduction Fund (ERF) methods	The Human-induced Regeneration and Native Forest from Managed Regrowth methods promote the conversion of non-forest grazing land to forest land. They apply to land that does not contain forest, but which has the potential to naturally regenerate to reach forest cover with changes in land management practices, including the cessation of clearing, decreasing stocking rates and the control of feral grazing pressure. The eligibility requirements under the two methods differ, as do the abatement calculations, but both require the land to not have been deforested in the previous seven years and, at the date of application, to not have forest cover but have 'forest potential', being trees that are reasonably likely to reach 2 metres or more in height and provide crown cover of at least 20 per cent of the land.
Landcover replacement class	An indication of the purpose for which the vegetation was cleared assigned by the Statewide Landcover and Trees Study (SLATS). The assignment or coding of these classes is primarily based on visual interpretation using satellite imagery, with reference to ancillary data sources.
Landholder	A holder, owner, or occupant of freehold, leasehold or land held under the Native Title Act 1993 and as defined within the Queensland Government's Aboriginal Land Act 1991, the Torres Strait Islander Land Act and the Land Act 1994
Least Concern regional ecosystems	Least concern status means remnant/regrowth vegetation is over 30% of its pre-clearing extent across the bioregion, and the remnant/regrowth area is greater than 10,000 hectares.
Of Concern regional ecosystems	Of concern status means: remnant/regrowth vegetation is 10–30% of its pre-clearing extent across the bioregion; or more than 30% of its pre-clearing extent remains and the remnant/regrowth extent is less than 10,000 hectares.
Old-growth vegetation	Vegetation that has attained great age without significant disturbance and thereby exhibits unique ecological features and might be classified as a climax community (White & Lloyd, 1994).
Partial clearing (major)	A human-induced clearing event which results in the partial but significant removal or destruction of woody vegetation. These are areas where greater than 50% of the woody vegetation has been affected by clearing but the area remains woody (i.e. greater than 10% crown cover remains). These areas are included as one of the categories of clearing activity reported by SLATS but remain in the woody extent.
Partial clearing (minor)	A human-induced clearing event which results in partial, minor removal or destruction of woody vegetation. These are areas where the woody vegetation has been modified but less than 50% of the area has been affected by clearing, and it remains woody (i.e. greater than 10% crown cover remains). These areas are included as one of the categories of clearing activity reported by SLATS but remain in the woody extent.
Property map of assessable vegetation (PMAV)	Property map of assessable vegetation—a map certified by the Department of Resources as a PMAV for an area and showing the vegetation category areas for the area (e.g. Category C area, Category X area).
Pulling	Pulling is a method of vegetation clearing that uses a chain strung between two bulldozers. It is primarily used for broadacre areas and regrowth often begins to regrow quite quickly as the vegetation root stock is generally not killed.

Term	General meaning
Regional ecosystem	A vegetation community in a bioregion consistently associated with a particular combination of geology, landform and soil.
Remnant vegetation	Vegetation that is an endangered, of concern or least concern regional ecosystem forming the predominant canopy of the vegetation by covering more than 50% of the undisturbed predominant canopy cover; averaging more than 70% of the vegetation's undisturbed height and composed of species characteristic of the vegetation's undisturbed predominant canopy.
Stick-raking	Stick-raking is a method of vegetation clearing that uses a metal 'rake-like' tool attached to a tractor or other vehicle and dragged over the land to clear-up/collect vegetation (often after another type of clearing has been done).
Statewide Landcover and Trees Study (SLATS)	SLATS is a vegetation monitoring initiative of the Queensland Government with the primary objective of assessing the extent of woody vegetation in Queensland and assessing all woody vegetation change (clearing and regrowth) in Queensland.
Spatial Compliance Analysis Network (SCAN)	Additional detailed analyses of SLATS clearing activity data is undertaken by DES and Resources for the purposes of understanding the clearing activity in the context of the VMA. The analyses involves intersecting SLATS data with lot on plan data and various notifications and permit information to provide detailed breakdowns of the purposes of the clearing under the VMA, and to help identify unexplained clearing which may include potentially unlawful clearing activity.
Unexplained clearing	Clearing associated with no obvious permitted clearing types or exemptions. Department of Resources analyses this data to determine if clearing is likely explained and no further action required or likely unexplained and subject to further investigation.
Vegetation	A native tree or plant other than the following – (a) grassy or non-woody herbage; (b) a plant within a grassland regional ecosystem prescribed under a regulation; (c) a mangrove.
VMA	*Vegetation Management Act 1999* (Qld)
Woody baseline	2018 map of woody vegetation extent (greater than 10% crown cover and minimum patch size of 0.5ha), which forms the basis for SLATS woody vegetation monitoring, accounting, and reporting going forward.
Woody plants	A plant that produces wood as its primary structural tissue. Woody plants may be trees, shrubs or lianas and are usually perennial.
Woody vegetation	Assemblages of woody plants. This includes stands of native vegetation, regrowth following clearing, plantations of native and exotic species, and woody weeds.

A grazing property in the Brigalow Belt bioregion

APPENDIX 1
ENVIRONMENTAL STEWARDSHIP SCHEME OPTIONS

There are different options for how the proposed environmental stewardship scheme could be designed. The table in section 3 (R3) of this report includes five options developed by the Panel for further consideration. Additional details on these options are provided here.

Environmental Stewardship Scheme option 1: Nature rewards program

While there are options for landholders who have the capacity and sophistication to navigate and engage with biodiversity offsets, the ERF/LRF, and certification programs, the majority of landholders are not interested (for a range of reasons which may include perceived or real cost and profitability implications, or personal values), not aware of these options, don't trust them, or are (quite reasonably) flummoxed by all the different initiatives. Even if these issues were all resolved, these programs will always only reach a smallish fraction of landholders; on their own, they cannot address this problem.

A 'Nature Rewards Program' would start to reward landholders for the contributions their properties make to the protection, restoration and management of native vegetation in Queensland. The aim of this program would be to provide an absolutely entry-level, low-obligation, non-threatening pathway to better engagement and start positive conversations about biodiversity and the value of native vegetation in Queensland.

The focus of Nature Rewards would not be so much on the payment itself, but the recognition afforded to landholders that what they are stewarding is valuable and valued, and the benefits for native vegetation would arise from the opportunity to connect landholders voluntarily with information and stories of other landholders who are experiencing benefits of various kinds from retaining good condition vegetation on their properties.

It would offer modest annual payments to landholders for the effective stewardship of very good condition, intact remnant vegetation. It could target threatened ecosystems, or particular bioregions, or both, via a payment on delivery of results, demonstrating that the vegetation is (for example) in the best five per cent per ecosystem. This is an opportunity to increase recognition of the importance for biodiversity of increasingly rare high-condition sites with a native, intact ground layer largely free from introduced pasture species.

The payments would be small, but qualification is easy, and forward commitment is zero, as payment is on results. Results would be demonstrated simply, via submission of photos, subject to random visits to 'audit' also used as opportunities for improved engagement.

The intent of this program is not to maximise site-level additionality but instead to achieve broader outcomes through changing the current often-negative tone about nature to a positive, enthusiastic one, to open the door to education, and ultimately, provide the pathway that is needed toward further opportunities. This is about celebrating the contribution landholders are making to Queensland.

It is focussed on building a network through direct communication, newsletters, featured people and places, with a positive story for every property. It aims to engender a culture of warmth and positivity about the program, about the land and nature.

The successful operation of this program would depend very much on R2 – improved locally-based extension officers.

