Alexandra Brown

Bradd Witt

Committee Secretary
State Development, Natural Resources
and Agricultural Industry Development Committee
Parliament House
George Street
Brisbane Qld 4000

Submission to the Committee:
Re: Vegetation Management and Other Legislation Amendment Bill 2018

To whom it may concern,

We are writing to advocate for improvements to the existing proposed amendments to the Vegetation Management Act 1999.

Alexandra Brown:

I am a recent graduate with a Bachelor of Environmental Management from the University of Queensland. In 2017 I completed my first class honours thesis reviewing the 20 year history of the development of the Vegetation Management Act. Please find attached my thesis and a summary highlighting relevant findings below.

Bradd Witt:

Bradd Witt is a UQ researcher in the areas of environmental management and environmental values with a long-term research interest[1] in the socio-economic factors influencing vegetation management in Queensland, especially in the south-west Queensland. Bradd has contributed to the original 2016 assessment of fodder harvesting and vegetation management of the mulga lands.

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[1] Silcock JL, **Witt GB**, Fensham RJ (2016) A 150-year fire history of Queensland's Mulga Lands. *The Rangeland Journal* **38**, 391–415
Witt, GB (2013) Vegetation changes through the eyes of the locals: the 'artificial wilderness' in the mulga country of south-west Queensland. *The Rangeland Journal* **35:** 299–314.
Witt, GB, Noël, MV, Bird, MI, Beeton, R.J.S Menzies, N W (2011) Carbon sequestration and biodiversity restoration potential of semi-arid mulga lands of Australia interpreted from long-term grazing exclosures. *Agriculture, Ecosystems and Environment* **141**, 108-118. doi:10.1016/j.agee.2011.02.020
Witt GB and Beeton RJS (2010) Conservation and the mulgalands of eastern Australia: an unusual case of regrowth. *Australasian Plant Conservation* **19** (1), 9-10.
Witt GB, Harrington RA, Page MJ (2009) Is 'vegetation thickening' occurring in Queensland's mulga lands? - a 50-year aerial photographic analysis. *Australian Journal of Botany* **57**, 572–582.
Lunt I. D., Eldridge, D. J., Morgan, J. W. and G. **Witt, G. B**. (2007). A framework to predict the effects of livestock grazing and grazing exclusion on conservation values in natural ecosystems in Australia (TURNER REVIEW No. 13). *Australian Journal of Botany* **55,** 401-415.
Witt, GB, Luly, J, and Fairfax, RJ (2006) How the west was once: vegetation change in south west Queensland ~ 1930 – 1995. *Journal of Biogeography* **33**, 1585-1596.

For two decades vegetation management policy in Queensland, Australia, has been plagued by ineffective policy, with multiple legislative amendments, fluctuating land clearing rates and persistent social conflict (see figure 1). The Vegetation Management Act 1999 represents a significant change in government policy stance, from one of economic development through agricultural expansion, to one of conservation and sustainable development. Part of the complexity of vegetation management is reconciling public interest values for biodiversity and economic development, with private interests and property rights. Despite the turbulent and high conflict history of vegetation management the Vegetation Management Act 1999 and associated policy remains, poorly evaluated.

The thesis reviewed environmental policy evaluation literature to develop an appropriate framework to evaluate vegetation management policy. The research drew on in-depth interviews with 20 professionals associated with the development of vegetation management policy in Queensland including representatives from conservation NGOs, Agricultural peak bodies, regional, state and local government involved in the process between the early 1980s to 2017. Transcripts from these interviews were then thematically analysed in reference to the evaluation framework to establish areas of success, failure and improvement within the policy.

Ultimately an interdependent relationship has been identified between the effectiveness, persistence and legitimacy of vegetation management laws. The laws have been effective in the past in reducing land clearing rates, however a lack of legitimacy and persistence has been dynamic in undermining this effectiveness (see figure 2.).

The key findings of this research indicate a major failing to develop an appropriate process for public participation that has endured. A lack of an agreed process for public participation has led to perceptions of inequity, poor transparency and illegitimacy associated with the laws. Improved public participation, through deliberative democracy methods, has potential to enhance the legitimacy and political acceptability of the vegetation management laws providing more persistent and effective vegetation management laws for Queensland. The development of a landscape approach is recommended to address issues of policy persistence and effectiveness through emphasising a long-term, shared vision founded on public participation at a regional scale.

Although conservation biologists, academics and the broader conservation lobby are calling for stronger regulation, this research highlights the underlying factors that have led to political unacceptability, constant policy change, and continued unsustainable land clearing rates will not be solved simply through stronger regulations. This thesis proposes that tighter and stronger regulation in the absence of appropriate participation, to develop legitimacy, will not lead to an effective and enduring vegetation management policy. Land clearing in Queensland will only stabilise once an agreed and shared vision is reached by key stakeholders, which until now has been undermined by over politicisation of the issue.

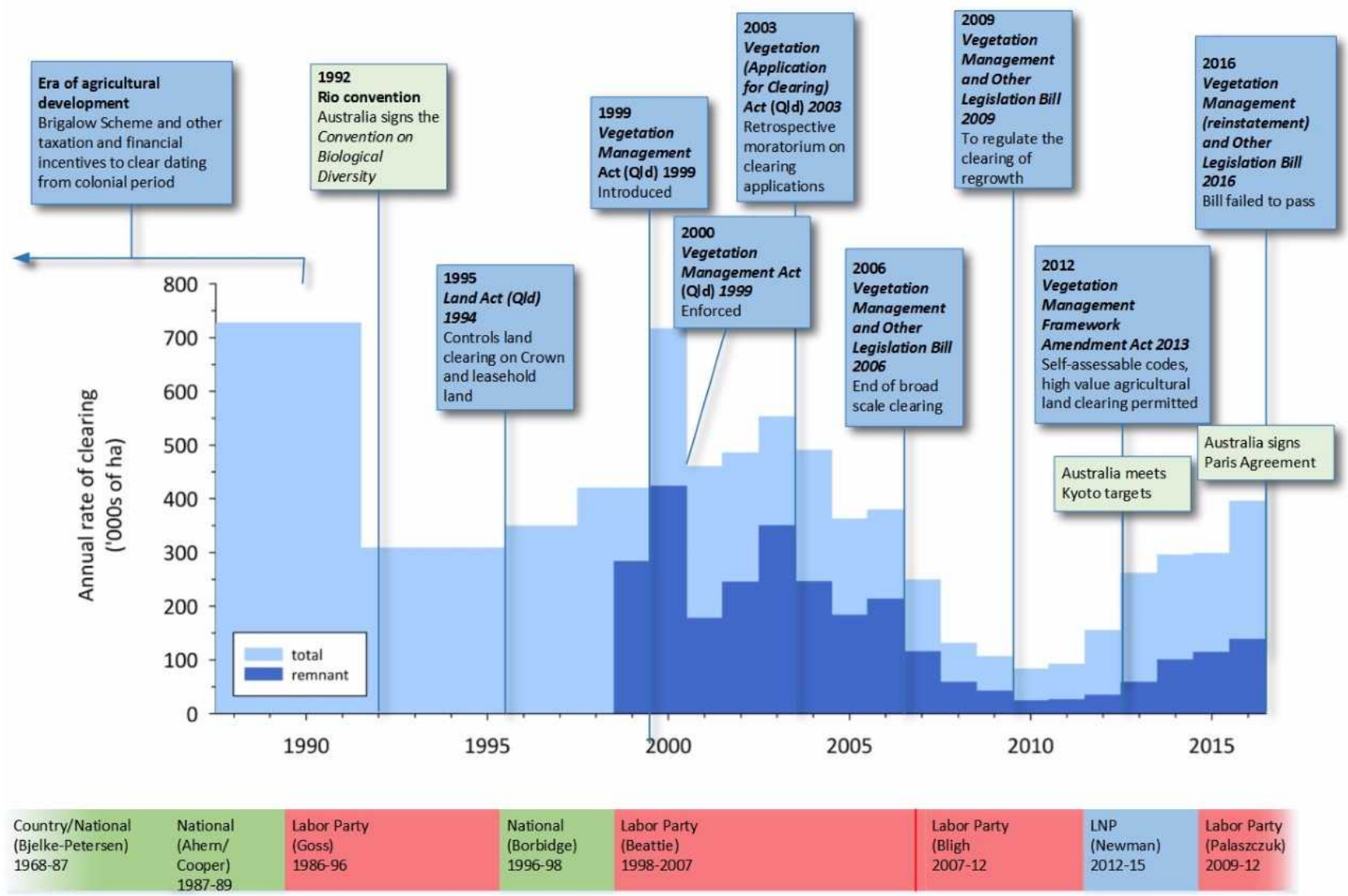

Figure 1. An adapted graph (SLATS 2017; Reside 2017) of clearing rates in Queensland between 1990 and 2016, aligned with key legislative dates (national legislation highlighted within green boxes, state legislation highlight in blue boxes) and political parties that held governing power.

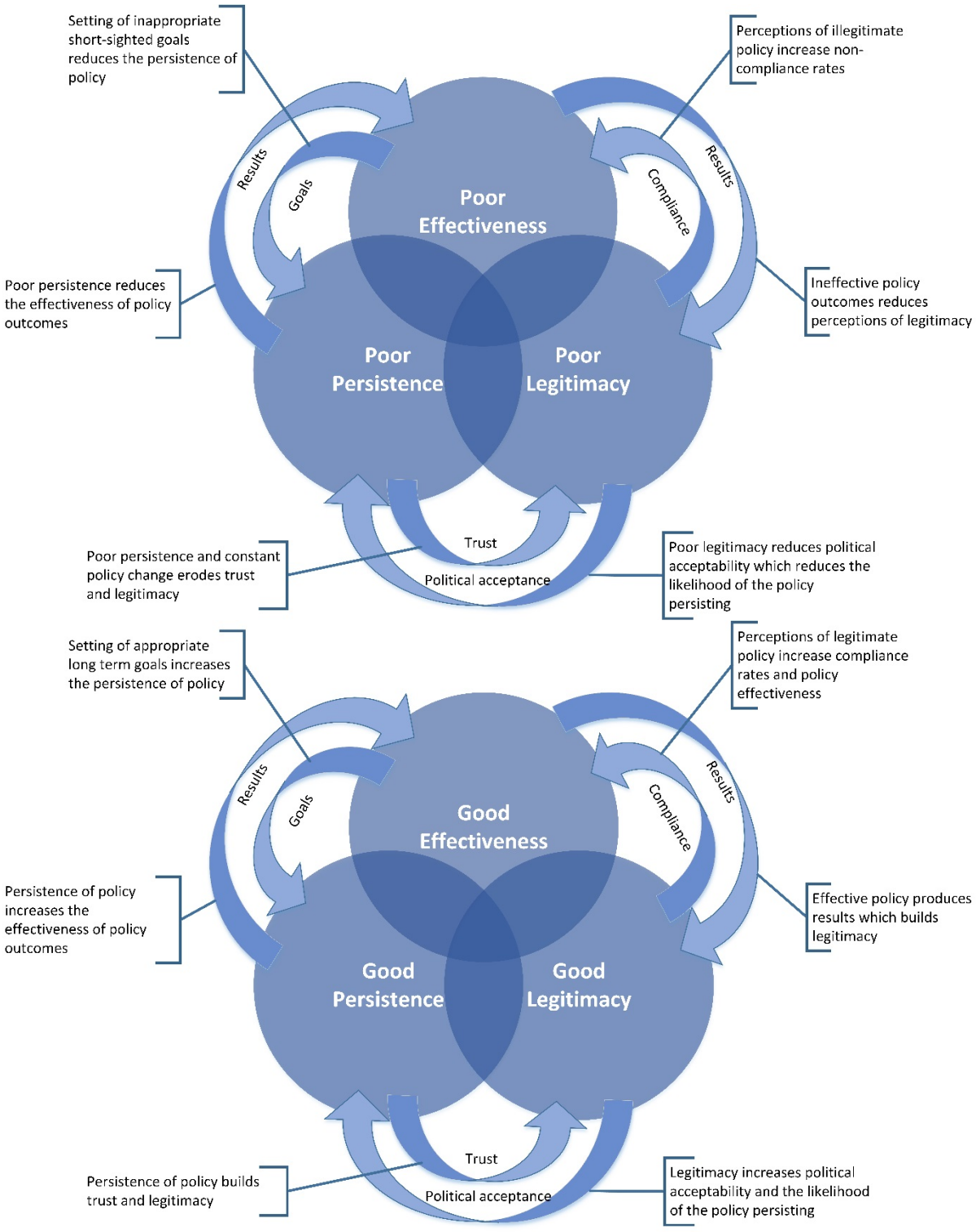

Figure 2. A conceptualization of both negative and positive reinforcing interactions within the sustainable policy paradigm relevant to vegetation management in Queensland.

In light of this research, within this submission we would like to respond to the following specific amendments to the VMA to be considered on the 22nd of March 2018:

Regrowth

We believe considered policy design for vegetation regrowth will play an essential role the development of sustainable vegetation management laws in Queensland. Vegetation regrowth represents an opportunity to transition the land clearing debate to a positive and progressive discussion centred on opportunities for regional growth and development.

The proposed classification of vegetation as ***high value regrowth*** if it is "*in an area that has not been cleared (other than for relevant clearing activities) for at least 15 years*". Can be considered:

Arbitrary and unscientific

- The figure 15 years does not have an apparent scientific basis, rather has been picked arbitrarily, and ignores growth pattern variations between different ecosystems. One of the VMA's greatest strengths (acknowledged by all sides of the debate) is its scientific basis, largely due to the SLATS report and the Queensland Herbarium. We urge the committee to commit to science-based laws as much as practical and develop a better classification system for high-value regrowth. The 15 year classification will likely cause push back and resistance in landholders.

Inequitable

- This 15 year classification does not acknowledge the server disparity of geographical inequity in Queensland. With the South East Queensland corner largely cleared and developed, the classification impacts primarily only regional and north Queensland landholders – causing them to individually and regionally bare large economic costs for a public benefit, with no compensation. It is important to develop mechanisms to balance this inequity – whether that is through financial or other means.

A potential cause of pre-emptive clearing

- The 15 year classification has potential to cause pre-emptive, albeit pro-longed, clearing. It incentivises landholders clearing regularly before the 15 year period closes to keep land "open" and potentially usable, even if they have no real productive use planned for it. High value regrowth should therefore be assessed on a more scientific and meaningful basis.

High-Value Agriculture and Irrigated High-Value Agriculture:

It is important to understand that whilst significant clearing occurred under these provisions between 2012 and 2015, these provisions were not necessarily the cause of broad-scale clearing. Rather the implementation and enforcement by the government of the time was poor. It is important to allow for high-value agricultural development when the projects are of actual and significant economic and social benefit to regional communities, which will not impact on threatened species or ecosystems. We believe these provisions when legislated and enforced correctly may be potentially useful and able to demonstrate a commitment to both conservation and regional development within the laws.

Category X and PMAVs:

We support the retention of PMAVs and Category X for stability and security of landholders rights and planning. We understand the committee will be under significant pressure to change this position from environmental NGOs and the like. However it is important to maintain this position to provide a balanced policy and stability to landholders. Softer policy options to eventually support landholders in amending their PMAVs and reducing the prevalence category X on their land (e.g. in favour of category R or C) would be valuable to consider as future policy options.

Remanent and Near Threatened Ecosystems:

We support the introduction of stronger protections for remanent vegetation and near-threatened ecosystems. This is an important and scientifically-sound policy, which strongly embodies the practice of the pre-cautionary principle. We understand the committee will be under significant pressure to adjust this from agricultural NGOs. It is important that this policy position is retained however as once an threatened-species is threatened, it is difficult to recover.

Self-assessable codes:

We support the removal of self assessable codes from the legislation. These codes not only reduce scientific rigor of the VMA (which is an aspect of the laws respected by all sides of the vegetation management debate) but also leaves landholders unsupported and vulnerable to legal liability.

Additionally we ask the committee to consider broader processes essential to developing sustainable laws;

The most important finding of our recent research highlighted the need to have a clear process for public participation to developing and influence the laws. It is important this process is agreed upon between the government and key stakeholders. This process will build legitimacy and acceptance of the laws, and ultimately create persistence, sustainable laws that will not be the subject of further amendments in the next Queensland election cycle. We ask the committee to consider implementing some form of round table/committee process representative of both key stakeholders and members of the general public to establish an ongoing and consultative process to inform adaptive and responsive legislation and management of Queensland's native vegetation.

Ultimately it is important to unite key stakeholders and the public in forming a long-term vision for a resilient, biologically diverse and economically productive Queensland, supported by sustainable vegetation management laws.

Thesis Summary: An evaluation of vegetation management policy in Queensland: insight into a 20 year roller-coaster ride.