Environmental Stewardship Scheme option 2: Land stewardship vouchers

An environmental stewardship scheme could include the annual distribution of stewardship vouchers (or a designated line of credit) to help landholders meet the extra costs involved in managing woody vegetation for successful environmental outcomes. This option would be primarily targeted at landholders who are already managing a significant amount of regulated woody vegetation because, generally speaking, regulated vegetation is not eligible for funding through the LRF or ERF schemes (due to their complex additionality requirements).[32] By providing stewardship vouchers to these stakeholders, this scheme will recognise their existing contribution to biodiversity outcomes and, at the same time, incentivise and secure enhanced environmental outcomes for the benefit of the whole community.

Stewardship vouchers would be redeemable in relation to targeted activities that are well known to enhance environmental outcomes.[33] They could, for example, be used in part payment for the costs involved in complying with the accepted development codes for managing weeds or managing regrowth density for improved environmental outcomes.[34] By completing these activities in accordance with the accepted development codes, landholders protect and enhance the environmental values of regulated land but at more cost than applying operational methods commonly used on Category X land. Because of the extra costs involved, this work may be delayed or altogether neglected and, as a consequence, biodiversity values on regulated land may not be optimised.[35] Increased woody vegetation also incurs additional costs to manage fire, weeds and pests (Ponce Reyes et al., 2016) so vouchers could be used in part payment for the increased costs associated with these activities on regulated land.

The overall goal here will be to provide landholders with a range of suitable options—and a modest incentive—to encourage them to manage their regulated land for improved environmental outcomes that complement their production objectives.

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32 Across Queensland, 49% of rural lots consist of more than 30% native vegetation; 44% of rural lots consist of more than 40% native vegetation and 39% of lots consist of more than 50% native vegetation. See, Accad et. al. (2022) intersected with DCDB (Lot on Plan › 100ha).

33 Vouchers or a designated line of credit are preferable to subsidies because vouchers are premised on pro-active engagement by the Government (ie. it initiates the process); they are less likely to be translated into increased costs by service providers and they can be distributed to target groups rather than simply being retrieved by pro-active, industry leaders who are most likely to act on their own initiative.

34 Selective clearing to manage regrowth density is permitted on Category C and R land in order to restore the floristic composition and range of densities typical of the regional ecosystem in the bioregion in which it is located and maintain ecological processes and prevent loss of biodiversity. Accepted development vegetation clearing code (07.02.2020).

35 See, for instance, (Peeters & Butler, 2014).

Stewardship vouchers could also be used to incentivise participating landholders to enter into other schemes which recognise and reward their contribution to protecting and enhancing native vegetation across Queensland. For instance, stewardship vouchers could be used to cover the costs associated with applying for and maintaining accreditation against relevant natural capital or carbon certification schemes (such as the Australian Land Management Group's Certified Land Management (CLM) system, the Australian Farm Biodiversity Certification Scheme, or AgForce's AgCarE assessments). Many landholders are yet to engage with these initiatives due to the lack of any tangible financial incentive to do so and the costs involved in participating. Offering targeted assistance to landholders who already manage significant amounts of woody vegetation will fast track their pathway to environmental/carbon accreditation. This serves to the benefit of Government, the community and producers alike. Given the increasing urgency of this issue, we note there is potential for allocating bonus vouchers to landholders who act early to achieve and maintain carbon neutrality.

The Panel notes the Queensland Government's Private Protected Area Program and the Australian Government-funded Enhanced Remnant Vegetation Pilot may also offer opportunities for these landholders. The voucher scheme could be designed to encourage eligible landholders to apply for and participate in these schemes. To the extent the Private Protected Area Program does not provide ongoing payments for routine management actions, we note the potential for allocating bonus vouchers (or simply additional payments) to eligible landholders who participate in these schemes.

Stewardship vouchers, as proposed, could help to incentivise greater compliance with the laws and regulations governing regulated land. In 2018–2019, 29% of all clearing (59,000ha) on regulated land was 'unexplained' (potentially unlawful clearing). To reward compliant landholders and penalise those who do the wrong thing, vouchers should be permanently withheld from any landholder (and /or their landholding) who engages in non-compliant activity on regulated land.

Lastly, by including landholders who voluntarily grow and maintain woody vegetation on their Category X land (if they are non-renumerated under another scheme), the voucher scheme would provide a small incentive to all landholders to increase their woody vegetation in line with R2.

In summary, the key benefits of this option are:

- to assist landholders with significant amounts of regulated, woody vegetation to complete management actions that will enhance the environmental values of that land by complying with environmentally beneficial accepted development codes and undertaking other actions that are known to enhance the environmental values of woody vegetation
- to facilitate access—and increase interest—in opportunities and schemes, including natural capital and carbon accreditation schemes, which can assist landholders to measure, protect, maintain and enhance environmental values on their land

- to reward, recognise and incentivise landholders to maintain their regulated, woody vegetation for improved environmental outcomes and provide an additional penalty to those who do not comply with the relevant law
- to signal to all landholders the general desirability of increasing the amount and calibre of woody vegetation on their land.

The targeted provision of land stewardship vouchers meets the 'SMART' principles for goalsetting—it targets specific activities; provides measurable and achievable outcomes (e.g., a documented increase in the number of landholders achieving carbon accreditation) and is relevant and timely to the issue of improving the management of woody vegetation for better biodiversity outcomes (EO3).

Stewardship vouchers would provide non-threatening but significant reward payments to landholders most impacted by the VMA. They would help generate jobs and economic activity directly in the rural regions and locations most impacted by the existing vegetation management framework. They would advance the government's own policy goals for realising carbon neutrality and enhanced biodiversity outcomes. Unlike options 4 and 5, stewardship vouchers would involve no lock-in contracts and few transaction costs for landholders. Landholders would retain a degree of choice—within a range of designated environmentally beneficial activities—over how to use their vouchers as best fits the requirements of their enterprise.

Most importantly, stewardship vouchers would complement and support the proposals in R2 (improve extension, information and demonstration). Evidence supporting the potential effectiveness of combining targeted grants or subsidies with appropriate extension is provided by a recent review of GBR-related grants and subsidies (Alluvium, 2018). It reported every dollar spent by the government led to $1.31 being spent by landholders. It also found: '[T]he grants program increased the chances of a landholder achieving practice change by 2–27 times compared to the baseline of voluntary practice change' and, '[T]he greatest increase in practice changes occurred when grants and extension were combined'.

From 2016 to 2018, notifications for vegetation thinning covered almost one million hectares of land. That number dropped to 12000ha in 2018–2019 when amendments to the relevant ADVCC took effect. Regulatory changes have major consequences for landholders and are resented by many of the (England, 2022).[36] Unlike the protected areas program (see option 5 below), option 2 is not premised solely on targeting specific biodiversity goals of interest to the state.

36 As an illustration of the contentious nature of this legislation, the Parliamentary Committee set up to report on the Vegetation Management Amendment and other Legislation Amendment Bill 2018 received over 13,000 submissions (including 777 non pro forma submissions) the largest ever number of submissions received by any committee of the Queensland Parliament. See, State Development, Natural Resources and Agricultural Industry Development Committee, Vegetation Management Amendment and other Legislation Amendment Bill 2018, April 2018 Report no 6, 56th Parliament. https://www.parliament.qld.gov.au/work-of-committees/committees

Rather, it is about working with those landholders most impacted by the VMA legislation to build greater acceptance of the need for conservation; generate additional economic opportunities and, in so doing, to maximise the effectiveness of the proposed extension program. In Queensland, we need to change the often acrimonious debate away from whether or not landholders should be allowed to clear vegetation towards how the wider community can support landholders —our frontline environmental stewards—to manage land for environmental outcomes of benefit to everyone. Implementing option 2 would help reorient the controversies and debates along these lines.