The problem: Land clearing is a complex problem contributing to loss of biodiversity, erosion, salinity, and climate change. However, has been an essential activity for agricultural and economic development. For two decades policy efforts in Queensland, Australia, directed at reducing land clearing rates have been plagued continuous legislative amendments, fluctuating land clearing rates and persistent social conflict. There has been public outcry and lobbying from both conservation and agricultural industry NGO's for more effective laws. Despite this issues complexity and its resultant social conflict, land clearing policy (vegetation management policy as it is referred to in Queensland) has not been adequately or critically evaluated.

Aim: Evaluate vegetation management policy in Queensland over the past 20 years; and recommend areas for improvements to achieve sustainable policy outcomes within vegetation management in Queensland.

Methods: A review of environmental policy evaluation literature was conducted to develop an appropriate framework to evaluate vegetation management policy. In-depth interviews with 20 professionals associated with the development of vegetation management policy in Queensland were conducted and thematically analyzed in reference to the key evaluation criteria to establish areas of success, failure and improvement within the policy.

Main findings: An interdependent relationship has been identified between the effectiveness, persistence and legitimacy of vegetation management laws. The laws have been effective in the past in reducing land clearing rates, however a lack of legitimacy and persistence has been dynamic in undermining this effectiveness.

Successes:

- Vegetation management laws have been effective in reducing land clearing rates between 2000 and 2011.
- Information and monitoring through the Statewide Landcover and Trees Study has been a highly successful aspect of vegetation management, although concerns over communication and enforcement were raised.
- Coordination to address multiple policy issues (e.g. salinity, erosion, climate change) through the vegetation management laws has been successful; however poor coordination between national and state government, government departments, policies and funding streams has reduced the effectiveness of the laws.

Failures:

- Key to this policy issue is a lack of legitimacy created through poor processes of public participation. Stakeholders have felt poorly represented and excluded, creating perceptions of poor transparency and mistrust within stakeholders. Lack of a clearly defined and agreed process for influencing policy has resulted in NGO's going to government independently to drive their agenda, instead of coming to decisions collaboratively and deliberatively.
- This has manifested in a lack of cultural and political acceptance of vegetation management leading to poor compliance (e.g. panic clearing), and the laws becoming a political wedge issue, reducing policy persistence.
- Policy persistence can be viewed as the ultimate failure of the laws. From the fast introduction and continual ramping up of vegetation management laws by the Labor government between 1999 and 2011 (which incited rural landholders), through to the relaxation of the laws by the LNP in 2011 (which enraged conservation NGO's), land clearing policy has been inconsistent. Overall this poor persistence has provided an unstable policy context for stakeholders and the wider public, producing negative environmental impacts.

Improvements:

- Development of a clearly defined process for public participation, to build trust, balance stakeholder interests, provide for meaningful influence of policy and the creation of a shared vision.
- Equity forms an important underlying theme within vegetation management to be addressed through improved laws, financial mechanisms, and the inclusion of mining and urban development industries.
- A landscape approach based on an agreed and shared vision, with a regionalized approach and well developed process for public participation is recommend as a way forward on vegetation management in Queensland.

An evaluation of vegetation management policy in Queensland: insights into a 20 year roller-coaster ride.

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A thesis submitted for Bachelor of Environmental Management
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Acknowledgements

I would like to acknowledge the traditional owners of the land on which this thesis was written, the Turrabul and Jagera people, and extend my respect to their elders past, present and future. The absence of First Nation voices within this thesis about managing the land and biodiversity of Australia is a travesty.

I would like the acknowledged and thank the participants of this study for their time, deep insights and wiliness to share their experience and knowledge.

I would like to acknowledge Dr. Bradd Witt, for his incredibly patient, generous and supportive supervision. Bradd has inspired me to learn and find solutions to 'wicked problems' since the first year of my degree to my last.

I would like to acknowledge Dr. Karen Hussey for her supervision and invaluable advice on policy evaluation. Karen has been an inspirational woman to become acquainted with through this thesis.

I would like to acknowledge my family for their constant support throughout university, financially, emotionally and through telecommunications. I would also like to acknowledge Ethan, for being an unexpected rock.

I would like to acknowledge the beautiful community of friends I have been able to form through the Environment Collective and Fossil Free UQ on campus who have supported, inspired and taught me so much.

Statement of original authorship and independent research

I, Alexandra Brown, hereby declare that the work presented here in this thesis is, to the best of my knowledge, original and my own work, except as acknowledged in the text, and that the material has not been submitted, either in whole or in part, at this or any other university.

The course Environmental Management Thesis (ENVM4200) is undertaken at the same time as the course Research Philosophy, Design & Implementation (GEOS6001) in order to prepare students for the aspects of research design, implementation, management and communication covered in ENVM4200. The assessment for GEOS6001 includes a detailed research proposal for this thesis as an assessment item including an introduction, literature review and methodology, of which some the material may be repeated within this submission, however all material remains original and my own work.

Signature:

Dated: 27 of October 2017

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Abstract

Environmental policy and laws are employed to solve society's most significant, complex and often desperate environmental problems. However policy responses to these challenges are often not critically evaluated in terms of their sustainability. For two decades vegetation management policy in Queensland, Australia, has been plagued by ineffective policy, with multiple legislative amendments, fluctuating land clearing rates and persistent social conflict. The Vegetation Management Act 1999 represents a significant change in government policy stance, from one of economic development through agricultural expansion, to one of conservation and sustainable development. Vegetation management is one of many "wicked problems" confronting society and governments and part of this complexity is the challenge of reconciling public interest values for biodiversity and economic development, with private interests and property rights. Despite the turbulent and high conflict history of vegetation management policy it remains, as is the case for many other complex issues, poorly evaluated.

Although there have been many criticisms of land clearing in recent literature from both conservation and property rights perspectives, this thesis is the first critical evaluation of vegetation management policy in Queensland. The research first develops a framework to evaluate policy that is grounded in best practice environmental policy evaluation literature. This literature highlights the most important attributes of sustainable policy are in the domains of; effectiveness, persistence, legitimacy, political acceptability, equity, transparency, public participation, information and monitoring, coordination and flexibility. Drawing on these domains the thesis evaluates the strengths, weakness and areas of improvement of vegetation management policy in Queensland. This research draws on 20 in depth interviews with professionals from diverse backgrounds who have been associated with vegetation management policy since the 1990s through to the present.

The analysis revealed an interdependent relationship between persistence, legitimacy and effectiveness. There has been some successes in the effectiveness, information and monitoring, and coordination of vegetation management regulation. Major failings in persistence and legitimacy have undermined these successes however, and consequently the laws have been changed and land clearing rates have risen again in recent years.

The key findings of this research indicate a major failing to develop an appropriate process for public participation that has endured. A lack of an agreed process for public participation has led to perceptions of inequity, poor transparency and illegitimacy associated with the laws. Improved public participation, through deliberative methods, has potential to enhance the legitimacy and political acceptability of the vegetation management laws providing more persistent and effective vegetation management laws for Queensland. The development of a landscape approach is recommended as capable of address issues of persistence and effectiveness through emphasising a long term, shared vision founded on public participation at a regional scale.

Although conservation biologists, academics and the broader conservation lobby are calling for stronger regulation, this research highlights the underlying factors that have led to political unacceptability, constant policy change, and continued unsustainable land clearing rate will not be solved simply through stronger regulations. This thesis proposes that tighter and stronger regulation in the absence of appropriate participation, to develop legitimacy, will not lead to an effective and enduring vegetation management policy. Land clearing in Queensland will only stabilise once an agreed and shared vision is reached by the key stakeholders in the issue, which until now has been undermined by over politicisation of the issue. The apparent effectiveness of the policy from 2000 to 2009 in driving down clearing rates has been short lived. Election cycles are a normal part of

environmental policy development and implementation, and any environmental policy that is going to be enduring needs to be able to survive a change of government. Vegetation management policy is clearly a policy that needs to be able to transcend changes of government.

Chapter 1 Introduction:

Internationally, complex and pressing environmental challenges are being "resolved" through intricate and often multilayered frameworks of environmental policy and law. However environmental policies are rarely critically evaluated in terms of their sustainability, and can be subject to chronic failure with dire environmental, social and economic impacts (Harding 1998; Crowley and Walker 2012). Vegetation management in Queensland, Australia, represents one such environmental problem that has suffered over 20 years of ineffective environmental policy, exemplified in multiple legislative amendments, and fluctuating land clearing rates (Fig.1). Underlying and causal to this policy turmoil is persistent and conflicting social perspectives and values (Kehoe 2009; McGrath 2007). Hence there is a need to critically evaluate vegetation management policy in order to inform improved policy.

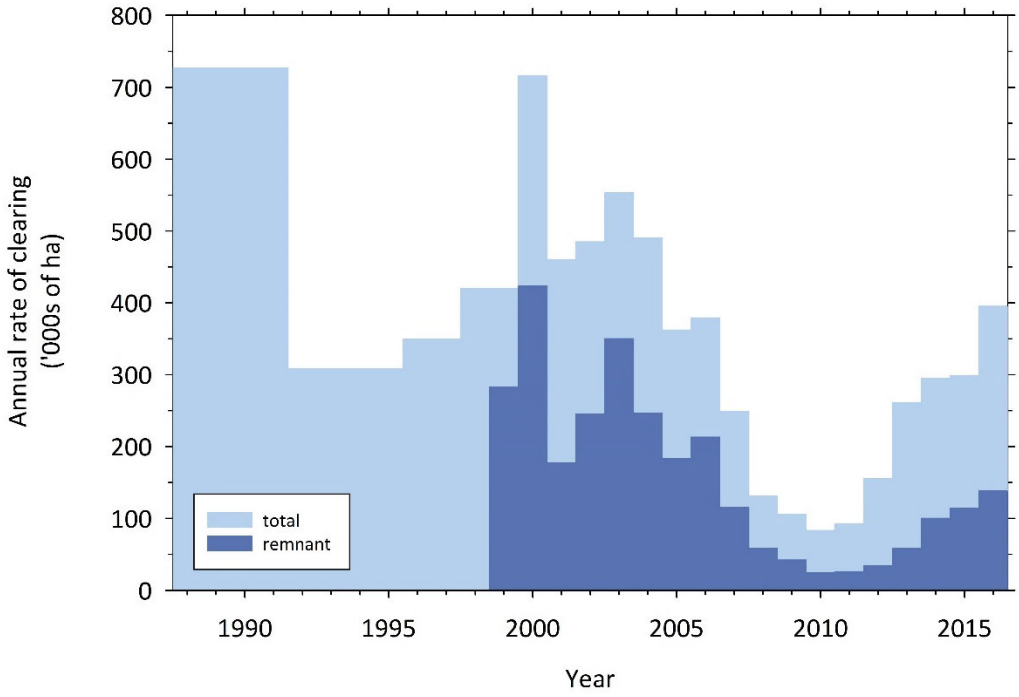

Figure 1. Annual land clearing rates in Queensland between 1998 and 2016 for both remnant and non-remnant woody vegetation (Department of Science, Information Technology and Innovation 2017)

Vegetation management constitutes a wicked problem; with multiple stakeholders; multiple drivers; interconnected issues; and no clearly defined problem or solution (Rittel and Webber 1973; Australian Public Service Commission 2007; McConnell 2017; Newman and Head 2017). Land clearing in Queensland has been linked to numerous negative environmental impacts including soil salinity, erosion, sedimentation, water pollution, impacts on the Great Barrier Reef, greenhouse gas emissions, and loss of habitat and biodiversity (Reside et al. 2017; Rhodes et al. 2017). Yet land clearing and the ongoing clearing of regrowth of woody vegetation is also necessary for agricultural production (e.g. horticulture, cropping and livestock grazing), which was a central pillar to the economic development policies of Queensland throughout the second half of the 20 Century (Rolfe 2000; Productivity

[1] t shou d be noted that "Vegetat on Management" s the part cu ar term adopted n the Queens and regu atory env ronment to contro var ous forms of and c ear ng Vegetat on s cons dered any nat ve tree or p ant other than: grass or non woody herbage; a p ant w th n a grass and reg ona ecosystem prescr bed under a regu at on; or a mangrove (VMA 1999 Sect on 8) Vegetat on management s descr bed to nc ude the retent on and ma ntenance of vegetat on to: avo d and degradat on; ma nta n or ncrease b od vers ty; or ma nta n eco og ca processes; the retent on of r par an vegetat on; and the retent on of vegetat on c umps or corr dors (VMA 1999 Sect on 9) The term vegetat on management' tse f can be cons dered po t ca y content ous and can be var ous y descr bed as and c ear ng', deforestat on', deve opment', ma ntenance' etc

Commission 2004). In response to community concerns over the impacts of high rates of land clearing the Queensland Government moved to control and limit land clearing from the late 1990s and introduced the Vegetation Management Act (1999) (VMA) (explored further in Chapter 2). The VMA applies to freehold[2] and leasehold[3] land tenures, and affects the ability of private landholders to clear woody vegetation. This signifies a very rapid transition in government policy stance from one of pro-development and clearing to one of conservation and sustainability. Consequently the issue has manifested in conflict between public values and concern for biodiversity, and individual values and concern property rights and economic development (Witt 2012). This conflict has manifested itself in political polarisation and protest, and a history of policy swings (Maron et al. 2015; Evans 2016; Rhodes et al. 2017).

The Vegetation Management Act (1999) came into effect in 2000, following several years of considerable conflict associated with the anticipated regulations and tightening of permitted clearing on crown land (Witt 2012). As indicated in Fig. 1, the VMA, and speculation around what it would involve, initially led to significant pre-emptive clearing in the very late 1990s, but then to a rapid decline in clearing rates through to about 2007. However with the most recent amendments to the laws the land clearing rates in Queensland have increased between 2015- 2016 to a total of 395,000 ha per year (138 000 ha of which is remnant vegetation), this the highest rate recorded since 2003-04 (DSITI 2017). To analyse and understand this negative policy pattern and outcomes, revisiting best practice policy principles, is viewed as essential.

Adaptive management, is often considered best practice in implementing sustainable environmental policy and tackling wicked problems (Dovers and Wild River, 2003; Hughes et al. 2007; McGrath, 2010). Key to adaptive management is evaluation (Dovers and Wild River, 2003). Whilst evaluation is arguably one of the most important steps in the "policy cycle", it is often the most poorly executed by policy-makers and governments, indeed environmental policies are rarely ever formally evaluated (McGrath, 2010; Rutter, 2012). Vegetation management in Queensland is one such area of environmental policy that remains poorly evaluated (McGrath, 2007; Kehoe, 2009; Evans, 2016). The most recent work that relates to some critical evaluation of vegetation management in Queensland is that of Evans (2016). However this work is national in its scope, and notes broad trends towards self-regulation in vegetation management. Evans (2016) does not go into detail as to how effectiveness can be increased, other than emphasizing the need to focus on monitoring, evaluation and enforcement. Other critiques of vegetation management in Queensland to date have generally been based on a single perspective, biased towards defending individual property rights (e.g. Ratnapala 2004), or the conservation of nature (e.g. McGrath 2007). Although Kehoe (2009) provides a detailed critique of legislative process the paper lacks a strong analytical framework, and thus appears somewhat narrow in its focus. Essentially, there is no peer reviewed research available that critically evaluates vegetation management policy in Queensland. Given that the issue has been part of formal government policy and considerable social conflict over the past 20 years this gap is significant. This thesis seeks to address this gap in the literature by providing a thorough evaluation of vegetation management in Queensland.

[2] Freeho d and (or fee s mp e) prov des peop e w th the most comp ete form of ownersh p of that and, n perpetu ty t a ows the and ho der to dea w th the and nc ud ng se ng, eas ng, cens ng or mo tgag ng the and, sub ect to comp ance w th app cab e aws such as p ann ng and env ronment aws (Austra an Government 2017) Approx mate y 28% of the tota and area n Queens and s freeho d and (Austra an Government 2017)

[3] Leaseho d and s a and ho d ng that s eased to a person or company by the re evant State (as the Crown) Approx mate y 64% of and n Queens and s he d n the form of some type of eases (Austra an Government 2017)

Aim of the Thesis and Research Questions

The aim of the thesis is to:

1. Evaluate vegetation management policy in Queensland over the past 20 years; and
2. Recommend areas for improvements to achieve sustainable policy outcomes within vegetation management in Queensland.

Research Questions:

In order to achieve the research aims, the following research questions have been developed. The first research question will be addressed exclusively through an extensive literature review on the topic. Question two will be addressed using in-depth interviews with key informants, while the answer to the final question will be drawn from a synthesis of the literature and the primary data.

RQ 1. What is an appropriate environmental policy evaluation framework to assess Vegetation Management in Queensland?

RQ 2. How has vegetation management performed against the criteria derived from the policy evaluation framework (developed to address research question one)?

RQ 2 a. What have been the most successful components of vegetation management in Queensland?

RQ 2 b. What have been the weakest components of vegetation management in Queensland?

RQ 3. What policy areas can be improved to achieve sustainable outcomes within vegetation management in Queensland?

Outline of the thesis.