Environmental Stewardship Scheme option 3: Natural capital, grants-based program

To complement options 1 and 2 (Nature Rewards and stewardship voucher scheme), a natural capital grants-based program could be introduced for landholders who wish to apply for funding to invest in bigger, natural capital projects.[37] Such projects could include fencing native vegetation areas to improve stock management; fencing to exclude cattle from riparian corridors and water holes; and environmental plantings to provide habitat and restore cleared ecosystems (see section 2—ecological values). This program could be made available to all landholders across Queensland, but priority access might be made available to landholders participating in either the rewards or vouchers programs.

The Panel notes the purpose of the Drought Assistance Program is to administer grants and concessional loans for capital improvements that will improve drought resilience in accordance with a landholder's Farm Business Resilience Plan. The Panel is of the view that biodiversity and natural capital investments are cost effective methods to improve drought resilience so the natural capital, grants-based scheme could sit within this framework. The Farm Business Resilience Plan, a pre-requisite for Program applicants, presents an excellent opportunity for individual enterprises to identify and integrate natural capital objectives into their business planning in a holistic, ongoing way. This existing planning process could be better tailored to highlight the opportunities for investing in natural capital.

Environmental Stewardship Scheme option 4: Remnant vegetation management scheme

Biodiversity is often defined at three scales: genetic, species and ecosystems. Different interventions are typically used to promote the conservation of biodiversity at each of these scales.

37 Matching or concessional finance is not appropriate for this purpose because although there is growing evidence natural capital contributes to more resilient and sustainable production in the long term, accurate cost-benefit methodologies at farm scale are not yet available.

At the ecosystem level in the terrestrial context, there are five main ways governments can protect and conserve biodiversity:

1. protecting ecosystems that are at imminent risk of loss or degradation through clearing or harvesting
2. restoring ecosystems that have been cleared or harvested
3. protecting and managing uncleared ecosystems that face a risk of degradation from pests, weeds and over-grazing
4. protecting, managing and improving the condition of uncleared ecosystems that have been degraded by pests, weeds and over-grazing; and
5. protecting a comprehensive, adequate and representative sample of largely intact ecosystems, regardless of whether they are at imminent threat of loss, in formal protected areas.

The VMA framework is primarily responsible for the protection of ecosystems that are at imminent risk of loss through clearing (option 1). The carbon market (R4), or a natural capital grants-based program (see above), are well placed to help incentivise the restoration of cleared ecosystems (option 2). Queensland has a network of public and private protected areas, and the government has announced a target of doubling the size of the protected area estate to almost 30 million hectares, which would be assisted by the creation of a private protected area stewardship payment program (option 5). The main missing part of the policy landscape is a stewardship program targeted at uncleared ecosystems that are at risk of degradation from pests, weeds and over-grazing (option 3), or whose have been degraded and their condition could be improved through the management of pests, weeds and grazing (option 4).

The natural capital, grants-based program outlined in option 3 would directly assist with this issue by providing one-off grants to assist with capital-intensive projects that are designed to protect native vegetation that is threatened by pests, weeds and over-grazing, or whose condition could be improved through plantings and the management of pests, weeds and grazing. However, while the one-off grants would assist with upfront capital costs, they are less well-suited to covering the recurrent costs associated with remnant vegetation management and the forgone profits from the full or partial exclusion of livestock.

Option 4 is designed to address this issue. It would provide landholders with annual payments to assist with the ongoing management of areas of remnant vegetation, particularly where the condition of the vegetation can be improved through active management of pests, weeds and grazing pressure. The scheme would be orientated towards areas of high conservation value, thereby ensuring the efficiency of the scheme in securing biodiversity outcomes. However, eligibility would be broader than the private protected areas program, which is intended to protect the best examples of native ecosystems.

Data on biodiversity status, which uses the regional ecosystem vegetation management classes plus information about ecosystem condition, including degradation and threatening processes such as weed invasions, could be used to identify areas on high conservation value.

A further point of differentiation with the private protected areas program is that it would not require landholders to enter into a permanent conservation agreement that attaches to title. Conservation covenants would be encouraged but not made mandatory. Many landholders are reluctant to covenant their land for fear it will adversely affect the land value and future management options. This scheme would address this issue by only requiring landholders to enter into conservation agreements for terms of between 10 and 30 years.

The Panel encourages the partnering of not-for-profit organisations with the Queensland Government to negotiate and manage these areas in a strategic, landscape scale way—including leasehold arrangements with private landholders (Somerville, 2022).

Environmental Stewardship Scheme option 5: Stewardship options in Private Protected Areas Program

Protected areas are generally defined as:

> A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

Important elements of this definition include the need for the area to be subject to a specific binding commitment to conservation and for the commitment to be 'long-term'. In Australia, for an area to qualify for inclusion in the National Reserve System as a protected area it must, amongst other things:

- enhance the comprehensiveness, adequacy and representativeness of the National Reserve System
- be established and managed for the primary purpose of protection and maintenance of biological diversity with associated ecosystem services and cultural values
- be subject to obligations to manage the area for conservation in perpetuity or for at least 99 years.

Reflecting these requirements, the purpose of protected areas is to protect a comprehensive, adequate and representative sample of largely intact ecosystems so as to guard against catastrophic losses and risks posed by unforeseen future events, and to ensure that each generation bequeaths to the next a natural capital endowment that is no smaller than what they received. In colloquial terms, they are intended to protect the 'jewels in the crown'—the best examples of the native ecosystems within Queensland. They are not intended to directly protect areas that face an imminent threat of clearing or other degradation. At times they will serve this purpose, but it is not their primary role.

They are areas put aside and managed in perpetuity for current and future generations as a form of natural capital insurance, or safety populations.

Despite its rich natural endowments,[38] Queensland has only 8.26% of its land mass in protected areas, the least of any Australian State.[39] However, in 2015, the Queensland Government set a long-term target of increasing protected areas to 17% of the state's land mass, which would involve increasing the estate from its current 14.3 million hectares to 29.4 million hectares. In 2020, the government recommitted to the target in its *Queensland's Protected Area Strategy 2020–2030*.

The Queensland Government can achieve this target using either public or private protected areas. Private protected areas are simply protected areas that are owned by private individuals or entities (individuals, non-government organisations and corporations), distinct from government.

At present, Queensland's Private Protected Areas Program (PPAP) does not provide stewardship payments. The main financial incentives provided to landholders to enter into PPAs are project-based grants provided through NatureAssist for on-ground conservation-related activities. Existing nature refuge landholders can also apply for small grants through NatureAssist for projects that will protect and enhance the significant natural values of their nature refuge, as well as small ecosystem recovery payments to assist with nature refuge recovery following natural disasters.

The inclusion of stewardship payments in the PPAP could potentially assist in promoting the uptake of private protected areas and the expansion of the protected area estate. One of the benefits of utilising PPAs with stewardship payments to expand the protected area estate is that it can be cheaper than direct land purchases. In addition to the potential cost savings, private protected areas offer several other benefits relative to public protected areas, including:

- they are often more acceptable to surrounding landholders;
- the presence of landholders that are being paid to conserve and manage protected areas can increase the interest in conservation amongst other landholders in the relevant regions; and
- they can be well suited to securing smaller areas of high value ecosystems, such as may remain in more extensively developed regions.