This brief introductory chapter has provided the rationale for the thesis, its aims and research questions. In order to provide sufficient context for the issue of land clearing and vegetation management in Queensland a separate chapter provides the historical, institutional and political setting (Chapter 2). This thesis is organised to address the research questions by resolving RQ1 using the literature, and RQs 2 and 3 through primary data. Thus the literature review (Chapter 3) critiques available policy evaluation frameworks and then feeds into Chapter 4 which justifies and describes the methods used to gather the qualitative interview data for the research. The results of the research are presented in Chapter 5, followed by an integrative discussion (Chapter 6) and set of conclusions and recommendations to improve the sustainability of vegetation management policy in Queensland

Chapter 2 Background:

Early History: how did we get here?

Relatively little of Queensland experienced broad scale clearing up until the post WWII period (Young, 1996; Fensham 2008). Prior to this, land clearing was largely restricted to the south east corner and near coastal areas. Significant land clearing began from the 1950's and intensified through the 1970s until the late 1990's driven by state government desire for economic growth via agricultural development. Commonwealth and Queensland government incentivised land clearing through policies and schemes such as the conversion of leasehold land to freehold land and the Brigalow scheme (Australian Greenhouse Office 2000). This political drive coupled with technological advances in machinery and chemical herbicides, saw land clearing accelerated rapidly (Australian Greenhouse Office 2000). By the early 1980s clearing was in excess of 700 000ha per year, declining slightly to around 350,000ha per year the late 1990s (DSITI 2017). It was at this time that a change in broader society and a concern for biodiversity loss and conservation emerged. The development of remote sensing (RS) technology allowed for the visualisation and precise monitoring of the extent of land clearing, and in response there was public outcry. This heralded a major political transition through the 1990s, wherein the challenge of government became how to bring about an end to broad scale land clearing. This research is focused on this period of policy change from the 1990s.

Institutional context

The framework of laws that currently govern vegetation management in Queensland extends from international commitments of the Commonwealth Government and national laws, through to State and local level laws (see Table 1.). The Earth Summit at Rio in 1992, and the Commonwealth signing of the Biodiversity Convention and UN Framework Convention on Climate Change set in place the opportunity for Commonwealth environmental regulation for biodiversity outside of world heritage areas and Commonwealth land and territories. Ultimately this saw the establishment the Environmental Protection and Biodiversity (EPBC) Act 1999 at a national level in Australia, as well as the placement of emission reductions on the national agenda. The EPBC Act regulates through a self-referral process based on Matters of National Environmental Significance (MNES) which includes impacts on ***"listed threatened species and ecological communities"*** which can include native vegetation. Meanwhile Australia's Kyoto Targets in 2012 were only met through Australia claiming saved emissions through the regulation of native vegetation in Queensland.

Table 1. A summary of the main legislation relevant to vegetation management at international, national, state and local levels of governance (derived from McGrath 2010). For a more comprehensive summary of the relevant laws see Appendix 1.

Law	Relationship to Vegetation Management
International	
Convent on on B o og ca D vers ty (CBD) 1992	The Convent on on B o og ca D vers ty (CBD), a mu t atera treaty deve oped for the conservat on of b o og ca d vers ty; the susta nab e use of ts components; and the fa r and equ tab e shar ng of benef ts ar s ng from genet c resources Austra a s gned the CBD n 1992
Un ted Nat ons Framework Convent on on C mate Change (UNFCCC) 1992	UNFCCC has an ob ect ve to stab ze greenhouse gas concentrat ons "at a eve that wou d prevent dangerous anthropogen c (human nduced) nterference w th the c mate system " Austra a s gned and rat f ed the UNFCCC n 1992, wh ch came nto force n 1994
Kyoto Protoco 1992	The Kyoto Protoco s an nternat ona agreement nked to the Un ted Nat ons Framework Convent on on C mate Change, wh ch comm ts ts Part es by sett ng nternat ona y b nd ng em ss on reduct on targets
	Austra a comm tted to a 108% em ss ons reduct on target between 2008 2012

	Austra a comm tted to a 5% em ss ons reduct on target between 2012 2020
Par s Agreement 2016	Par s c mate agreement, s an agreement w th n the Un ted Nat ons Framework Convent on on C mate Change (UNFCCC) that sets non b nd ng targets for greenhouse gas em ss ons m t gat on, adaptat on and f nance start ng n the year 2020 Austra a comm tted to a 1 46% em ss ons reduct on target
The Convent on on Combat ng Desert f cat on (CDD) 1992	The goa of the CDD s ***"to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability".*** Austra a s gned the CDD n 2000
National	
Env ronment and B od vers ty Conse vat on (EPBC) Act 1992	The ***Environment Protection and Biodiversity Conservation Act 1999*** (the EPBC Act) s the Austra an Government's centra p ece of env ronmenta eg s at on The EPBC Act regu ates through se f referra Matter of Nat ona Env ronmenta S gn f cance (MNES) nc ud ng mpacts on ***"listed threatened species and ecological communities"***
State	
Vegetat on Management Act (VMA) 1999	The VMA prov des the tr gger and process for assessment, together w th the offence for c ear ng w thout approva , are conta ned n the P ann ng Act 2016 The VMA a so prov des for the preparat on of maps to dent fy areas of h gh conservat on va ue, areas vu nerab e to and degradat on and remnant vegetat on
Nature Conservat on Act (NCA) 1992	The NCA regu ates creat on and management of protected areas (such as nat ona parks) and the protect on of nat ve f ora and fauna Many spec es of nat ve vegetat on are protected under the NCA
P ann ng Act 2016 (prev ous y the Susta nab e P ann ng Act (SPA) 2000 or the ntegrated P ann ng Act (PA) 1997)	The purpose of th s Act s to estab sh an eff c ent, effect ve, transparent, ntegrated, coord nated, and accountab e system of and use p ann ng, deve opment assessment and re ated matters that fac tates the ach evement of eco og ca susta nab ty The VMA s eg s ated through the P ann ng Act
Env ronmenta Offsets Act (EOA) 2014	The EOA prescr bes and prov des a framework for the eg s at on of env ronmenta offsets
Env ronmenta Protect on Act 1994	C ear ng and rehab tat on for m n ng and petro eum act v t es and p pe nes C ear ng caus ng ser ous or mater a env ronmenta harm
Forestry Act 1959 (Q d)	Forestry pract ces and forest products on State and
Land Protect on (Pest & Stock Route Management) Act 2002 (Q d)	Weed and pest contro , as we as matters concern ng stock routes
Regional	
Reg ona P ans (RPs)	Non b nd ng reg ona p ann ng documents have been deve oped for 11 reg ons w th n Queens and n con unct on w th p ann ng aws
Local	
Loca Government Act 1993 (Q d)	Each Loca Government Area may have ts own spec f c by aws affect ng the remova of trees or s gn f cant vegetat on

The State level is where the bulk of the laws governing vegetation management exist (Bricknell 2010). In 1995 changes to the Land Act 1994 first signalled the beginning of controls to land clearing, with restrictions placed on leasehold land (Evans, 2016; Witt 2012). The Vegetation Management Act 1999 (VMA), was introduced in response to growing public concern over broad scale clearing (Queensland Land and Administration Review, 1990). In the period between 1999 and 2000, before the regulatory provisions of the VMA came into force, landholder backlash and "panic clearing" occurred, resulting in a peak of over three quarters of a million hectares being cleared in the year before the Act came into effect (see Fig. 2.) (Queensland Department of Science, 2016).

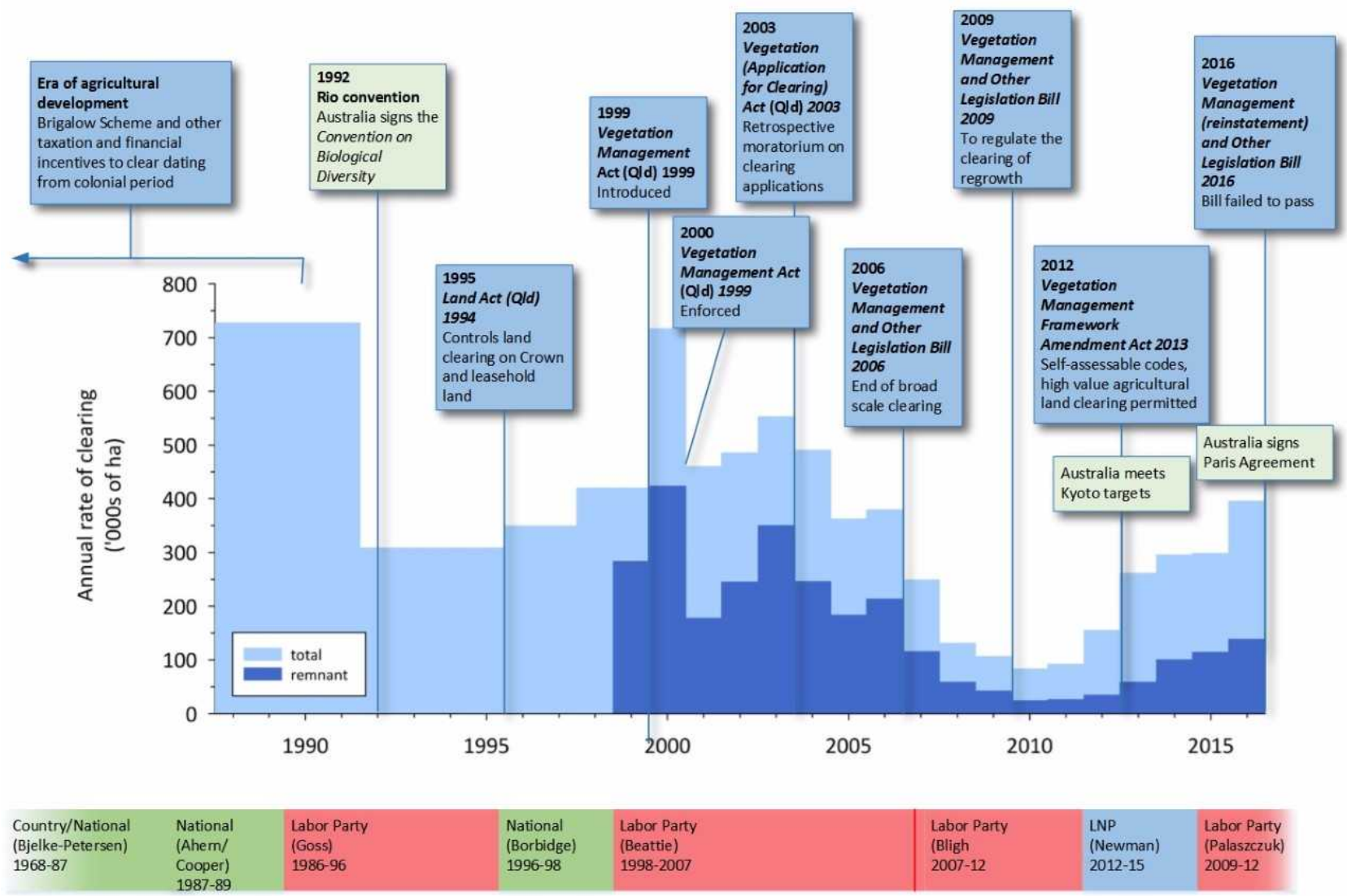

Figure 2. An adapted graph (SLATS 2017; Reside 2017) of clearing rates in Queensland between 1990 and 2016, aligned with key legislative dates (national legislation highlighted within green boxes, state legislation highlight in blue boxes) and political parties that held governing power.

Amendments were introduced to launch a retrospective moratorium of land clearing, and put a stop to 'pre-emptive' or 'panic' clearing in 2003 (Evans, 2016). In 2004 amendments were made by the State Government to end broad scale clearing by 2006. Clearing was capped to 500,000 ha which was allocated to landholders by a ballot system (Kehoe 2009; McGrath 2007). Financial compensation of $150 million was provided for rural landholders by the State Government, which funded individual compensation packages, industry support and adjustment programs (Kehoe 2009; McGrath 2007). The 2004 amendments also defined *Property Maps of Assessable Vegetation* (PMAV) which are property-scale maps showing location, boundary and status of vegetation. PMAVs enable landholders, via property plans, to "lock in" areas where clearing can occur and provide management certainty (McGrath 2007; DERM 2009). By 2006, there was a significant drop in clearing rates, and the era of broad scale clearing had effectively come to an end (see Fig. 2.). In 2009, the Bligh government made further amendments to regulate the clearing of high-value regrowth[4] and protect vegetation along watercourses in catchments of significance to the Great Barrier Reef (Evans 2016).

In 2012, with the election of the Liberal National Party (LNP), the first conservative government in Queensland for 8 years, amendments to the VMA were made, including the introduction of self-assessable codes and removal of the protection of high value regrowth (Vegetation Management Framework Amendment Act 2013) (Evans 2016). In addition to the amendments made by the Newman administration, areas considered as high value agricultural land[5] were able to be developed under state development powers that overrode the VMA (Taylor, 2015, Taylor, 2013). The effects of these policy changes was a rapid rise in the rates of clearing especially regrowth (see Fig. 2.), and significant areas of remnant vegetation, especially in the Gulf region, were cleared for agricultural intensification (SLATS 2015).

In 2015, Labor was returned to government in Queensland but with a minority hold over parliament. In 2016, in response to sustained political pressure (particularly from conservation lobby groups) and as a 2015 election promise, the government attempted, and failed, to reinstate the VMA to return it to its previous status of 2009 regulations. The Bill was voted down by a margin of two votes, Katter's Australian Party representatives, and independent Billy Gordon blocking the Bill. The conservative LNP unanimously voted against the reinstating of the VMA as it stood in 2009 (Environmental Defenders Office, 2016). It should be noted that the Queensland government, has no upper house, which allows for a dominance of political parties (Kehoe 2009) often for very long periods. For example, from 1957 to 1988 conservative parties dominated but since that time have only held power very briefly in 1996-98 and 2012-15 (see Fig. 2.). Labor has held power for most of the period involving the regulation of land clearing, however regardless this vegetation management has been far from stable. There have been repeated amendments to the Act and many calls for reform. Despite the conflict, constant amendments and political agitation there has been little critical evaluation of vegetation management policy.

Understanding why these laws have undergone such a politically tumultuous history, with almost yearly amendments, is fundamental to this thesis. Several key stakeholder groups can be identified within the vegetation management debate. Conservation Non-Government Organisations (NGOs), including World Wildlife Fund (WWF) and The Wilderness Society (TWS), have been involved in creating public awareness and concern around land clearing, and lobbying for stricter controls on land clearing. Agricultural industry bodies, primarily AgForce, and the landholders they represent have generally push back against regulation on land clearing on the basis of productivity, economic losses and property rights. Another vocal group opposed to most of the regulations effecting land clearing

[4] H gh va ue regrowth nc udes a) endangered reg ona ecosystems b) of concern reg ona ecosystem c) a east concerned reg ona ecosystem and areas that have not been c eared s nce December 1989, Areas a ong watercourses assoc ated w th the Great Barr er Reef v Areas determ ned by the ch ef execut ve adm n ster ng the VMA (see Append x 1)

[5] H gh va ues agr cu ture s cons dered: broadacre cropp ng (nc ud ng sugar cane); annua ho t cu ture; perenn a hort cu ture; and rr gated pasture (for graz ng)

include Property Rights Australia (PRA). Scientist and academics have been involved in the monitoring and reporting of land clearing as well as contributing to research on ecological impacts, social science and policy design associated with land clearing. Government and government employees have been involved in designing and implement policy at national, state and regional levels. The key political parties who have played a role in vegetation management policy include the Australian Labor Party who have historically introduced and supported strong laws on land clearing, and the Liberal Party and the National Party, who currently take the form of the LNP in Queensland and have historically only supported weaker controls on land clearing. Concepts of success and failure often depend on the perspective, although sustainable policy aims to create an acceptable policy process and outcomes for all stakeholders.

This chapter has demonstrated that vegetation management in Queensland is a long standing and complex topic, and fits the criteria of a "wicked problem". Evaluation of policy, especially environmental policy has received considerable attention in the literature and there are several frameworks and principles that have been identified that represent "good" policy. In the following chapter the key literature on policy evaluation is drawn on and integrated to address the first research question for this thesis.