38 Queensland is home to twice as many native wildlife species as any other Australian state or territory. Half of the species living in Queensland are unique to the state. Queensland is also home to 72% of Australia's native bird species, 85% of its native mammals and just over 50% of the country's native reptiles and frogs (DES, 2020). See also 'selling nature short', available online: https://npaq.org.au/wp-content/uploads/2019/10/Queensland-budget-report-190612-final.pdf

39 As of 8 September 2022, 8.26% of Queensland's land mass was in protected areas (State of Queensland, 2022). This does not include state forests nor Indigenous Protected Areas (IPAs). As of 2018, Western Australia has protected approximately 23% of its land, the Northern Territory 25% and South Australia 30% (Our Living Outback, 2018).

Due to these benefits, the Panel believes consideration should be given to providing annual stewardship payments to landholders who establish private protected areas on their properties. The New South Wales Biodiversity Conservation Trust's Conservation Management Program provides a useful precedent on how this could be done.

For Indigenous Protected Areas, projects that reflect the goals of regeneration of native vegetation, should be funded to encourage increased biodiversity protection, especially where there are gaps in the funding under the Australian Government's IPA program. This funding could meet what is required by the Indigenous groups' projects in total or be seen as supplementary funding to meet any shortfalls in Australian Government funding.

APPENDIX 2
NATIVE VEGETATION SCIENTIFIC EXPERT PANEL TERMS OF REFERENCE

Native Vegetation Scientific Expert Panel Terms of Reference 09 March 2022

1. Background

Queensland's native vegetation and woodlands cover more than 85% of the state, extending across 13 bioregions and contributes significantly to Queensland's biodiversity and wildlife habitat, land and water ecosystem services, and economic recovery. The extent and type of vegetation influences current and future climates experienced by Queenslanders and is a key mechanism towards achieving 2030 emissions reduction targets.

The policy and management of remnant and non-remnant vegetation is regulated through the Vegetation Management Act, which draws from the State-wide Land and Trees Study (SLATS) to map the location, extent and changes in woody vegetation. The 2018–19 SLATS report indicated the rates and trends in tree clearing continues to remain high, resulting in immediate and longer-term environmental and climate change impacts with subsequent implications for Queensland's economic, social and cultural values.

At the same time, McKinsey forecast that the market for carbon credits could increase by a factor of 15 or more by 2030 and by a factor of up to 100 by 2050, with the market projected to be worth upward of $50 billion in 2030. When combined with the potential of biodiversity and reef credits, this suggests that retaining and restoring native vegetation can deliver very significant regional economic development, climate and environmental outcomes.

The factors contributing to this latest assessment, and the identification of social change and economic incentives to reduce tree clearing, presents a knowledge gap for government, industry and community stakeholders.

2. Purpose

The purpose of the Native Vegetation Scientific Expert Panel is to provide advice on the factors behind the latest native vegetation clearing in Queensland, identify incentives to help avoid clearing and advise if other measures are needed.

3. Role

The Native Vegetation Scientific Expert Panel will provide advice to the Minister for Science on native vegetation matters as outlined below.

3.1 Native Vegetation

The Native Vegetation Scientific Expert Panel will advise the Minister and the Queensland Government on the causes and driving factors contributing to the clearing of native vegetation in Queensland, and to identify incentives and reforms that avoid clearing in the future. This will include:

- Better understand the drivers, behaviours and causal factors contributing to the latest land clearing rates and trends in Queensland.
- Review available information and engage with key stakeholders and communities to identify pathways to protect, retain and regenerate native vegetation and associated biodiversity and carbon while supporting sustainable economic productivity.
- Identify appropriate incentives, carbon farming and natural capital programs, and any other income streams to help avoid clearing.
- Make recommendations on policy and other measures to improve the retention and restoration of native vegetation.

4. Membership

4.1 Chair

The Queensland Chief Scientist will be appointed by the Minister as the Chair.

The Chair will be appointed for the term of the Native Vegetation Scientific Expert Panel unless otherwise directed by the Minister.

The Chair will convene meetings and report on behalf of the Native Vegetation Scientific Expert Panel to the Minister.

The Chair will report directly to the Minister on scientific and technical matters related to advice and recommendations by the Native Vegetation Scientific Expert Panel.

If the Chair is not able to attend a meeting or is not present at the commencement of a meeting, the Chair will nominate a member to preside for that meeting, or failing that, the members will identity an agreed member to preside for that meeting.

The Chair is the only authorised spokesperson on issues concerning the operations, deliberations and recommendations of the Panel. Responses to media and other information requests will be the responsibility of the Chair.

The Chair is authorised to establish sub-committees to address specific research issues critically relevant for the considerations of the Native Vegetation Scientific Expert Panel.

4.2 Members

The Native Vegetation Scientific Expert Panel will have a skills-based membership which will provide a cross-section of expertise in areas relevant to managing native vegetation.

The Native Vegetation Scientific Expert Panel may include members with expertise in the following areas:

- Native vegetation management and landscape processes
- Biodiversity and ecosystem health
- Agricultural economics, offsets methodologies and market-based incentives
- Behavioural and social sciences
- Carbon farming, natural capital and ecosystem services
- Climate change
- Policy and government processes.

Other expertise may be co-opted as required.

Members must advise of any conflict of interest issues as soon as they arise subsequent to appointment, by writing to the Chair or in person if in a Native Vegetation Scientific Expert Panel meeting.

Members will maintain confidentiality on any identified materials or sensitive issues.

4.3 Appointment

Members of the Native Vegetation Scientific Expert Panel will be appointed by the Minister.

A member will be appointed for the term of panel unless otherwise agreed in writing by the Minister.

5. Operation

The Native Vegetation Scientific Expert Panel will meet as required and agreed by members and the Chair.

The Native Vegetation Scientific Expert Panel is encouraged to hold a joint meeting(s) with the Interagency Technical Advisory Group (see section 5.2) to share experiences and knowledge and discuss issues of mutual interest.

The Native Vegetation Scientific Expert Panel will have the ability to utilise sub-working committees to undertake specific, time bound research and synthesis to assist discussions and workplan deliverables of the Panel. The terms of reference, operating requirements and deliverables will be authorised through the Chair.

The Native Vegetation Scientific Expert Panel may also wish to engage with other strategic and advisory expert panels, including the Reef 2050 Independent Science Panel, Native Timber Advisory Panel, the Queensland Climate Advisory Council, the Queensland Species Technical Committee and the Offsets Project Management Committee, as well as industry and community stakeholders.

The Native Vegetation Scientific Expert Panel will also be expected to engage and consult with relevant First Nations people and groups, including Native Title bodies and other Traditional Custodian representatives.

Additional observers with particular expertise may be invited to contribute to meetings or analysis as needed.

The Native Vegetation Scientific Expert Panel is requested to provide a workplan of focus issues and deliverables within one month of commencing.

The Chair and members of the Native Vegetation Scientific Expert Panel will declare actual or perceived conflicts of interest; apply good analytical skills, objectivity and judgment; express opinions frankly; and ask questions that go to the fundamental core of an issue.

Reasonable costs associated with sitting fees, travel and accommodation will be paid on behalf of members.

Meeting agendas will be prepared by the Secretariat in consultation with the Chair and circulated to members in advance of meetings. Any business transacted in the meetings including findings, conclusions and proposed recommendations prior to its release for public review or prior to endorsement by the Minister, is strictly confidential unless otherwise stated.

5.1 Invited Experts

Where necessary, the Native Vegetation Scientific Expert Panel may invite subject matter experts to attend meetings to discuss and present matters of relevance.

Invited experts will be required to agree to the operational requirements of the Native Vegetation Scientific Expert Panel, including statements on conflicts of interest and confidentiality.

Invited experts will be eligible for remuneration of costs associated with their participation in the Native Vegetation Scientific Expert Panel discussions.

5.2 Interagency Technical Advisory Group

An Interagency Technical Advisory Group will be established to support the efficient and effective operation of the Native Vegetation Scientific Expert Panel for relevant matters where approved by the Chair.