Chapter 3 Literature Review:

This literature review addresses the first research question of the thesis, "*what is an appropriate environmental policy evaluation framework to assess Vegetation Management in Queensland?"* through the synthesis of literature. As demonstrated in Chapter 1 there is essentially no literature critically evaluating vegetation management policy in Queensland, aside from academic commentary. Literature exists on the biophysical and conservation impacts of land clearing (e.g. Rhodes et al. 2017), and there are a few studies that consider the economics of vegetation management (see the economic studies undertaken for the Productivity Commission's Report into "*Impacts of Native Vegetation and Biodiversity Regulations*" (Productivity Commission 2004). These impacts are considered outside of the scope of this review and thesis. The readers is directed to consider the following as source of information to understand the biophysical impacts of land clearing: Reside (2017) (ecological impacts); Bradley et al. (2010) (biodiversity impacts); Lee et al. (2013) (species specific impacts koalas); Thorburn et al. (2000) (soil salinity); McKergrow et al. (2005) (Great Barrier Reef impacts); Dale (1997) and Henry et al. (2002) (climate impacts); and Fensham (2008), Burrows (2002) and Witt et al. (2009) (the vegetation thickening debate). The reader may consider economic evaluations by Marano (2001), Sinden (2004) the Productivity Commission (2014) and Mohr (2016). The remainder of this review is focused on understanding the key elements of sustainable policy through two main sections. Firstly there will be an overview of the key attributes of effective environmental policy, and a synthesis of the most commonly identified elements. Secondly a detailed exploration and definition of the ten attributes that can be synthesised as the most important to the evaluation and development of sustainable environmental policy.

There are many ways environmental policy can be evaluated. Howlett M and Ramesh M (2003) identify five forms of evaluation: effort evaluation; performance evaluation; effectiveness evaluation; efficiency evaluation; and finally process evaluation. The framework underpinning this analysis is *process evaluation* which is concerned with seeking lessons about policy process and organisational design and attempts to account for elements such as effectiveness, efficiency, legitimacy, transparency, participation, coordination, monitoring and reporting (Bartlett 1994; Howlett and Ramesh 2003; McGrath 2010).

In understanding policy process, Dovers and Wild River (2003) stress the importance of an adaptive approach to policy-making and managing the environment. Environmental management is described as a constant experiment requiring feedback, review and adaption of methods (Dovers and Wild River 2003). The adaptive management approach consists of five core principles: persistence; purposefulness; information richness; inclusiveness and flexibility. Throughout the policy cycle Dovers and his colleagues advocate for policy coordination and integration, public participation and stakeholder engagement, transparency, accountability, openness and communication (Dovers and Wild River 2003). Later Dovers is seen to extend on these principles with Hussey, to include inter and intra-generational equity, precaution and innovation (Dovers and Hussey, 2013).

These themes are seen to perpetuate throughout policy evaluation literature. Mickwitz (2003) advocates for general (persistence, relevance, flexibility, impact and effectiveness), democratic (legitimacy, transparency and equity) and economic (cost-benefit and cost effectiveness) criteria to be used in evaluating environmental policy. Whilst Huitema et al. (2011), in their meta-analysis of EU member nations climate policy, identified commonly used policy evaluation criteria to include; goal attainment, cost-effectiveness, efficiency, fairness, legitimacy, coordination and legal acceptability. Hollick (1984) in addition to the criteria of effectiveness, efficiency and equity, added political attractiveness, incentive and individual freedom. Similarly Gunningham et al. (1998) identified political acceptability of as important. This is reflective of the need to not be naïve to the political processes and context inherently associated with policy development.

These criteria and evaluation themes, advocated for by various papers, are summarised and compared in Table 2. These terms and their meanings have been combined and arranged in Figure. 3. to form the

evaluation criteria framework that is the basis of this study. The second part of this literature review will be dedicated to further defining these terms, and their role in sustainable policy development.

Effectiveness

Effectiveness, goes to the core of environmental policy evaluation. There are numerous interpretations of effective environmental policy. Many authors emphasise tangible ecological impacts and the policy's contributions to improving the environment in evaluating effectiveness (Ervin, Khan and Livingston 2004; Gunningham, Grabosky, and Sinclair 1998; McGrath 2010). Evaluating biophysical environmental policy outcomes requires high levels of scientific data and analysis, often unavailable to governments (Howlett and Ramesh 2003). For example, the impacts of climate change policy are difficult to evaluate due to the widespread and unknown impacts and large geological time scales.

Often considered in policy effectiveness evaluation is efficiency, *"improving the environment at minimum cost"* (Gunningham, Grabosky, and Sinclair 1998). However this is extremely difficult to do within environmental policy as so many environmental benefits and costs are not accounted for in current economic systems. Although there is some movement to internalise environmental costs such as carbon markets - which has relevance to vegetation management (Fensham 2008; Mohr 2016). A move towards neoliberal "flexible" approaches to solving environmental problems is recognise globally (McCauley 2006), as well as nationally with in vegetation management (Evans 2016).

Perhaps simultaneously the most basic and complex interpretation of effectiveness is "*did the policy achieve its goal?"* Effectiveness involves more than evaluating the inputs and outputs of a policy, but also evaluating the original goals of the policy and adjusting those goals if necessary in considering the policies outcomes (Gunningham, Grabosky, and Sinclair 1998; Howlett and Ramesh 2003; Mickwitz 2003; Dovers and Hussey 2013). Human well-being and social impacts, as well as the impact on ecosystem services and public goals outside of the scope of the policy goals, should be considered in evaluating effectiveness not just environmental outcomes (Mickwitz 2003; McGrath 2010). A combined approach of understanding and evaluating policy goals, social and environmental outcomes, will be adopted in this analysis. In this way the need for considering ecological outcomes and the achievement of multiple policy goals, effectiveness can be seen to be linked to information and monitoring and coordination (see Fig. 3.).

Information and monitoring

Information and monitoring is important for measuring policy impact, environmental and social conditions and secondary policy influences (Mickwitz 2003; Dovers 2005; Hockings et al. 2009; Cook and Hockings 2011). Ervin, Kahn and Livingston (2004) identify that a policy's aim should include "Advancement of Knowledge" and learning. Due to the long geological time periods dealt with within environmental policy the aim of data collection is often not to identify goal achievement, but a sense of policy direction (Dovers 2005). Dovers (2005) stresses the need for routine data capture, to be planned and defined from the start of policy development. Often data collection is a shared responsibility across multiple parties, in need of central coordination (see Fig. 3.) (Dovers 2005). Transparency is considered essential within data and monitoring, and Dovers and Wild River (2003) emphasise that wide ownership of information as important.

Coordination

Coordination within and across policy fields is identified as important by the literature (Huitema 2011; Barlett 1994). Coordination is outlined as a general principle to be integrated throughout all stages of the policy process; problem framing; policy framing; policy implementation; monitoring and evaluation (Dovers 2005). Within coordination this review integrates concepts around communication, an element which is viewed as equally important to have throughout the policy cycle both internally and externally (Dovers 2005).

Coordination forms an important part of international policy - especially for European nations from which much environmental policy literature is produced (Huitema 2011; Bárcena-Ruiz and Garzón 2014). Within Australia is can be seen to play out between national and state-levels (Dovers and Wild Rivers 2003).

Persistence

Persistence, like effectiveness, can also be evaluated in multiple ways. Dovers (2003) emphasises persistence as important to an adaptive approach in policy stating "*learning and adaptation are more likely to occur if initiatives and processes are properly supported and maintained over time, generally requiring some defensible legal status"*. Mickwitz (2003) adds under this criteria the long lasting effects of the policy on the environment, as well as unintended effects, that may jeopardize benefits should be considered. Proper support and maintenance within the Australian system of governance can be linked to political support; whilst learning and adaptation requires system flexibility, hence these attributes are linked in Figure. 3.

Political acceptability:

Gunningham, Grabosky, and Sinclair (1998) include the factors of liberty, transparency and accountability within political acceptability. Conversely Hollick's (1984) definition states *"any policy can only be successful to the extent that it attracts support from politicians and the general public and avoids causing opposition and powerful lobby groups*". This definition links political acceptability with persistence and legitimacy. Often scientific research attempts to avoid political connotations, however this research attempts to openly acknowledge of the role of politics and ideology to provide a realistic analysis of the history of vegetation management in Queensland.

Flexibility

Flexibility in policy can be described as the ability to alter policy and institutional responses in the faces of new knowledge or changed circumstances (Dovers 2005). Dovers points out that this principle of policy development balances and prevents "persistence" and "policy goals" from becoming become rigid and unchangeable. Adaptive management has been strongly advocated in environmental management and policy development that prescribes a philosophy of learning-by-doing, and inherent flexibility and responsiveness. Adaptive management practice is currently being used to effect in management of world heritage areas such as the Great Barrier Reef and the Grand Canyon. Hughes et al. (2007) in their case study of adaptive management of the Grand Canyon state "*This* [adaptive] *approach has generated a great deal of trust among stakeholders and provides a more open and flexible institutional setting for dealing with multiple objectives in the management of complex and large social-ecological systems."* Hence the importance of flexible adaptive management is underlined, and linked to effectiveness, information and monitoring, as well as elements of effective public participation and legitimacy.

Legitimacy

Legitimacy has strong links to public participation (discussed below) as well as concepts of equity and transparency (see Fig. 3). Legitimacy is frame generally in terms of public and stakeholder acceptance of policy (Huitema 2011; Mickwitz 2003; Levi 2009; Turner 2016). Mickwitz specifically highlights the acceptance of non-government and interest organisations in their definition - this is highly relevant in analysing vegetation management. Hogl et al. (2012) identify the normative description of legitimacy to be associated with a claim of authority and the acceptability of a political system, regime or institution (Bodansky 1999; Steffek 2003; Buchanan and Keohane 2006). Legitimacy can be viewed as an "objective fact" that is socially constructed (Black 2008). An instrumental perspective on legitimacy can view it as an operational resource (building into concepts of "social licence to operate") which can be 'extracted' from cultural environment

and used to achieve goals such as policy implementation (Suchman 1995). This paper will focus on legitimacy generally in terms of public acceptance in an institutional sense.

Public participation

Public participation within policy is a commonly accepted principle within modern society, however there are a range of varying degrees and expectations around the quality and extent of it. The distinction between "public" and "stakeholder" is important to understanding public participation in policy. Kahane et al. 2013 in their exploration of "stakeholder" and "citizen" roles in public deliberation, distinguishes between the two terms: a stakeholder is defined as "*a group advocating for shared interests*"; comparatively a citizen (or the public) is a "*functional* [member] *of a democratic society by virtue of living within it and being affected by it*". Furthermore Dovers (2005) describes a community to denote "*a place-based collection of people, such as the residents of a catchment or district, including those highly engaged with policy issues and those far less so*".

'Public participation' in this study forms an umbrella term to cover citizen, stakeholder, and community participation to design, implement, and evaluate policies (Renn, Webler, & Wiedemann 1995; Coenen 2008). Reasons for public participation in policy include: ideology; mistrust of governments; increased legitimacy; education; high quality policy design; policy implementation requiring close relationships; cost-shifting and assignment of responsibility to communities (Dovers 2005; Coenen 2008). Although Arnstein (1969) argued participation can range from citizen control through to manipulation, however this is now considered less of a hierarchy and more of a spectrum of participation (Ross et al. 2002)

A major dilemma described by Dovers is '*inclusion through exclusion*'- which describes how inclusion and participation will often inherently exclude parties. For example, consultation with a creek catchment community would exclude the wider public. However inclusion of the wider public may make the smaller, more directly affected creek catchment community feel unconsulted and excluded. Representativeness of diverse interests is difficult. Often policy consultation processes are limited to the "usual suspects" which generally include well organised, well-known and willing stakeholder groups (Colvin et al. 2016). This can be seen to limit policy responses.

Dovers (2005) outlines five key principles for public participation in environmental policy, stating participation should be: genuine; clear; flexible; and appropriately resourced. Focusing more specifically on stakeholders Reed (2008) in their review of literature on best practice stakeholder engagement complied 8 key principles;

1. Stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust and learning
2. Where relevant, stakeholder participation should be considered as early as possible and throughout the process
3. Relevant stakeholders need to be analysed and represented systematically
4. Clear objectives for the participatory process need to be agreed among stakeholders at the outset
5. Methods should be selected and tailored to the decision making context, considering the objectives, type of participants and appropriate level of engagement
6. Highly skilled facilitation is essential
7. Local and scientific knowledge's should be integrated
8. Participation needs to be institutionalised

Specific methods of public participation in environmental policy are relatively undefined in the literature, with very few properly implemented, and recorded case studies (Soma and Vatn 2014). Moreover there is an explicit need to be context dependent (Dovers 2005). One of the most prominent theories however is deliberative democracy. Deliberative democracy advocates for deliberation and discussing all elements of the policy issue a process that can combine or separate citizens, stakeholders and communities, in an

attempt to reach a consensus (Dryzek 2000; Kahane et al. 2013). Engaging the public through best practice principles such as above, can be key to developing positive perceptions of equity and transparency in environmental policy.

Equity

Equity within policy is a commonly considered element within the literature. Within all environmental policy there is an inherent balancing of costs and benefits. Often environmental policy is attempting to balance an existing inequity e.g. reducing costs to public from individuals or companies who are benefiting through environmental pollution (Bento 2013). And intricate example of equity in environmental policy can be understood in polluter-pays carbon tax policies (Bento 2013). However this cost balancing is often claimed to be overstepped, asking individual entities bear too much of the costs of a public benefit. In understanding this it can be understood that inherent trade-offs exist within environmental policy. Almost unanimously definitions surround a fair or even distribution of costs and benefits amongst stakeholders (Ervin, Kahn and Livingston; Gunningham, Grabosky, and Sinclair; Huitema et al.; Mickwitz 2003). Whilst Dovers and Hussey and Ervin, Kahn and Livingston broaden this definition to include intergenerational equity for future generations. Huitema et al. includes the ability of "*participants* [to] *have equal opportunity to influence the processes used by the administration*". Through this process public participation can be seen as integral and related to matters of equity.

Transparency

Transparency and accountability are advocated for by numerous authors with environmental policy development and evaluation (Dovers and Wild River 2003; Mickwitz 2003; Huitema 2011). It describes the extent to which processes and outcomes are observable for outsiders (Mickwitz 2003). This concept is linked strongly with concepts of legitimacy and public participation (see Figure.3.), with Dovers (2005) describing it as the most basic form of public participation. Providing information and understanding about policy aims, function and direction will reduce opposition to the policy. Accountability is grouped under transparency as an integral component, fundamental to functional public policy and the expenditure of public resources. Poor transparency can disintegrate the effectiveness and implementation of environmental policy (Pellegrini and Gerlagh 2006), this is seen blatantly in the implementation of climate policy in countries with high level of corruption for example (Fredriksson and Neumayer 2016).

Summary of Chapter 3

This literature review has addressed the first research question, through the synthesis of literature to develop an appropriate framework for the evaluation of sustainable policy. Through the comparison multiple authors in the field of environmental policy evaluation ten key attributes of sustainable policy can be summarised and defined as: effectiveness, information and monitoring, coordination, persistence, political acceptability, flexibility, legitimacy, public participation, equity and transparency (see Figure. 3.). Table 2. groups the attributes of policy evaluation consider by numerous authors visually, whilst Figure 3 summaries these key attributes in a framework. This literature review and framework forms the basis of the following methodology, analysis of results, and discussion.

Table 2. A summary of key sustainable policy attributes across multiple authors in the field of environmental policy evaluation.

Dovers and W d R ver (2003)	Dovers and Hussey (2013)	M ckw tz (2003)	Hu tema (2011)	Ho ck (1984)	Erv n et a (2004)	Gunn ngham, Grabosky & S nc a r (1998)	Bart ett (1994) (on Process Eva uat on)
Pers stence	Long term po cy	Pers stence					
Purposefu ness	B od vers ty and eco og ca processes	Re evance	Eff c ency				
nformat on r chness and sens t v ty	nformat on focus	mpact			Advancement of Know edge		
nc us veness	Part c pat on				Pub c Part c pat on		Part c pat on/Representat on
F ex b ty		F ex b ty					Respons veness
Po cy coord nat on Commun cat on	G oba D mens ons Po cy ntegrat on nter ur sd ct ona		Co ord nat on Lega Acceptab ty				Coord nat on/ ntegrat on
Transparency, accountab ty and openness		Transparency	Leg t macy				
Commun cat on							
		Effect veness	Goa Atta nment & Effect veness	Effect veness	Eco og ca mpact	Effect veness	Eff c ency
		Eff c ency: Cost benef t Eff c ency: Cost effect veness	Cost Effect veness /Eff c ency	Eff c ency	Econom c Eff c ency/Susta nab ty	Eff c ency/Cost effect veness	
	nter & ntra generat ona equ ty	Equ ty	Fa rness	Equ ty	Equ ty/Env ronmenta Just ce/Eth cs	Equ ty	Fa rness
		Leg t macy	Leg t macy				Leg t macy
				Po t ca Attract veness		Po t ca Acceptab ty	
				ncent ves			
				nd v dua Freedom			
							Leadersh p
							Pract ca ty
							Pura sm
	Precaut on						
	nnovate po cy approaches						

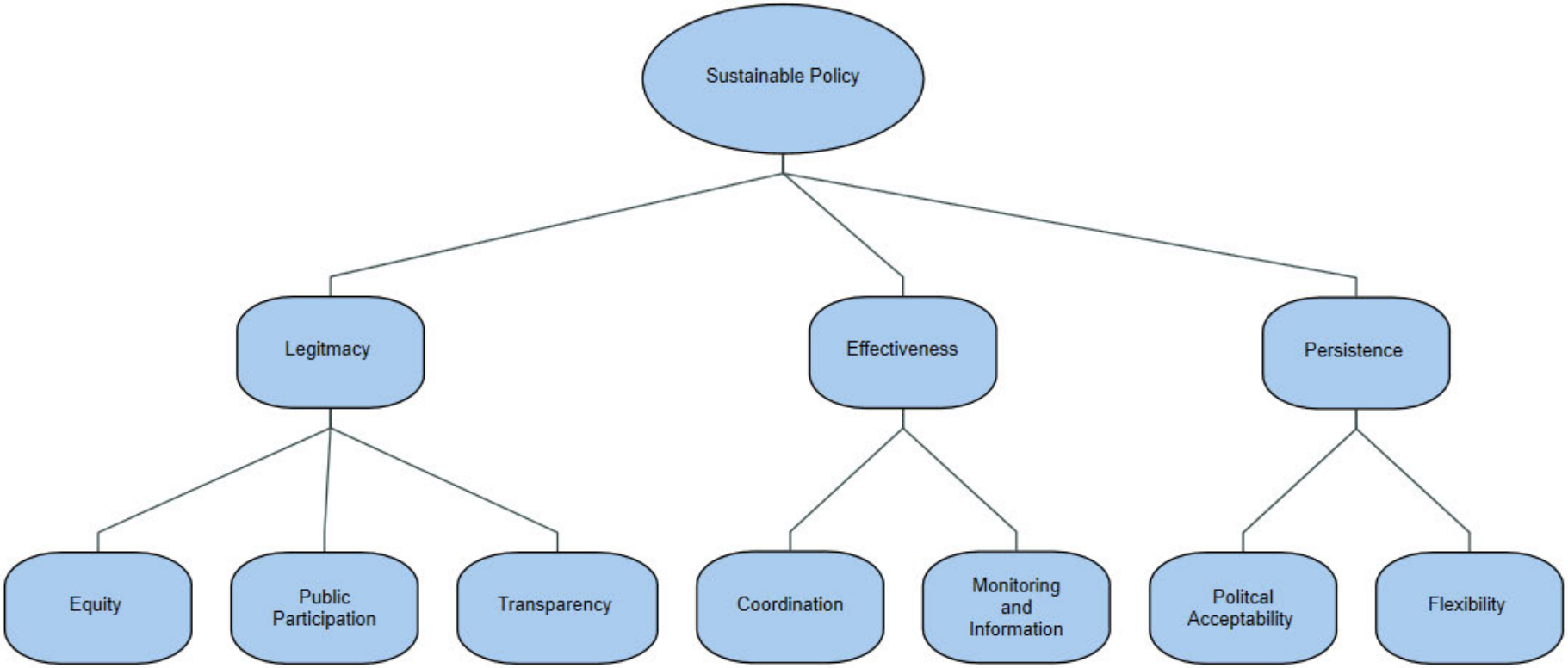

Figure 3. The sustainable policy framework summarised key attributed required for effective environmental policy (derived from Table 2. above).

Chapter 4 Methods

This research adopted a *hermeneutical approach* to policy analysis. "*Hermeneutics is a way of interpreting historical documents and other phenomena in light of the events that took place at the time of the writing of the text, as well as approaching the interpretation from the intent and experiences of the text's author*" (McNabb, 2004). Hermeneutical approaches are often viewed as a sensitive way to encapsulate complex, explicit and implicit themes, and describe influencing events and social histories (McNabb, 2004). Hermeneutical approach account for the idea that realities are socially constructed, based on interactions and the "knower's" experience, and that there are multiple realities. This research philosophy and practice was adopted as a sensitive approach to analysing the multiple stakeholder perspectives and positions held within the issue of vegetation management.

To develop an understanding of the history and evolution of vegetation management policy a qualitative approach was developed. In-depth interviews with professionals associated with the long-term development of vegetation management policy in Queensland were conducted. These interview were then coded and analysed thematically to identify areas of success, failure and improvements. Themes were established using the evaluation framework developed in the literature review (Chapter 3), whilst also accounting for novel themes that emerged in the interviews.

Theme development:

A literature review was conducted to establish a set of key criteria for environmental policy evaluation (Chapter 3). Common, re-occurring criteria in the literature were selected and merge to develop a framework for analysis. These criteria include; effectiveness, persistence, legitimacy, information and monitoring, coordination, flexibility, political acceptability, public participation, transparency and equity. These criteria formed themes for the interview structure and the coding and analysis of interviews within the study.

Participant Recruitment

This research avoided investigating the "angry stakeholder" perspective, as this is not likely to produce the reflective and analytical insight this study hopes to draw out, especially within the relatively tight time-frame of the project. Criteria for selecting participants required that participants had been "key informants to policy development", within a professional or representative role that were "at the table" during policy development, and able to reflect on policy process. Participants were contacted using a "snowballing" sampling technique. Snowball sampling, is a non-probability based method of sample selection, commonly used to again access to rare or difficult to find populations (Johnson, 2005). Trusted networks, connected with the studies' advisory team and the researcher's' personal professional connections, were used to initially identify appropriate informants likely to contribute honest, truthful and independent perspectives to the study. These initial participants were then asked to nominate further potential participants from their contacts. The study aimed to capture as many perspectives as possible on the issue. A significant saturation of the network was recognised, when eligible participant suggestions became repetitive, and less new names were recommended, that had not already been contacted by the study. Participants were initially contacted either by email or phone, and provided with information regarding privacy of information and their rights in participating in the study (see Appendix 6.).

Interview Questions:

Interviews were semi-structured and contained open-ended questions, to allow interviewees explore concepts in-depth, and identify novel themes, without imposing the researcher's preconceptions (Guest et al. 2012). Interviews were structured according to the "funnel approach" (Lopez 2008), starting broadly before narrowing to ask more specific questions. The interview consisted of eight questions asking participants to describe their role in the development of the laws and in their concepts of success, failures and improvements associated with the history of the laws. Participants were asked to talk to the key criteria of the sustainable policy framework to explicitly identify and describe research themes in the context of vegetation management. A final question asked participants to describe the three main lessons to be learnt from vegetation management in Queensland for sustainable policy development.

Interview Aids:

The last two questions involved the use of two separate visual aids designed to stimulate ideas and cover areas of vegetation management policy potentially not spoken about by that stage of the interview. The first aid is the sustainable policy criteria framework which encourages participants to contextualize their knowledge within the dominant framework of the study. The framework displays the following elements; legitimacy, effectiveness, persistence, equity, public participation, transparency, coordination, monitoring and information, political acceptability and flexibility (see Appendix 4.). The second visual aid is a timeline detailing the amendments that have been made to vegetation management policy between 1994 and 2016 (see Appendix 5.).

A series of eight questions were posed to interviewees in total. Participants initially were asked to explain, identify and/or summarize: 1) their role in the development of vegetation management; 2) from their perspective areas of success and 3) failure within vegetation management policy; 4) from their perspective areas for improvement within vegetation management policy; 5) areas of strength, weakness and improvement within vegetation management policy with explicit reference to the sustainable policy criteria framework (see Appendix 5); 6) an event on the timeline of policy amendments in regards to vegetation management (see Appendix 6) 7) three main lesson they have learn from vegetation management in Queensland 8) other professions connected to vegetation management that would be willing to partake in the study.

Interviews:

The majority of interviews were conducted in-person, in a one-on-one setting, by the same researcher. A few interviews, largely due to geographical distance were conducted over the phone or online through Skype. During the interview the researcher avoided prompting or imposing opinion or preconceptions. The researcher often used the technique of summarising the main points made by interview participants as a way of checking her interpretation was correct. All interviews were recorded using a voice recorder and transcribed by the researcher at a later date. De-identified notes concerning the main points of conversation were recorded by the interviewer in a notebook during the interview.

Data Management:

Storage:

All interview recordings were downloaded from the voice recorder and stored de-identified on a password-protected online database (Google Drive). All interview files were deleted from the voice recording device.

Transcription:

This study was limited by time and lack of funding for transcription. Therefore a novel method of transcription using YouTube to auto-generate captions for interviews was utilized. Interviews were uploaded de-identified to a private, password-protected YouTube account as videos. The method was rapid but needed to be checked carefully against the original recording for errors. YouTube automatically generates captions which were then re-listened to and corrected by the researcher. Caption files were downloaded as a sbv. file then converted to a word document, reformatted and uploaded to Nvivo. Within Nvivo the transcription file was named according the date and time of the interview and the stakeholder group or groups they were classified as representing (either Conservation, Agriculture, Science, National Policy, State Policy, Regional Policy or a combination two e.g. State-Conservation).

Coding:

The qualitative analysis program Nvivo was used to code the 20 interview transcripts. A semi-structured but essentially open coding technique was used to code the data (Robson 2011). Data was firstly coded as "Concepts of Success", "Concepts of Failure", "Improvements" or "Neutral". Under this broad classification data was further coded based on the sustainable policy framework developed in the literature review (see Fig. 3.). Novel themes, which did not fit well within themes derived from the sustainable policy framework were, recorded, defined and coded. These codes are recognised within the study, however novel codes with small significance were disregarded or merged and mentioned within other themes. For example "timing" was a theme mentioned briefly by only three participants, this theme was incorporated as an element of "persistence" within the results and discussion of this study. A code book containing all codes used in this study, their definitions and examples can be found in the Appendix 7.

Themes included effectiveness, coordination, information and monitoring, legitimacy, equity, public participation, transparency, persistence, flexibility and political acceptability. These themes were classified under broader themes of "Concepts of Success", "Concepts of Failure" and "Concepts of Sustainable Policy - Neutral".

Interpretation:

Firstly the participants "top three lessons" were analysed. This part of the analysis was given special consideration as participants self-nominated these ideas as the most critical elements to understand within vegetation management policy. Each "lesson" was coded as a single theme. These themes were then quantitatively analysis to identify the most frequently referenced themes. The most significant themes are discussed in the results.

For the main analysis, a hermeneutical approach was adopted. Concepts of success, failure and improvement were summarised within each theme and novel theme, with due consideration to

stakeholder groups and length of involvement of participants. This interpretation attempted to capture the main messages within each theme, as well as showcase unique viewpoints and insights.

Chapter 5 Results:

In total 20 people participated in this study. Interviews averaged 48 minutes (min 21, max 72 minutes). Participants had a range of backgrounds including agriculture, conservation, science, and government policy at national, state and regional levels (see Fig. 4). These backgrounds were classified based on the participant's main role/s in vegetation management for subsequent analysis. As many participants had multiple roles in vegetation management policy it was sometimes necessary to classify accordingly. For example one participant had been a grazier/landholder, and a regional policy development officer, therefore this participant was classified as "Regional/Agriculture (or Ag)" for analysis.

The final distribution of participants tended to be dominated by people with scientific, conservation and state policy backgrounds and roles. Whereas participants from an agricultural, national and regional policy background were slightly less represented (Fig. 4). This study was in part limited by its recruitment technique of trusted networks and snowballing. The majority of initial contacts existed within the conservation and science spheres. The high representation of state-level participants however is acceptable as this is where the bulk of the administration for vegetation management laws currently exists. The majority of participants were late-career or retired Caucasian males, with two females represented (from science and state policy backgrounds). Participants' involvement ranged from the early 1990's (the period well before the VMA came into effect) to the latest changes to the Vegetation Management Act in 2016 and the laws continued implementation in 2017. There were no Aboriginal and Torres Strait Islander participants, which is partially reflective of their limited direct engagement in vegetation management policy in Queensland over 20 years, but was also affected by time and resource constraints of the research.

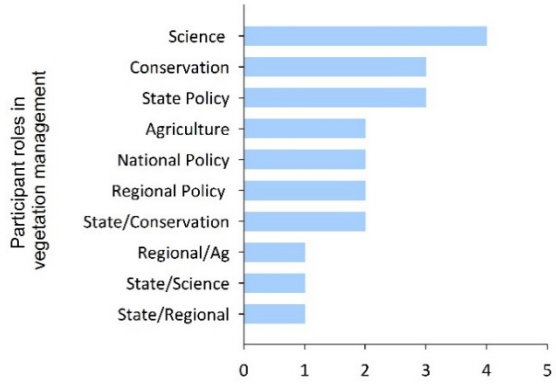

Figure 4. Participants Roles in Vegetation Management

The interviews were transcribed and then coded using Nvivo. Coding themes were based on the Key Sustainable Policy Framework, as described in the methodology (see Appendix 7 for coding book). Emergent themes outside those identified from the literature review included "Landscape Approach", "Financial Mechanisms", "Timing", "Goal Setting", "Resourcing", "Flexible Mechanisms", "Pre-emptive Clearing" and "Independent Body". "Landscape approach" was considered significant enough to be including analysed within the results. Several novel themes on reflection, were merged under existing themes for example - "timing" was considered and discussed as part of persistence which is inherently time-sensitive. Specific references to legislation were frequent, however this study is focused on the policy drivers rather than a particular critique of the sections and regulations of the VMA. Analysis of these specific comments was then generally considered outside of the scope of this study.

The results will first explore the themes that emerged during the interviews, including themes identified within the framework and the novel theme of "landscape approach" (see Fig. 5.). Within each theme participants perceptions of success, failure and improvements for each area will be explored and compared (Fig. 6.). Exploration of the "main lessons" will be used to summarise and highlight concepts participants self-nominated as the most critical to learn from vegetation management policy in Queensland including: public participation; persistence; information and monitoring and equity (Fig. 5.). Due to the nature of the inquiry and the data, it was seen as important to use the strength of the voices of the participants to speak directly to issues, hence the results section of this study is large.

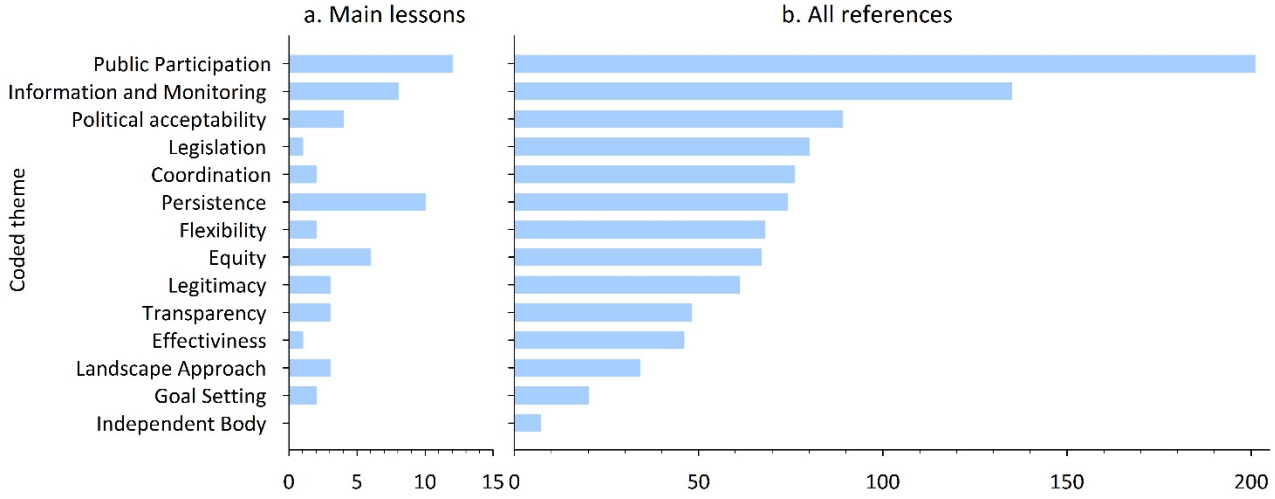

Figure 5. Frequency of themes a) within identified the three main lessons described by participants compared with the frequency of themes identified throughout the interviews.