Members of the Interagency Technical Advisory Panel will be invited by the Director-General, Department of Environment and Science in consultation with the Chair of the Native Vegetation Scientific Expert Panel.

All requests for advice from the Interagency Technical Advisory Group will be made through the Chair.

6. Confidentiality

All documents provided to members (except those normally available to the public) are to be considered by members as confidential working documents, unless otherwise indicated.

Native Vegetation Scientific Expert Panel members will be expected to observe and maintain the confidentiality of documents or information that is advised to be 'in-confidence'. Members are also asked to:

- Observe confidentiality and exercise tact and discretion when dealing with sensitive issues. If a member is unsure or concerned about the disclosure to non-members, the member should seek advice from the Chair.
- Act honestly at all times, exercise care and diligence in the discharge of their duties and not make improper use of Panel information. Improper use would be where a member gains an advantage either directly or indirectly (financial or otherwise) over another person or causes detriment to the Panel's work or to another person.
- Not publish or communicate to any person, who they are not authorised to publish or communicate to, any information that comes to their knowledge or possession because they are a member of the Panel.
- In consultation with the Chair, particular items may be considered appropriate to be shared, in confidence for the purposes of seeking advice or responses, with relevant other organisations that members are associated with as representatives of a sector or interest group. This will only be on the following basis:
  - the item for sharing and the groups to be provided with the item are approved by the Chair
  - a list of the organisations or individuals proposed to be provided with an item is given to the Secretariat prior to sharing
  - feedback provided by another approved organisation is to be given back to the Panel member only (not directly to the Chair or secretariat) and kept in confidence by all parties
  - any item shared or feedback provided is on the condition that the Queensland Government has not endorsed any directions or made any decisions on any of the items.
- Provision of certain information for member review or approved sharing may warrant signing of a confidentiality agreement.

7. Reporting

The Native Vegetation Scientific Expert Panel will report through the independent Chair to the Minister on matters relating to the protection, retention and regeneration of native vegetation, market-based incentives and recommendations on policy reforms, and other matters as discussed by the Native Vegetation Scientific Expert Panel.

It may provide advice on other matters for action by the Interagency Technical Advisory Panel or undertake other tasks as requested by the Minister.

The Panel is requested to provide a draft report with provisional recommendations by 19th August.

The intention is that a final report is formally submitted to government before the end of September 2022.

8. Secretariat

Secretariat support will be provided by the Office of the Queensland Chief Scientist.

Costs for the Secretariat and Native Vegetation Scientific Expert Panel will be provided by the Department of Environment and Science.

The Secretariat will maintain records for the Panel and invited subject matter experts, including agendas, papers and minutes.

APPENDIX 3
NATIVE VEGETATION SCIENTIFIC EXPERT PANEL BIOGRAPHIES

Professor Hugh Possingham (Chair)

Former Queensland Chief Scientist Professor Hugh Possingham has a distinguished career developing mathematical and economic tools for solving nature conservation problems such as where to place protected areas and which are the most efficient actions for saving threatened species. He was Director of the Australian Research Council Centre of Excellence for Environmental Decisions, as well as the Australian Government's Threatened Species Recovery Hub. He was the Chief Scientist at The Nature Conservancy, a global conservation organisation with 400 scientists advising on the protection of more than 40 million hectares of land and thousands of kilometres of rivers worldwide. His combination of expertise in mathematics and ecology has enabled Professor Possingham to undertake conservation initiatives that integrate spatial planning and economic factors.

Dr Beth Woods OAM

Dr Woods is an agricultural expert and previously the Director-General of the Department of Agriculture and Fisheries (DAF). She was also Chair of the WorldFish Board of Trustees, an international non-profit organisation to harness the potential of aquaculture to reduce hunger and poverty in developing countries. Dr Woods was a Professor of Agribusiness at The University of Queensland, and Queensland's first female Rhodes Scholar, completing her Doctor of Philosophy in Agricultural Economics at the University of Oxford. She has served on boards for many organisations and committees, such as the Australian Centre for International Agricultural Research, the Grains Research and Development Corporation, CSIRO, Rural Adjustment Scheme Advisory Council, and the Gatton College Council, and the Rural Industries Research and Development Corporation, International Rice Research Institute, and had oversight for the delivery of several Queensland government policies and strategies including the Drought Program Review and Drought Management Framework.

Dr Andrea Leverington

Dr Andrea Leverington is a Director with Protected Area Solutions, with projects including the review of the US Conservation Area Landscape Plan and Protected Area Policy for Papua New Guinea, assessing the management effectiveness of the Great Barrier Reef Marine Park Authority for the World Heritage Strategic Assessment and Outlook 2014, and an assessment of the management effectiveness of the State of Environment Report for the Australian Capital Territory Government. Andrea has extensive experience in Queensland Government having served as head of the Queensland Parks and Wildlife Service (2009–2012) where she was responsible for the development and implementation of Queensland's protected area management policy in terrestrial and marine parks. Andrea's role also included the protection of wildlife, and she oversaw the development of agreements with Traditional Owners for the joint management on protected areas in Cape York.

Professor Martine Maron

Martine Maron is a professor in the School of Earth and Environmental Sciences at The University of Queensland, focusing on conservation biodiversity for maintaining the health of the environment to support human life and wellbeing. She has published internationally on why species respond the way they do to landscape change and how even highly modified landscapes can be managed to be more biodiverse. Professor Maron's research seeks to improve the practice and policy of conservation policy such as biodiversity offsetting. She collaborates with a broad network of individuals and organisations including government bodies to help achieve effective uptake of research findings into policy and environmental management. She has actively contributed to multidisciplinary projects with the Landscape Ecology and Conservation Group in SEES, the Environmental Decisions Hub and ARC Centre of Excellence for Environmental Decisions. Professor Maron has expertise in landscape ecology, restoration ecology, conservation biology, bird ecology, habitat offsets and conservation policy.

Dr Philippa England

Dr Philippa England is a senior lecturer in the Law School at Griffith University, Queensland. She holds LLB, LLM and PhD degrees from London University (School of Oriental and African Studies) and now specialises in the study and teaching of planning and environmental law in Queensland.

Professor Andrew Macintosh

Professor Andrew Macintosh is a leading environmental law and policy scholar and is the Associate Dean (Research) at the ANU College of Law. His research is cross-disciplinary, involving the application of legal, economic and political science methods to the study of environmental policy problems and processes. Professor Macintosh's work has a strong policy orientation and he regularly advises governments, corporations and non-government organisations on environmental law and policy. He is regarded as one of Australia's preeminent experts on climate change mitigation and adaptation, particularly in relation to the land and forest sectors and the management of the elevated risks of bushfires and coastal hazards associated with climate change. His research is widely published in respected international journals including Nature Climate Change, Global Change Biology, Climatic Change and the Journal of Environmental Law. Professor Macintosh has also held roles as the Chair of the Domestic Offsets Integrity Committee, an Associate Member of the Climate Change Authority, a member of the Emissions Reduction Fund Expert Reference Group and a director of the Port of Newcastle. He recently served as a Commissioner on the Royal Commission into National Natural Disaster Arrangements.

Nigel Onley

Nigel Onley is a highly respected member of the agricultural sector in Queensland. He holds formal qualifications in Applied Science, Plant Protection and Applied Finance and Investment. He is a lifelong grass-fed beef producer as well as having run his own agricultural consultancy business for 20 years advising urban based investors in agriculture. In that role he helped source properties for investment and develop management plans with a strong emphasis on environmental awareness. Nigel is the landholder representative on the Queensland Government Department of Environment and Science Offsets Advisory Committee. He is an active member of Queensland peak body AgForce, serving on various committees. Nigel has participated in webinars hosted through the Rural Economics Centre of Excellence, most recently on making sense of markets for ecosystem services, where he presented on decision making factors and influences. Nigel currently owns and manages two cattle properties in the brigalow bioregion of Taroom in Southern Inland Queensland in a family partnership.