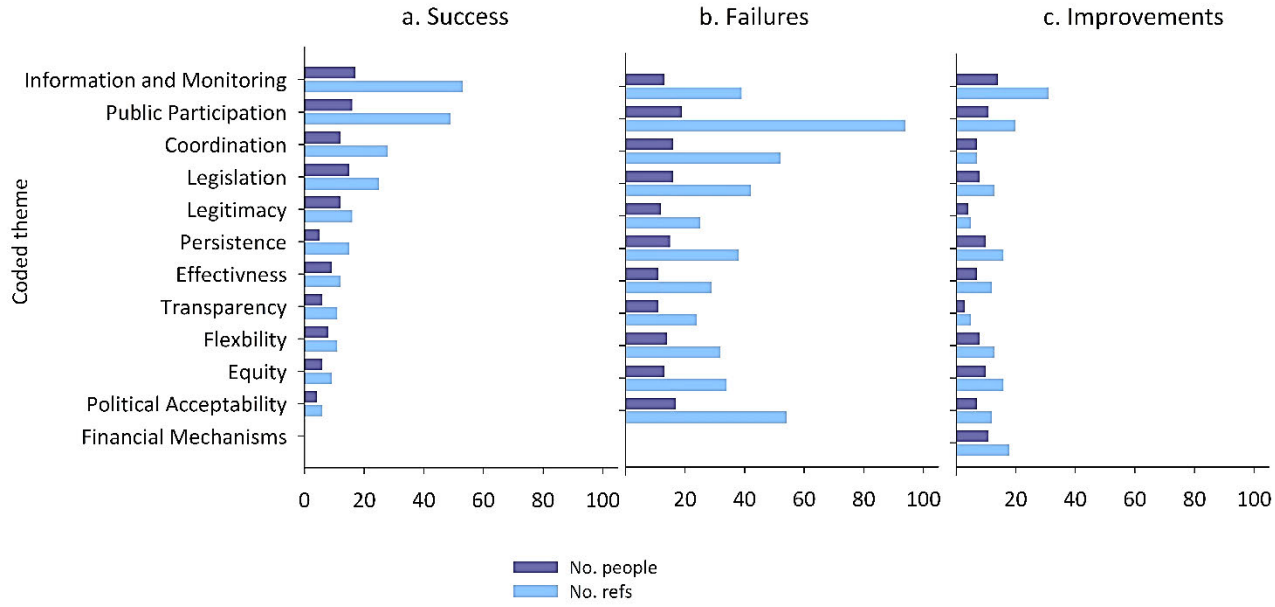

Figure 6. Frequency of coding themes associated with a) concepts of success b) failure c) improvements.

Public Participation

Concepts of Success: Public Participation

Six of the participants mentioned the existence of successful reference groups that predated the formation of vegetation management laws through to more recent times. Reference groups includes examples like the VMA Advisory Committee, the SLATS Reference Group, and more recent stakeholder consultations with the Bligh government e.g. "*SLATS actually had this reference group...because we had such a good relationship with the reference group that the figures that came out of SLATS weren't ever questioned,"* (07/07/17 11AM Science). State tree groups were described as particularly successful in creating a sense of community ownership through the creation of regionalised laws with community input "*there was incredible ownership over* [the vegetation plans] *because they actually … had landholders designing their laws and the laws they came up with* [in] *a lot of cases were tougher* [than the legislation]*… but they had ownership,*" (21/07/17 Regional-Agriculture).

Both Agricultural and Conservation representatives were able to identify examples where they had been consulted, and influenced policy outcomes successfully (contrast the below statements).

> "*...one thing that we were able to do in that when we were dealing with Beattie* [former QLD Premier] *was we convinced him ...that if people were prepared to do a map, a plan of their place and map it … this becomes the PMAV,*" (01/09/17 Agriculture).

> "*Yeah, so we met with Annastacia Palaszczuk* [opposition leader at the time but now QLD Premier] *and Jackie Tradd when there were only seven labor MPs and we kind of really convinced them to not give up on this issue,*" (11/07/17 Conservation).

State representatives generally described good examples of public participation associated with the community cabinet meetings. Community cabinets were introduced by the Beattie Government in 1998 in allow for greater community engagement through holding an open 'cabinet' meeting, with the intention improving community awareness of government policies and processes and inviting public feedback on the implications of policy decisions (Australian Government 2012). All references to the community cabinets described a transition from a hostile public audience to a generally accepting audience through a process of listening to community grievances and explanation of the science and intent behind the laws. For example;

> *"And so we would take the entire government every month… all the ministers all the director general's you would go out to Mt Isa, out to Roma, out to Whoop Whoop, and you'd sit there, you'd be sitting at a table and you know Jo and Mary Blogs would show up…. They didn't understand, or didn't want to believe us, but at least they gave us credit for just being out there and explaining what we're doing and why,"* (22/06/17 State)

Another State representative pointed out the laws had been an election promise during the state election, *"Peter Beattie if you talk to him he said 'I had the ultimate public participation it's called an election',"*(17/07/17 2PM State).

One state participant mentioned public information on good land management practice was available for landholders. "*I also worked in education, they had an education section the department in those days, we spent a lot of time and effort producing educational material about how you could clear land and not completely destroy the ecosystem it was part of …And that was the message to try to get across that* [you had to] *link up areas, you had to leave windbreaks shade corridors for cattle and sheep to sleep under, we always had to slant it back towards what was the advantage of keeping this vegetation for a grazier. But it was largely ignored… "* (20.06.17 1PM State-Conservation).

Those participants in predominantly conservation roles tended to focus on the success of large-scale public awareness campaigns, demonstrations and media. Public debate around the issues was framed as good participation. These participants also strongly expressed a belief that there was genuine public support for the laws. "*That was probably the highlight. Some of the demonstrations in support of the laws. The wilderness society staged a demonstration at one of the ALP state conferences, where they had a huge amount of people march down Gray St …"* (20/06/17 State-Conservation).

Agricultural representatives identified the effect the laws had on making landholders realise their role as land managers. This was exemplified by the uptake of PMAVs which stimulated long term thinking and planning. Agricultural representatives talked about Agforce's role in communicating the science and legislative mechanisms of the laws and upskilling their staff to be able to advocate and participate in the public debate:*"*[We had] *to basically gear up the whole* [of] *our technical capacity in a range various areas in terms of mapping and people with remote sensing skills that could interpret and understand those maps and also people that could interpret that and explain it to landholders...we've been doing that basically for* [the] *last 12 years."* (13/07/17 2PM Agriculture).

Concepts of Failure: Public Participation

The largest failing, in the context of public participation, according to participants across the spectrum, was the influence of non-government bodies lobbying government. It was generally identified that this created polarized discourse, lack of cooperation and poorly represented the majority of stakeholders involved in vegetation management. There was a sense of lack of transparency, associated with a lack of consultation and back-door deals from both the agricultural and conservation sides of the debate. For example an Agricultural representative stated "*we were never there when they had their secret meetings,*" (01/09/17 4PM Agriculture). On the other hand a Conservation representative thought "*Minister Lynam who was the Minister for Natural Resources...I believe received a delegation from AgForce very early in the piece , a day before we did, and I think he was bottled up by them,"* (11/07/17 9:30 AM Conservation).

Outside of NGO lobbying a lack of ability to influence policy, was identified, despite formal consultation processes. One state representative described redundancy in the formal consultations saying, "*In the early days there was some on the ground stuff…*[but] *government did not listen was the feeling, because when they got all the community groupings together, they all had their recommendations and then the government just brought in legislation,"*(12/07/17 10AM State). All anecdotes of community cabinets initially described the community present at the meeting as very angry, with the focus of the meeting about calming down the community, not necessarily seeking the community's opinions to meaningfully influence policy development. "*We had 2000 very angry agricultural farmers and graziers turn up and march at the community cabinet very angry. Pitch fork type stuff. And we had to deal with that real visceral anger from the community about what we're trying to do… And we just said well look this is what we're doing and this is why,"*(22/06/17 State).

The role of media was identified to have a polarizing role in creating public participation. It was identified that media became a strong driver of policy "*the policy drivers…60 minutes did a big exposé on the rate of clearing in QLD in 1999 … from an activist's point of view you really … getting the media in… and that's what drives that policy but that isn't necessarily indicative of what the community feel is ..."*(12/07/17 10AM State). Participants with conservation roles frequently described media instrumentally "*And to their credit the media ran those ugly pictures, and without those ugly pictures we never would have got as far as we got with the legislation,"*(20/06/17 1PM Conservation). Whereas Agricultural representative were more sceptical, *"I guess I think that's when you can probably have too much public participation …influencing your political influences … people from the conservation movement…take a fairly militant sort of approach to how they agitate and… that's become even more evident … with the rise of social media …"*(13/07/17 2PM Agriculture). Hence the

role of the media is a controversial one. One researcher on the issue summarised, "*nuance isn't something that the media can really deal with…it's very easy for people to say we need stronger regulations…* [but] *we need a whole policy mix to support and enable compliance …* [but] *you know that that sentence is way too long for a soundbite, or an us versus them media article which thrive on conflict, so even if you do try to have a more nuanced kind of message it's going to get lost*,"(18/07/17 Science).

Numerous participants identified that it was difficult to engage the community on this issue because of the technical complexities of the laws. For example: *"…I suspect that system is still very complicated and to be fair to the farmers even when we brought in the … PMAVs and all that sort of stuff it's complicated it's okay for the people who live and breathe it every day but if you're out and a cow cockies running cattle,* [and] *that's your main aim,* [but] *then you've* [also] *got to understand all this mumbo...*"(17/07/12 2PM State)

When it came to actual implementation of the laws, agricultural and science representatives identified negative public interactions with monitoring and enforcement through the "tree police"[6] enforcing vegetation management in communities e.g. *"..the tree police...were coming out and basically bullying people... for instance they'd come and record conversations without telling people,"* (01/09/17 Agriculture)

Concepts of Improvement: Public Participation

Suggestions made by participants regarding public participation revolved around consultation processes, awareness and information, cultural changes and policy implementation. Several participants suggest the creation of workable reference groups and genuinely listening to stakeholders through open policy planning processes. Improvements in general public awareness and information available about the laws was recommended. Numerous participants identified the need to embed acceptance of the laws culturally. One participant emphasised the need to be "humane" throughout the implementation of these laws.

> *"And… being humane in the way you go about it. I mean government has immense powers over the people they're in charge of and* [that goes] *for vegetation management, but understanding also the depth of feeling… that guy in NSW that shot*[7] *that government employee who was going there to inspect his vegetation management, and he shot him. The farmer shot him. You're on my property, you're stopping me, what I have a god given right to do. So don't underestimate the passion that is out there among people who don't like government, don't trust government,* [and are] *ready to believe in my property and my rights for ever*," (22/07/17 State).

While the complexities of public participation in vegetation management are great, Table 3 summarises some of the main results. This style of summary will be continued throughout the results section.

[6] The term "tree po ce" became the derogatory vernacu ar for the government off cers who had to enforce and prosecute vegetat on management eg s at on

[7] An env ronmenta comp ance off cer work ng for the NSW Off ce of Env ronment and Her tage, was shot dead by andho der n 2016 dur ng a rout ne departmenta v s t (SMH 2016)

Table 3. A summary of key aspects of success, failure and areas for improvement under the theme public participation in vegetation management

Pub c Pa t c pat on	
Success	Fa ures
• E ect on represents a form of pub c support for Vegetat on Management Act • Pub c nformat on ava ab e about the VMA ○ ndustry bod es nvo ved n d str but ng nformat on • H gh pub c awareness around and c ear ng ssues • PMAVs engage andho ders n ong term management p ann ng • Consu tat on was cons dered adequate by State representat ve ○ NGO consu tat on nf uent a ○ Commun ty cab nets opportun ty for pub c consu tat on ○ State Tree Group fostered strong sense of ownersh p ○ Reference groups consu ted (e g SLATS)	• nf uence of NGOs ○ Po ar sat on of d scourse ○ Lack of transparency around consu tat on ○ Lack of cooperat on between NGOs ○ Poor representat on of stakeho der • Po ar z ng nf uence of med a • Consu tat on ○ Techn ca nature of the aws d ff cu t to engage w th commun ty ○ Lack of mean ngfu consu tat on (e g commun ty cab nets) • Enforcement ○ Uneth ca conduct of "tree po ce"
mprovements	
• Mean ngfu consu tat on ○ Reference groups ○ Open po cy p ann ng • mproved nformat on & awareness of aws • Cu tura change and acceptance of aws • Better mp ementat on and on the ground enforcement nteract ons	

Persistence

Concepts of Success: Persistence

Vegetation management policy was perceived to have good persistence in three key areas by participants; PMAVs, information and monitoring, and political persistence. One agricultural representative highlighted the PMAV mapping system as crucial in providing stability for landholders. Whereas scientist in the field identified strong persistence in the maintenance of monitoring and information, '*Fortunately we've been able to keep the science and the monitoring and management going in the longer term so despite that the change in...the policies and how they're implemented ...in general hasn't affected what we do or what we deliver,"*(25/07/17 Science). State, conservation and regional personnel often identified the former Beattie administration (and the labor party more broadly) as having persistence with vegetation management laws despite poor political conditions, including a minority government and angry rural constituency;

> *"Beattie got up, and he could handle a crowd, and said 'right you know I can sense you're angry but you're going to need to just hold it. …. I will stay, I will be the last man standing, doesn't matter what time, 2:00 o'clock tomorrow morning until we've talked ourselves out about tree clearing'. So this is putting in my mind, it was putting some real substance around the policy, and it was showing that the determination of government,"* (12/07/12 Regional).

Concepts of Failure: Persistence

Failures around persistence are generally associated with a failure to embed the laws culturally. Participants identified the laws were a strong contrast to a long-established pro-clearing rural culture, stating *"And indeed there were over many decades government incentives to clear land, actual subsidisation, so stopping that paradigm and starting another paradigm is a big switch,"* (12/06/17 State). The change in laws by the Newman

government was viewed to disrupt the cultural "bedding down" of the laws. Timing was identified as a large factor, some participants identifying the need for the right timing and other saying "*there were other ways of doing it ways to get it done, more slowly, done more cooperatively,*" (17/07/17 State).

From an agricultural perspective, the constantly changing laws and lack of limits on land clearing controls was identified. The issue was consistently described as a wedge issue[8] negatively impacting on the rural community, which needed to change:

> "*And then the poor buggers out there who are trying to do the right thing and yet every time they get up to have a bowl of cereal vegetation management laws have changed that that's the biggest problem and it's become a political football rather than looking at trying to get an agreed vision, and agreed outcome, and the sit* [down] *and talk about how what's the best way to get there,*" (21/07/17 Regional-Agriculture).

Inconsistent resourcing was identified as a problem at state level; "*The need for government to have appropriate resources, including staff, adequate and appropriate people to deal with the situation,*" (14/06/17 State-Conservation). This issue was viewed to extend to a national level "*The Rudd government came in and that discontinued in NHT and switched to Caring for Our Country a lot of thing were defunded…*" (07/07/17 2PM National)

Concepts of Improvement: Persistence

Recommendations for improvement largely were associated with long term resourcing, from both a state and national level "*there has got to be appropriate resourcing …a lot of things were defunded and a lot of human capital intellectual capital some that was built up was lost and stopping and changing* [of] *government …* [at] *both levels and you know you need an enduring national system that's properly resourced and that's a big ask no one seems to have not pulled it off yet,*" (07/07/17 2PM National).

Political support was perceived as one of the biggest factors, with one participant in response to the question "*from your perspective what are the three main themes that emerge as lessons to be learnt from vegetation management…*?" solely stating "*create enduring bipartisan and industry acceptance of the laws that's it,*" (26/07/17 Conservation).

Table 4. A summary of key aspects of success, failure and areas for improvement under the theme persistence in vegetation management

Pers stence	
Success	Fa ures

• PMAVs were v ewed by agr cu ture representat ves to prov de stab ty
• Conservat on representat ves v ewed pers stence of Labor
• nformat on and mon tor ng cons stent desp te po cy changes
	• Fa ure to create cu tura acceptance of aws
	• T m ng
	  ○ Need to get the t m ng r ght
	  ○ Need for a s ower process to ncrease engagement
	• Resourc ng

mprovements	
• Long term, cons stent resourc ng for po cy mp ementat on • B part san support for a ong term andscape v s on for Queens and • T m ng and cap ta sat on of w ndows of opportun ty for po cy mprovement	

[8] Wedge ssue s a po t ca term used to descr be a d v s ve po t ca ssue, used as a bas s for draw ng voters away from an oppos ng pa ty whose supporters have d verg ng op n ons on t

Information and Monitoring

Concepts of Success: Information and Monitoring

The information and monitoring was considered the most successful component of vegetation management policy by participants (see Figure 6.). However this research also recognises that the large level of participants from a science background may have create a bias within the data toward highlight concepts of information and monitoring. The policy is generally considered to be science-based, with clear accurate mapping, and the maintenance of long-term records and reporting. Additionally appropriate acknowledgement of limitations to data was praised as well done by several participants.

Large, early, and long term investment, formed a strong focus of participant's responses. One science representative described the formation of the SLATS database as important, for example, *"one key person … he went to …the national* [government] *back in 95 and said, 'look we need a we need a crazy super computer and a hundred thousand dollars a year,' which was just phenomenal back then, 'so that we can monitor and provide accurate figures for land clearing'. And that was just such a bold step …and they went 'oh yeah?'. That's the reason why SLATS kind of works because it had good foundations,"* (07/07/17 11AM Science)

The data and monitoring of vegetation management is open-access, with non-government organisations (e.g. through the website Watch My Wilderness which allows the public to monitor land clear through satellite images) contributing to perceptions of strong transparency. *"But now you know when WWF can send an email to the government going 'what has happened here? this happened last week.' That really makes people go shit and I think that's important for building effective policy…"* (07/07/17 11AM Science)

The review processes to "future-proof" and improve the system were talked about by participants *"when there is new technology… bringing* [that] *into the program … making sure the science is sound and future proof for delivering accurate repeatable quantitative information,"* (25/07/17 Science) involved in the monitoring of land clearing. There has been strong research collaboration and open support from the academic community for vegetation management laws e.g. the Brigalow Declaration *"this declaration which essentially said these are all the reasons why you need to stop land clearing now… apparently was instrumental in providing that impetus…* [and] *added scientific legitimacy to the decisions,"* (18/07/17 Science)

Agricultural representatives conceded there was good information and monitoring however poor release and communication of information. *"Out of five information and monitoring …I'd give that a three because I think science is there and has been captured but it's not being government's not doing a good job of releasing the information and it's being released in a manner that people can get in and manipulate,"* (21/07/17 Regional-Agriculture).