Dr Stuart Whitten

Dr Stuart Whitten is the principal economist in CSIRO's Land and Water. His is an expert in environmental and institutional economics with particular specialisation in the design and delivery of environmental markets including auctions and tenders, biodiversity offsets and cap and trade approaches. He has worked on the design and implementation of environmental markets for the Australian Government (Reef Tender, Environmental Stewardship Program, Forest Conservation Fund) and for several regional natural resource management groups. At a policy level his economic expertise has supported the Great Barrier Reef water quality policy responses and biodiversity policy across three states and at the national level. Dr Whitten's current research focus is on land management and Great Barrier Reef water quality, biodiversity on private land, and the economics of Qfly.

Jim Walker

Jim Walker is an Aboriginal Elder of the Yiman and Goreng Goreng First Nations peoples of Australia. He is a lecturer within the School of Earth and Environmental Sciences at the University of Queensland and is the Chair of the Science Advisory Committee of Earthwatch Australia, Chair of the First Nations Advisory for the Co-operative Research Centre for Transformations in Mining Economies, and a member of the Science Advisory Committee for Terrestrial Ecosystem Research Network. He has been involved in advocating for the rights of Indigenous Peoples in excess of 20 years both in Australia and internationally. Jim has been involved in development and implementation of Aboriginal and Torres Strait Islander policies and programs in the fields of environment protection, science research, social justice, education, health, housing, economic development, Indigenous rights advocacy, and Indigenous cultural protection.

Shilo Villaflor

Shilo Villaflor is the Regional Manager of the Aboriginal Carbon Foundation. Shilo is a proud Aboriginal & Torres Strait Islander woman. For 20 years she worked in Native Title in Cape York and was committed to creating real change and empowerment in Aboriginal Communities. Shilo joined the Aboriginal Carbon Foundation (AbCF) in April 2019 and continues to work with Traditional Owners to create income streams once land has a consent determination of native title. She loves working with pastoralist and farmers to assist keeping people on their land through carbon projects. Recently Shilo has been working on innovative ways to reduce native vegetation clearing, including the Cultural Fire Credit project, an Indigenous-led impact measurement process for the environmental, social and cultural core benefits of carbon farming projects using a peer-to-peer strengths-based approach.

APPENDIX 4
LIST OF PANEL ACTIVITIES AND MEETINGS

Date	Activity	Location
25.03.2022	Panel meeting	Brisbane and online
27.04.2022	Panel meeting	Brisbane and online
25.05.2022 – 27.05.2022	Field trip	Roma, Waikola, Taroom, Wandoan, Jackson, Hookswood
09.06.2022	Consultation meeting with Environment via Ministerial Environment Round Table (MERT)	Brisbane and online
10.06.2022	Consultation meetings with resources, infrastructure and agriculture sector groups	Brisbane and online
13.06.2022	Consultation meetings with First Nations, local government and NRM sector groups	Brisbane and online
15.06.2022	Consultation meeting with environment sector groups	Brisbane and online
17.06.2022	Panel meeting	Brisbane and online
20.07.2022	Panel meeting	Brisbane and online
21.09.2022	Panel meeting	Online
24.10.2022	Panel meeting	Online
05.12.2022	Panel meeting	Online

APPENDIX 5
SUMMARY OF 2018–19 SLATS REPORT

In December 2021, the Department of Environment and Science (DES) released the 2018–19 Statewide Landcover and Trees Study (SLATS) report, which maps the location and extent of woody vegetation across Queensland.

The 2018–19 SLATS report is the first using enhanced scientific capabilities and new satellite technology to provide a more accurate representation of the state's woody vegetation cover.

The methods used for the 2017–18 report were based on 30m spatial resolution Landsat satellite imagery and mapped clearing in woody vegetation with a nominal crown cover of about 20% or greater. The methods used for the 2018–19 report were based on the higher spatial resolution Sentinel-2 satellite imagery which has a resolution of 10m, and uses a woody extent baseline which has a minimum crown cover of about 10%.

Under the revised methodology, SLATS is monitoring an expanded area compared to previous years, and in general, SLATS scientists can more reliably identify clearing due to the higher spatial resolution of the satellite imagery, particularly in sparser vegetation.

An additional factor in the revised methodology that contributes to different reporting figures is that SLATS is now mapping the full extent of the clearing event and are characterising both full and partial clearing whereas previously, the program would only map the pixels that have changed from woody to non-woody. This can have an influence on the area mapped as the clearing event will include pixels of non-woody change (i.e. the areas between the trees) which can result in a greater area being mapped for any individual clearing event, particularly in sparser vegetation where there are (naturally) gaps/spaces between the trees and shrubs. It is important to note that in some cases, such as denser woodlands and forests, the clearing area mapped using the revised methods may be less because the higher resolution satellite imagery enables better delineation of the clearing extent.

The 2018–19 SLATS report includes, for the first time, a woody vegetation regrowth mapping and monitoring component. The baseline data enables ongoing monitoring, reporting and accounting to track the age and location of vegetation regrowth, and to capture the benefits this provides for biodiversity and carbon accounting.

Whilst work continues on the development of a vegetation condition assessment framework to map and monitor the ecological condition (or 'BioCondition') of Queensland's terrestrial ecosystems, the 2018–19 SLATS does not report on the biodiversity status, condition, nor the composition (i.e. native or exotic species) of the vegetation cleared.

The 2018–19 SLATS report is the first SLATS data to be released since amendments to Queensland's vegetation management laws were passed in 2018. The data reflect changes to the accepted development vegetation clearing code for managing fodder harvesting in May 2018, but not any changes from the 2022 review of the accepted development vegetation clearing code for managing a native forest practice.

The changed SLATS methodology means that the data from the 2018–19 SLATS report are not directly comparable with previous SLATS data. While this breaks the time-series and makes identifying trends difficult, the Panel supports the change of method for its improvements and benefits to a range of stakeholders.

Key findings from 2018–19 SLATS report (2 s.f.)

- 680,000 hectares (ha) of woody vegetation were affected by clearing activity in Queensland in this 12-month period. This represents about 0.70% of the state's woody vegetation.
- Of the total clearing activity, 82% resulted in full removal of woody vegetation. The remainder was partial clearing.
- About 70% or 480,000ha of the total clearing activity was in Category X areas (i.e. areas not generally regulated by the *Vegetation Management Act 1999*).
- Clearing activity in Category X areas (i.e. areas not regulated by the VMA) accounted for about 71% or 480,000ha of the total area. 16% of this 480,000ha was on land without a PMAV in place.
- About 28% or 190,000ha was in Category B (mapped remnant vegetation) areas with the remainder mostly in Category C (mapped high value regrowth vegetation) areas (1.5% or 11,000ha) and Category R (mapped regrowth watercourse area) (‹1% or 3,000ha) areas.
- Of the state's 13 bioregions, the Brigalow Belt (43% or 290,000ha) and Mulga Lands (42% or 280,000ha) had the majority (a combined 85%) of all clearing activity. These two regions also recorded the highest amounts of remnant vegetation clearing (130,000ha in Mulga Lands and 35,000ha in Brigalow Belt).
- Within areas of remnant vegetation, (29% or 200,000ha), about 180,000ha (26% of the total clearing activity) was in areas that contained Least Concern regional ecosystems and about 19,000ha (3% of the total) was in Of Concern regional ecosystems. About 5,100ha (0.75% of the total clearing activity) was in Endangered regional ecosystems.
- 91% of the clearing activity was permitted—either exempt from the VMA or approved under development approvals and self-assessable codes or area management plans. 9.4% was unexplained (non-permitted) clearing and is being investigated.

APPENDIX 6
SUMMARY OF 2019–20 SLATS REPORT

Despite not being released at the time of this review, 2019–20 SLATS data were provided to the Panel during their review. However, recognising the review's terms of reference, this report and its recommendations do not reference the 2019–20 data. Whilst the report's recommendations were not informed by the newer clearing data, the Panel notes that they remain appropriate.

Key findings from 2019–20 SLATS report (2 s.f.)

- In 2019–20, 420,000ha of woody vegetation was affected by clearing activity. This is a 38% decrease in clearing activity from 2018–19 (680,000ha)
- Of the total clearing activity undertaken in 2019–20, 340,000ha (81% of all clearing activity) resulted in full removal of the woody vegetation (i.e. 'full clearing'). This is a 39% decrease in full clearing from 2018–19 (560,000ha). The remaining 80,000ha of clearing activity in 2019–20 was partial clearing.
- In 2019–20, 43,000ha of new regrowth was mapped. This is the first monitoring period where new regrowth has been mapped and reported following changes to the SLATS methodology that commenced in 2018–19.
- About 21% (88,000ha) of the clearing activity was in Category B (regulated remnant) areas—a 53% decrease in clearing activity in Category B from 2018–19 (190,000ha).
- About 2% (6,500ha) of the clearing activity was in Category C (high-value regrowth vegetation), and less than 1% (2,400ha) was in Category R (regrowth watercourse area).
- Clearing activity in Category X areas accounted for 77% (320,000ha) of the total clearing. Most of this resulted in full removal of the woody vegetation (290,000ha or 91% of all Category X clearing activity).
- About 18% (74,000ha) of the clearing activity was in areas that have least concern regional ecosystems present and a further 5% (22,000ha) was in areas that have of concern regional ecosystems. About 1% (4,900ha) of the clearing was in areas that have endangered regional ecosystems present.
- Of the state's 13 bioregions, the Brigalow Belt (48% or 200,000ha) and Mulga Lands (26% or 110,000ha) accounted for 74% of the state's woody vegetation clearing activity. In each of these bioregions, about 80% of the clearing activity was mapped as full clearing.

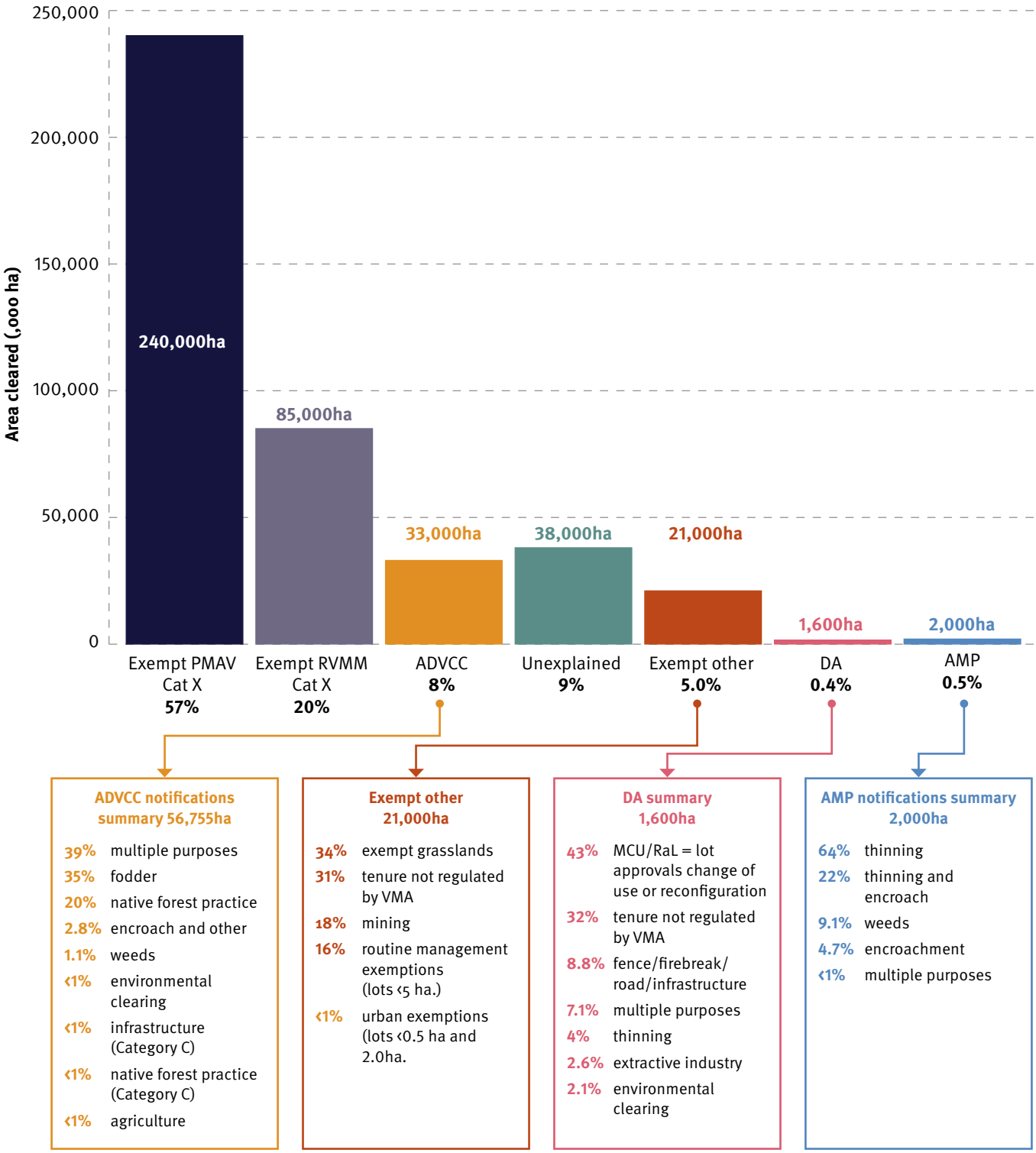

Figure 6 **SLATS 2019–20 total full and partial clearing (420,000ha) under the vegetation management framework (SCAN data 2 s.f.)**

Note: About 96% of all clearing for Exempt PMAV Cat X and Exempt RVMM Cat X is in vegetation mapped as non-remnant. About 95% of all clearing for DA combined, ADVCC and AMP is in Category B areas (regulated remnant vegetation).