Concepts of Failure: Information and Monitoring

Some of the main critiques of the information and monitoring of vegetation management came from Agricultural representatives in the study, who were very vocal on this topic (in comparison to conservation who generally only commented positively if at all). There is a perception that "*lot of a mapping wasn't a ground trothed,"* (01/09/17 Agriculture) due to incidences of incorrect mapping, a lack of integration of the permit system resulting in poor enforcement and an overall lack of recognition of legal clearing.*"I mean from a negative point of view the data definitely was very, very poor in the first instance, the tree police was the second thing and then the correlation of data, permitting yeah clearing and all that sort of thing was not happening,"* (01/09/17 Agriculture).

Much of the science is perceived as debatable by those from an agricultural background, *"… because if you pull a tree out you instantaneously get water quality problems which is it's not right and it hasn't been*

adequately researched… because of differences soil and nutrients I think a lot of it is assumed…" (13/07/17 Agriculture). Historic arguments around thickening and regrowth persist to undermine the legitimacy of the laws.

An agricultural participant explained that the science was *"applied in a regulatory way whereas they probably could have applied them in a more proactive way and actually used them as a tool for better and more sustainable property management,"* (13/07/17 2PM Agriculture).

A major failure was perceived to exist in the communication of science around vegetation management laws. One participant commented *"I mean it's absolutely a science based policy but they used to give speeches to our science people all the time saying you really need to communicate it better,"* (12.07.17 State). This was perceived as creating an issue "*in terms of transparency in that it's not a hundred percent clear often how the work is done even though there's explanations on websites and so many reports,"* (25/07/17 Science). A need for better public information transfer, through regional personnel, to explain the laws was identified by Agricultural participants (see improvements section).

Misinformation was identified as a problem by science, conservation and agricultural representatives. One scientist claim poor information existed as a result of comparisons drawn by Agforce misusing measures like Foliage Cover Percentage. Whilst Agricultural representatives described the use of legal clearing in total clearing figures as unrepresentative. One participant from a science background emphasised that the PMAV system preserves poor mapping, "*…because that bad map, the incorrect one, is locked in forever more and I think it should be live so that you know since the map actually gets better and better as we go through time…"* (10/07/17 Science). Difficulties in mapping regrowth and the length of time to gather information and investigate illegal tree clearing were generally viewed as limiting. Offset policies were claimed to be based on poor science by the majority of participants.

Concepts of Improvement: Information and Monitoring

Suggestions for major improvements in policy included continuous technological improvements in terms of satellite technology and mapping, a transition to real-time monitoring, and a linking responsive, proactive regulation and management to that.

> *"...basically your major improvement would be a system where everyone knows where they stand that includes transparent parameters potentially more regional personnel to communicate these ideas and a community debate in terms of planning for Queensland and the future of Queensland,"* (13.07.17 2PM Agriculture).

Table 5. A summary of key aspects of success, failure and areas for improvement under the theme Information and Monitoring in vegetation management

nformat on and Mon tor ng	
Success	Fa ures
• VMA was perce ved as a sc ence based po cy • Mapp ng cons dered accurate • The m tat ons of data have been appropr ate y acknow edged • Mon tor ng has rema ned pers stent desp te frequent po cy changes prov d ng ong term records • Pub c report ng through SLATS • nvestment n h gh qua ty techno ogy • Transparency of nformat on through prov s on of open data • Coord nat on of nformat on between ent t es (e g un vers t es, NSW, Nat ona government) • ndustry part c pat on has he ped d ssem nate nformat on	• ncorrect mapp ng and a ack of "ground truth ng" ○ Regrowth d ff cu t to map • Landho der comp ance d ff cu t to mon tor • H stor c arguments over sc ence pers st to underm ne eg t macy (e g th cken ng) • Data s not use proact ve y to support susta nab e management but regu atory • Poor commun cat on of the sc ence ○ Lack of transparency ○ Poor pub c nformat on ava ab e ○ L m ted reg ona personne to commun cate po cy • M s nformat on and nappropr ate use of nformat on (e g data man pu at on) • Offset po cy s based on poor sc ence
mprovements	
• The need for constant mprovements n techno ogy recogn sed s • Rea t me mon tor ng and regu at on to move towards more respons ve regu at on • mprovements n the commun cat on of sc ence to the pub c	

Equity

Concepts of Success: Equity

Concepts of good equity associated with vegetation management were only voiced by representatives from a state and conservation background. Vegetation management was often justified as equitable with public good, intergenerational and bio-centric arguments. One State representative commented, *"Equity was interesting….they saw what we were doing as inequitable because we were these Brisbane based shiny bums*[9] *who were doing this because of some green agenda. And it was totally inequitable in their terms because we were basically sending them broke or as they saw it. We're saying no think about it as an intergenerational issue - long term intergenerational issues,"* (22/06/17 State). The compensation and ballot allocation was often mentioned as a premise for equity *"… once the compensation was paid out the issue largely died down, it was no longer an issue,"* (20/06/17 State-Conservation).

Concepts of Failure: Equity

In contrast failures around equity were generally grounded in arguments based on private, individual rights. The removal of rights, potential productive value and was generally viewed as in need of compensation which had not been adequately fulfilled e.g. *"I kept saying to him* [Beattie] *that people had paid significant amount of money to freehold their land under the laws of the government of the day and by doing what they had done they had thought they were buying certain rights over the land,"* (01/09/17 Agriculture) The reverse onus of proof was identified as unfair process by Agricultural representatives *"…probably the worst thing about is introducing you know reverse onus of proof the fact that someone that you know was thought was suspected of illegally clearing trees basically was denied a proper defence,"* (13/07/17 2PM Agriculture)

[9] Derogat ve vernacu ar for peop e from c t es

Some state government personnel were conversely concerned about landholders cheating the system *"...yeah we gave them half a million hectares as a final ballot. But even after they got that they still cleared. I think its criminal,"* (20/06/17 10AM State). One representative also thought that landholders were receiving double payments - compensation for not clearing under land clearing laws, and funding for carbon abatement under the national Emissions Reduction Fund (ERF).

State, agricultural and conservation representatives all identified inequity in the application of clearing laws to differing industry sectors e.g. agricultural clearing versus clearing for mining, coal seam gas and urban development. Again emphasised was a *"sector blind approach is another thing… to solve the equitability thing,"* (20/06/17 10AM Conservation).

Concepts of Improvement: Equity

Improvements were often suggested as taking a more balanced approach with a greater focus on equity. The inclusion of all sectors such as mining and urban clearing under vegetation management regulations was emphasised throughout the interviews. There was a large focus on financial mechanisms such as compensation, incentives and payment for ecosystem service including schemes such as carbon farming.

> *"Like the carbon farming in a sense is meant to be a part of that, farmers always complain about loss of rights, loss of income, well here is actually an opportunity to make money and generate income from a really positive thing,"*(11/07/17 9:30AM Conservation).

Table 6. A summary of key aspects of success, failure and areas for improvement under the theme equity in vegetation management

nformat on and Mon tor ng	
Success	Fa ures
• The aws were v ew to benef t pub c good arge y by State and Conservat on representat ves ○ Strong ntergenerat ona equ ty • Compensat on for oss of product ve was v ewed as equa s ng arge y by State and Conservat on representat ves	• Loss of product v ty, r ghts and cost bear ng v ewed as unequa by Agr cu tura and some sc ence representat ves • Reverse Onus of Proof v ewed as un ust by Agr cu tura representat ves • Lack of transparency around compensat on and pay outs v ewed by State personne • C ear ng for urban deve opment and m n ng exempt from aws v ewed unfa r by a part c pants
mprovements	
• A sector b nd approach' – w th the nc us on of m n ng urban c ear ng etc under aws s recommended • F nanc a mechan sms to ba ance osses e g ○ Compensat on ○ ncent ves ○ Markets e g carbon	

Effectiveness

Concepts of Success: Effectiveness

The laws were described as being effective in association with enforcement and prosecution, compensation, and tangible impacts of the laws in protecting land, reducing land clearing rates and greenhouse gases mostly by State, Science and Conservation representatives. A few participants emphasised *"...you can track the rise in clearing after elections and when enforcement's were wound back, and then legislative changes were made, so there's a very clear correlation between clearing rates and legislative process…"* (11/07/17 9:30AM Conservation). Generally the laws were identified as most effective between 2004-2009 associated with the

band on broad scale clearing and regrowth laws. The effectiveness of RS monitoring and the ability to prosecute landholders and enforce vegetation management was identified as good, but also an area for improvement and the development of responsive regulation with the ability to monitor in real time. The compensation of $1.5 million was viewed as effectively distributed through Agforce. One participant identified the effectiveness of the laws to pre-emptively address soil-salinity issues.

Concepts of Failure: Effectiveness

The overall scope and goals of the regulations were viewed as a major contributor to the ineffectiveness of the laws including; exemptions for clearing by urban development and mining industries; the lack of focus on the ground implementation; a focus on regulation rather than flexible mechanisms. Resourcing to achieve effective policy implementation in terms of time, financing and staffing (especially regional staffing) was generally viewed as poor. The laws were often viewed as overly complex especially for landholders causing ineffectiveness.

National laws, primarily the EPBC Act, as well as other relevant state laws such as the NCA, were viewed as ineffective due to lack of reporting and enforcement around land clearing. One participant stating "*with the federal level they simply failed to comply they just ignored it...wasn't enforced...another huge factor in Queensland as well, just that lack of reporting to the EPBC,"* (07/07/17 2PM National).

Self-assessable codes (for thinning etc) were considered ineffective as they were often viewed as "loopholes", hard to enforce and confusing and difficult for landholders to comply (this result is confirmed with findings under the themes such as flexibility). *"Self-assessable codes … the DNRM have acknowledged that they're being abused and need to be changed but have basically sat on a set of recommended changes there,"* (11/07/17 9:30 AM Conservation).

At a regional level effectiveness was viewed to be compromised by administration wanting to help landholders, with two participants saying permits were *"dished out like lollies*" (20/06/17 Conservation) in the past. Penalties for non-compliance were seen as weak, one participant recommended the use of required restoration or rehabilitation of sites rather than the current use of easily payable fines. Pre-emptive clearing, was also viewed to undermine the effectiveness of vegetation management laws in Queensland. Additionally participants from all backgrounds stated offsets were ineffective, expensive, complex, and based on poor science.

Concepts of Improvement: Effectiveness

Improvement towards the effectiveness of the laws mentioned by participants included a simplification of the laws, development of responsive regulation, protection of regrowth and endangered ecosystems, and more flexible laws.

Table 7. A summary of key aspects of success, failure and areas for improvement under the theme Effectiveness in vegetation management

Effect veness	
Success	Fa ures
• The nk ng of RS mon tor ng and enforcement was v ewed as effect ve • Compensat on was v ewed as effect ve y d str buted through Agforce • Effect ve mpact of the aws was measurab e through and c ear ng and em ss ons rates	• Nat ona aws e g EPBC Act suffered from a ack of report ng & enforcement • Comp ex aws were v ewed as d ff cu t to enforce and comp y w th e g se f assessab e codes • Lack of resourc ng (e g t me, staff, money) reduced effect veness • Scope and goa s were n appropr ate e g ○ m n ng/urban not nc uded ○ focus on regu at on not management • Weak pena t es for non comp ance • Offsets are based on poor sc ence, neffect ve, expens ve and comp ex • Enforcement neffect ve e g reg ona adm n strat on a ow ng too much c ear ng • Pre empt ve c ear ng
mprovements	
• S mp f cat on of vegetat on management aws • Respons ve regu at on to prov de t me y pena t es • Protect on of regrowth to a ow for endangered ecosystem regenerat on • F ex b ty n aws to prov de for adaptat on	

Coordination

Concepts of Success: Coordination

A major success associated with vegetation management in Queensland was that the laws addressed many policy issues. Participants identified the laws as addressing issues of biodiversity, animal welfare, soil salinity, erosion, sedimentation, catchment impacts, Great Barrier Reef impacts and climate change.

> *"I think the major successes were in having government committed to a policy to address a multifaceted issue. So where as people would think of the tree clearing as the saving the trees and the critters and that sort of thing. Benefits for things like salinity which was a major emerging issue, sedimentation into water courses, reductions in GHG emissions, the QLD Veg Management Act was the sole reason that Australia met its Kyoto targets in 2008. So there were a range of successes in addition to the obvious of maintaining biodiversity and limiting species lost,"* (12/07/17 10 AM State Policy).

National-state government coordination around the Kyoto Protocol was identified. One participant also spoke positively about the effects of the National Framework for Vegetation Management and the associated reference group (of which they were apart of). Another large part of successful coordination included the coordination of data and information between research institutes, States and the Commonwealth government.

Concepts of Failure: Coordination

A general observation made by numerous participants was poor government coordination on this issue ranging from national-state relations and interdepartmental-state relations, to internal department problems.

A large focus of the national-state coordination problems was around funding - and the unwillingness of national government to fund Vegetation Management. A couple of participants commented on the undermining of national goals by vegetation management *"… so there's literally billions of dollars of federal public money being spent on providing benefits that trees provide and yet in QLD the increase in clearing that's happened since the veg management was rolled back the trees cleared since that time has completely offset any Federal stuff* (sic)*,"* (18/07/17 Science). Additionally one participant identified that the States and National government have not been able to come up with a common definition for operational terms such as ecological communities and threatened species. National government was viewed to be poorly coordinated with State information systems, creating data discrepancies and poor legitimacy.

At a State level coordination was viewed poorly in terms of inter-departmental coordination, within departments themselves, inter-policy integration, compliance systems, urban and rural clearing. Poor coordination was identified between the Department of Science, Information Technology and Innovation (DSITI), DNRM and DEHP especially when working on SLATS reporting. Internally within departments one respondent identified the a failure to bring staff on board with policy agenda, with staff not wanting to enforce land clearing policy, a regional personnel saying during the Beattie government "...*because the culture of a number of departments were that* [they] *didn't see loyalty to the minister and my department they really saw a loyalty to the graziers and in opposition.."* (Regional Policy Background, 12/07/17 1PM).

Policies have not been integrated to work together. Commonly identified was the poor integration of the Nature Conservation Act, the Sustainable Planning Act and the differential treatment of urban and rural clearing. One Agricultural representative identified that too much may be being addressed through vegetation management policy, *"…everyone wants to jam in mapping layers into the VMA and delegate that responsibility,"* (13/07/17 2PM Agriculture) with increased complexity resulting in poor outcomes.

Poor information coordination was identified at a compliance level - especially by those with an agricultural background - with examples of incorrect mapping, and the approval and permit system not aligning with enforcement measures. For example the "tree police" fining landholders that actually hold permits for clearing.

Concepts of Improvement: Coordination

The main improvements identified for coordination of the vegetation management laws were associated with better National-State coordination, and inter-policy coordination including integration of planning laws and laws governing stock routes.

Table 8. A summary of key aspects of success, failure and areas for improvement under the theme coordination in vegetation management

Coord nat on	
Success	Fa ures
• Mu t p e ssues are addressed through vegetat on management po cy (e g GHG em ss ons, sa n ty, eros on, b od vers ty) • H gh eve of nformat on shar ng between research ent t es e g (Nat on state, Un vers ty State, State State)	• Poor Nat ona State coord nat on on: ○ Fund ng ○ EPBC referra and enforcement ○ nformat on and mon tor ng ○ Po cy ach evement e g nat ona b on tree p ant ng • Poor State coord nat on through ○ nter departmenta (e g DEHP, DNRM, DS T) ○ Po cy ntegrat on (e g NCA) ○ Comp ance nformat on ○ nterna y br ng ng staff "on board" w th po c es • Commun cat on throughout a eve s of government
mprovements	
• Nat ona state coord nat on for po cy effect veness • nter po cy coord nat on e g through p ann ng aws	

Legitimacy

Concepts of Success: Legitimacy

Most participants viewed the government as having a legitimate role in intervening in land clearing due to the high rates of clearing. Processes such as the election commitment on vegetation management, compensation and community cabinets were viewed to give the laws legitimacy, by State and Conservation representatives. Collaboration on information and monitoring, as previously mentioned, with other levels of government and research centres was viewed as legitimising. Agricultural representatives identified processes such as the regional tree groups and PMAVs as legitimate processes. Meanwhile one agricultural representative defended clearing for high value agriculture as legitimate giving the example: *"... the thing with Olive Vale[10] is the production of sorghum and potentially rice and grain crops up there ... that ... can support ... a whole ... new area of cattle production through the soil through the feed but also ... the production of crops and stuff ... for food basically."* (13/07/17 2PM Agriculture).