APPENDIX 7
ADDITIONAL FIGURES

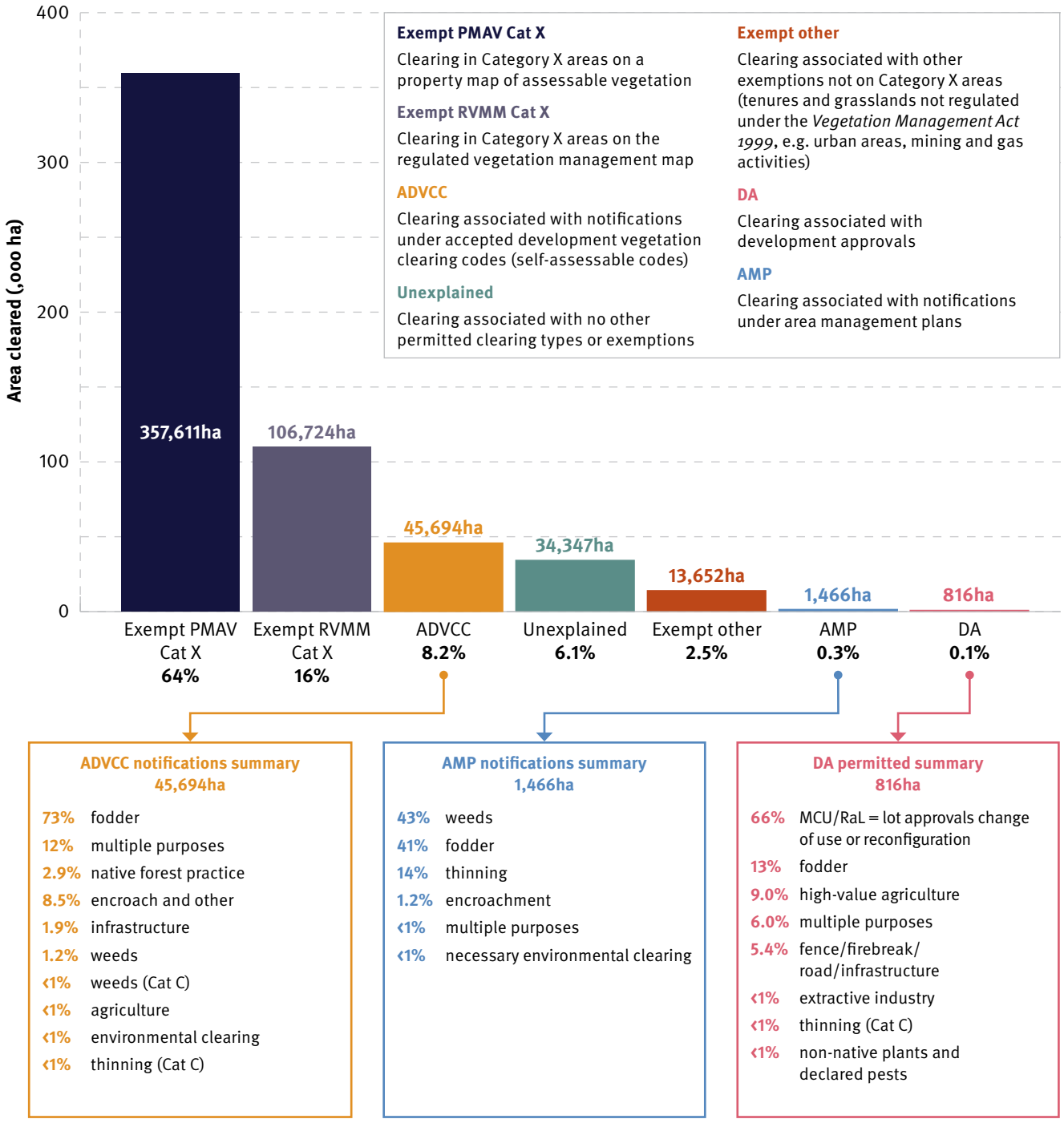

Figure 1.1 **SLATS 2018–19 total full clearing (560,310ha.) under the vegetation management framework (SCAN data)**

Note: About ~96% of all clearing for Exempt PMAV Cat X and Exempt RVMM Category X is in vegetation mapped as non-remnant. About 95% of all clearing for DA combined, ADVCC and AMP is in Category B areas (regulated remnant vegetation).

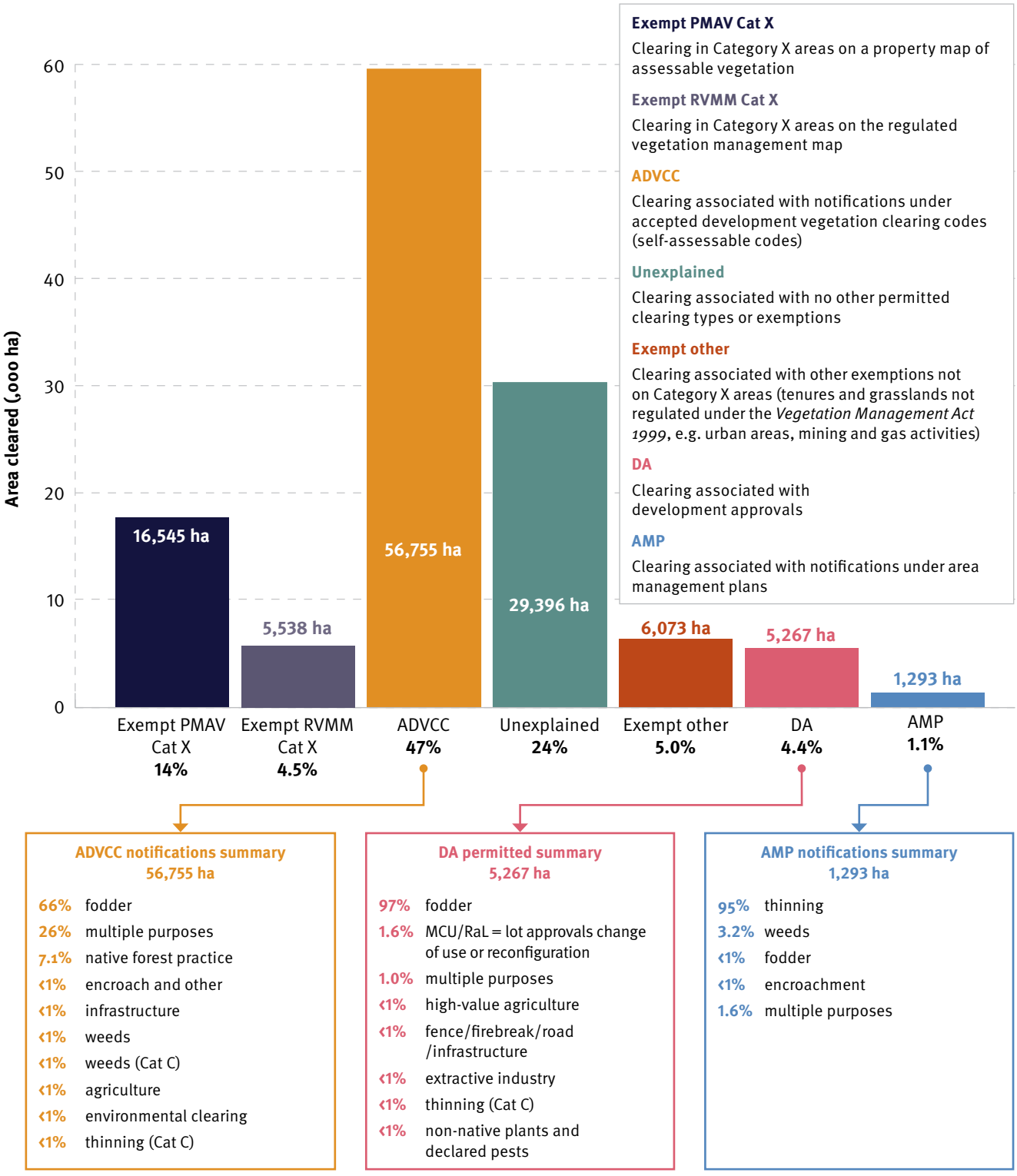

Figure 1.2 **SLATS 2018–19 total partial clearing (120,866 ha) under the vegetation management framework (SCAN data)**

Note: About ~96% of all clearing for Exempt PMAV Cat X and Exempt RVMM Cat X is in vegetation mapped as non-remnant. About 95% of all clearing for DA combined, ADVCC and AMP is in Category B areas (regulated remnant vegetation)