Concepts of Failure: Legitimacy

Agricultural representatives identified a lack of legitimacy concerned with "secret meetings" between the government and conservation sector, broken promises and a lack of limits to land clearing laws with a perception that if the conservation sector will push for zero clearing. Explicitly trust was mentioned as an issue by multiple parties.

The perception of a "lack of limits" to the laws was also identified by state and science representatives. One science and state representatives described the complete lock down on clearing as detrimental to trust *"we made it very, very difficult for people to move now that's created a trust issue,"* (17/07/17 2PM State). The speed of the introduction of the laws was also viewed as poor for building legitimacy.

[10] Campbe Newman s LNP government approved the c ear ng of near y 32,000 hectares of and on O ve Va e stat on n the Cape York (W acy and So omons 2015) w th n an area of known hab tat of severa endangered and rare spec es and w th n the Great Barr er Reef catchment (McCutcheon 2017)

Conservation representatives also felt a lack of trust and legitimacy, exemplified by Campbell Newman breaking his promise to not amend land clearing laws. Conservation opinion often viewed the laws as not strict enough, designed with illegitimate loopholes e.g. *"Government of course wanted something that looked very ambitious but wasn't... In other words they pick just the low hanging fruit so they can claim this wonderful new thing. And we said no it wasn't anywhere near good enough..... And these AMPs are basically a Trojan horse for the self-assessable codes,"* (20/06/17 10AM Conservation).

One conservationist reflected on the fact that they had targeted farmers, and not included urban clearing, in their campaign as delegitimizing. *"...so up until pretty recently the debate focused largely on rural-agricultural clearing, broad scale clearing. It didn't really focus from land clearing form mining, urban expansion and clearing law... I always felt that it was an uncomfortable disjunct which mean that at one level we were lacking authenticity and at another level we weren't dealing with the real issue of urban clearing,"* (11/07/17 9:30AM Conservation).

It was mentioned that issues with information discrepancies were delegitimizing of the laws. When farmers were able to identify (relatively) small flaws in mapping or the mismatching of state and national land clearing figures. *"And when a grazier picks up a map that was designed on 1:25,000 or extracted 1 to half a million scale ...And they say well I'm being penalised and that's not even bloody accurate, where's the fringing forest down by the creek?"* (14/06/17 State-Conservation).

Concepts of Improvement: Legitimacy

Main recommendations for improvements revolved around a rebuilding of trust, open consultation, development of bipartisan support and the alignment of national-state information on land clearing. A simple mechanism for mapping disputes was suggested to resolve issues with mapping accuracy.

Table 9. A summary of key aspects of success, failure and areas for improvement under the theme Legitimacy in vegetation management

Leg t macy	
Success	Fa ures
• E ect on comm tment, commun ty cab nets, and compensat on perce ved to g ve eg t macy to br ng ng the aws by State and Conservat on representat ves • Co aborat on on nformat on and mon tor ng of and c ear ng add eg t macy • PMAVs v ewed as a eg t mate process by Agr cu ture representat ves • State Tree Groups perce ved to be eg t mate by Reg ona , State and Agr cu tura representat ves	• L m ts to aws – perce ved to be mov ng toward zero c ear ng • Not trust between part es espec a y NGO obby st • Not nc ud ng urban c ear ng n conservat on campa gn m ted eg t macy • Poor nformat on e g Nat ona and State data not n ng up created sense of poor eg t macy
mprovements	
• Ga n ng trust of stakeho ders • B part san support of aws • Data mprovements	

Transparency

Concepts of Success: Transparency

Transparency around the legislation was considered successful almost exclusively by State and Science representatives. Concepts around strong transparency included information and monitoring processes such as mapping, open data and public participation through the SLATS reference group and community cabinets. *"But we were there and we were transparent. And we just said well look this is what we're doing and this is why.... And that was really critical and that's a good reason for an difficult public policy issue to do it behind a*

closed door but you got to get out there and you got to make an attempt to be seen to be making conclusions about a critical public policy. So that was vital. Transparency was critical and we made all the maps available, all the science available, and we didn't try to hide anything and we admitted we were wrong, we admit we got this bit wrong, but look at this bit over here, try and balance up the argument. And we got credibility," (22/06/17 State).

Transparency was viewed as instrumental by Conservation representatives in creating awareness and public outrage to gain political attention. "*…transparency is important, because if you don't have institutions of transparency, for example SLATS, if you don't have that information, then the ability of the public to know what's going on and get angry about things is diminished,"* (20/06/17 10AM Conservation).

Concepts of Failure: Transparency

Most lack of transparency was associated with the lobbying efforts of non-government organisations. Participants from a wide spectrum identified cases of misuse or suppression of information, sensationalization and vested interests. "*Both sides of the camp in the conservation side as well as the industry side I think they have sensationalized or beat up some of the issues want and haven't taken a very rational approach to it,"* (21/07/17 Regional-Agriculture).

At a government level suppression of information including report findings and scientific publications were identified on three accounts by participants e.g. "*I was directed to take certain aspects out of my report because according to the deputy they were outside of the brief I was given, those aspects were critical of the way the government was implementing it, the lack of permanent staff etc.,"* (14/06/17 State-Conservation). SLATS reports were identified to be inconsistently released, stopping all together during the Newman-government years (2012-15).

The speed of the introduction of the laws was view to reduce transparency by one participant and another identified the need for exposure drafts. Finally participants from an agricultural background identified "*self-assessable codes removes, or it moves the emphasis of accountability from the department to the individual's,"* (21/07/17 Regional-Agriculture).

Concepts of Improvement: Transparency

Improvements towards transparency included clear definition of parameters and penalties, clear communication of the science and the release of policy exposure drafts. *"…you know it would be clear be transparent I guess it has clearly defined in parameters about what the penalties would be is if you did to you know essentially step outside of the line so to speak,"* (13/07/17 2PM Agriculture).

Table 10. A summary of key aspects of success, failure and areas for improvement under the theme transparency in vegetation management

Transparency	
Success	Fa ures
• nformat on and mon tor ng e g open data systems v ewed as very transparent • Commun ty cab nets and reference groups v ewed as grounds for transparency by State and sc ence representat ves • Transparency v ewed as mpo tant n creat ng pub c awareness of and c ear ng by conservat on representat ves	• NGO obby ng assoc ated w th m srepresentat on of nformat on • State emp oyees exper ence suppress on of nformat on regard ng government reports etc • Se f assessab e codes sh ft accountab ty to andho ders
mprovements	
• C ear parameter and pena t es for non comp ance w th aws • C earer commun cat on of sc ence and repo ts • Re ease of po cy exposure drafts throughout po cy deve opment	

Political Acceptability

Concepts of Success: Political Acceptability

Examples of good political acceptability were recognised by mainly State and Conservation representatives. The bi-partisan support for the 2004 amendments to the VMA between the Labor party and the Liberal party (when the Liberal party was separate from the Nationals) was recalled positively. Equally one State representative identified "*There was a real sense that back in 1998-99 the QLD government had an opportunity to act which it hadn't had previously and it put a lot of political effort and burn quite a lot of its political capital trying to do this,*" (12/06/17 State). The support of the Labor party in general, was recognised as good by State and Conservation representative. One participant identified personal success in gaining Premier Beattie's support for tighter vegetation management laws:

"*And* [Beattie] *had to go to Mt Isa and he got up in his jet...he's flying across Qld and there is fires burning everywhere...and he rings me from the plane and he says 'What an earth is going on? I'm looking out the window and there is fires as far as I can see.' And I said that's panic clearing, when they clear it they push it into rows, big piles and they burn it. That's what we've been telling you about, that's panic clearing. And when he came back from that trip he told the treasurer at the time … to give $150 million to go into tree clearing and they did...and we shut down the whole lot. It was great, but just enormous damage was done,*" (20/06/17 State-Conservation).

Concepts of Failure: Political Acceptability

Political acceptability was largely viewed as an area of failure by nearly all participants. Identified (and self-identified) as a problem was the political influence and lobbying-power of both non-government conservation and agricultural groups. For example "*I guess some of the conflict between the farmer and Agforce is quite regretful....*" (11/07/17 9:30AM Conservation).

Pandering toward stakeholder groups based in south east QLD to win votes was viewed as detrimental e.g. *"...why is the rural sector being penalised and not the urban development? Why is all the pain being borne in the bush? Just to keep those greenies in the South East corner happy?"* (14/06/17 State-Conservation).

Lack of cooperation between state and national governments was identified by those participants from a national policy background. Party division and the influence of hard-line backbenchers are viewed as large barriers to developing balanced laws, "*certainly I've talked to LNP front benchers that have said 'we know our*

policy on land clearing is terrible, we know its unsustainable and we're going to get caned for it, we just can't move on it until some of these people move on, retire from politics'," (11.07.17 9:30AM Conservation). One agricultural participant identified a ramping up of the laws consistent with elections cycles.

Concepts of Improvement: Political Acceptability

Ultimately the need for bipartisan support and the development of a shared vision was identified by most groups. Improvements to political acceptability centred on a persistence in government policy with the basic acceptance of both governments.

> *"We never did get a bipartisan approach. We got a piece of legislation passed and $150 million and half a million ha ballot to clear. And they begrudgingly shut up. They never said okay fine we're happy. It was fertile ground for when Newman became government, they weren't asking for it so when Newman came along and said oh by the way we're getting rid of those land clearing laws, and they said oh good," (20/06/17 State-Conservation).*

Table 11. A summary of key aspects of success, failure and areas for improvement under the theme Political Acceptability in vegetation management

Po t ca Acceptab ty	
Success	Fa ures
• B part san support n 2004 Labor L bera support for aws • Strong pub c suppo t for contro s on and c ear ng dent f ed by Conservat on • Po t ca pers stence e g Beatt es support for the aws	• NGO obby ng approaches conf ct ng not cooperat ve • Po cy focused on ga n ng po t ca support n SEQ, not account ng for rura reg ons • Poor Nat ona State cooperat on on po cy
mprovements	
• B part san support for a shared v s on for Queens and • Stab e government po cy w th estab shment of a bas c acceptab e standard for contro s on and c ear ng	

Flexibility

Concepts of Success: Flexibility

Positive comments surrounding vegetation management laws and flexibility were largely associated with Agricultural participants in reference to current provisions for self-assessable codes, high value agriculture and the former state tree groups. These laws were viewed to allow for the exercise of local knowledge and decision making, appropriate for different vegetation types and regions. For example one participant states *"I like the codes, self-assessable codes, and that sort of thing ...we've got the history we've got the records and we've got the incentives…"* (01/09/17 Agriculture). State personnel often thought the provision for regrowth and mulga clearing as flexible provisions in the laws.

Concepts of Failure: Flexibility

Generally the laws were viewed as inflexible. The main critiques came from Science and State backgrounds. The laws were described as a one-size-fits all approach which was not able to manage for the different types of bioregions and vegetation types, further limited by the lack of regional centres and administration. For example *"I'm not sure how the foddering harvesting thing works but I've heard landholders complain that it takes too longer to get a permit to harvest fodder and you know that's an animal welfare issue cause you got starving stock... knocking I'm a bit of mulga is not being the end of the world as long as you stick to the guidelines and there were strict guidelines on how,"* (10/07/17 Science). Science representatives also viewed the PMAVs as having poor flexibility - locking in bad maps and ignoring data improvements. Agricultural representatives believed the laws were not flexible enough even with self-assessable codes.

Too much flexibility on the other hand was viewed as dangerous. Big "loopholes" were suggested to be too flexible, *"So for example in urban areas only a certain size of endangered vegetation was protected so your potential for connectivity and biodiversity weren't captured in planning frameworks. And with things like thinning* [and high-value agriculture]... *was probably exploited to actually broad scale clear. So there were ins and outs,"* (12/07/17 10AM State). One participant pointed out often "flexible" mechanisms such as self-assessable codes are highly inefficient in terms of administration costs etc. Several participants address the concern of regional personnel being bullied into being flexible with the law and permits being given out too freely.

Concepts of Improvement: Flexibility

Improvements suggested included greater flexibility and efficiency surrounding fodder harvesting permits and management of mapping disputes. Overall there was a general recognition of the need for a regional approach to the laws to provide flexibility for management of different vegetation types.

Table 12. A summary of key aspects of success, failure and areas for improvement under the theme Flexibility in vegetation management

F ex b ty	
Success	Fa ures

• Reg ona y adapted po c es e g State Tree groups
• F ex b e mechan sms
  ○ H gh va ue agr cu ture
  ○ Se f assessab e codes
  ○ Regrowth
  ○ Mu ga
	• Reg ona y adapted po c es e g reg ona aws and adm n strat on
	• Too f ex b e e g urban exempt ons, th nn ng and se f assessab e codes
	• Poor f ex b ty
	  ○ Laws " ock ng down" on and c ear ng
	  ○ PMAVs do not ref ect data mprovements

mprovements	

• Mechan sms
  ○ More f ex b ty around Fodder harvest ng ru es
  ○ mproved mapp ng ad ustment processes
• Reg ona approach	

Landscape Approach

Taking a landscape approach to vegetation management emerged as a novel theme with the interviews. Eleven participants, from all backgrounds, identifying this theme as an important concept. Participants advocated for a whole of landscape approach, defined by long term planning generally at a regional scale with community input to preserve both biodiversity and productivity values, *"…seriously negotiate a meaningful land management and land restoration pattern which places values on biodiversity and values on carbon as well as values on rural products so that farmers are actually genuinely mixed farming for those sorts of products…"* (11/07/17 National). This was seen as crucial by many participants in managing different vegetation types *"… good veg management of the Mulga lands is completely different to how you're going to manage the wet tropics but at the moment we've got one veg management law that applies to the Mulga lands and the same rule that applies to the Wet Tropics…you get a better vegetation outcome…designing it for different landscapes,"*.

Participants believe this was an opportunity for goal setting, policy integration (e.g. climate policy, the Nature Conservation Act etc.), addressing clearing in non-rural sectors and planning for restoration and biodiversity corridors. Existing planning laws were referenced, although participants raised that these laws currently had a different focus and were too flexible in approving development: *"this is the challenge with the Sustainable Planning Act because it has a different intent, but if you actually did landscape level planning about how to maintain biodiversity you could actually let stuff go and be more flexible if you kept the parts*

and if you're planning laws was much stronger and allowed prohibition and you had all the things you wanted to achieve in connectivity and biodiversity that's essential habitat - if you actually planned your landscape," (12/07/17 State). The former state tree groups were referred to by two participants identifying the strong community consultation and a sense of ownership as important, suggesting a regional approach is important *"I think you get a better veg outcome in terms of landscape design because you're designing it for different landscapes, you also get better outcome because you got ownership,"* (21/07/17 Regional-Agriculture).

Main Lessons from Vegetation Management Policy in Queensland:

This final section of the results draws together the main lessons from vegetation management in Queensland as articulated by the participants. Although it overlaps with the themes covered above it serves as an integrated overview of the key messages. Overwhelmingly the main lessons from vegetation management identified by participants fell within the themes of public participation (12 identified), persistence (10 identified) and "information and monitoring" (8) in vegetation management. Next most mentioned was "equity" (6) and Political Acceptability (4). Themes of legitimacy (3), transparency (3) and a landscape approach were also commonly identified. Touched on once or twice was themes of coordination, effectiveness, flexibility, legislation. Here we will explore the top 4 themes identified as significant lessons before examining the findings through an integrated discussion.

Public Participation

Concern for public participation came from across all backgrounds included in the study. The feedback around the "main lesson" from public participation can be understood to fall under 3 major sub-themes: stakeholder engagement, communication and public awareness

A large focus was around public participation and community engagement or "*keep*[ing] *everyone at the table,*" (07/07/17 11AM Science) from all sides of the debate - academic, agriculture, conservation. This was often spoken about in the context of increasing transparency and rebuilding trust. This especially was commented on by participants from an agriculture back ground, *"Very good point how do you get the trust I think openly acknowledging the role that the land managers slash owners have had in this process for so long and how they have worked genuinely to try and be part of the process even when they're being undermined all the time,*" (01/09/17 Agriculture). There was a large focus on landholders and understanding and incorporating localised (bottom-up) knowledge on state representative commented "*Don't assume you know everything there is to do to end tree clearing you've got to listen to people and how they live their lives to make it relevant on the ground level so that it can endure,"* (12/07/17 10AM State).

Two participants emphasised the need for more "open policy planning" at all stages of the policy development process, one participant saying *"it is appropriate to engage with all the with all the people groups communities that are impacted by the policy to begin with at the start and include them"* (25/07/17 Science). Processes suggested to address this included formation of reference groups, public meetings and increased communication.

Communication formed the next sub-theme of participation. The focus was on gaining wider public acceptance, as well as enhanced communication and explanation of policy goals, legislative mechanisms and science. *"They might never believe you but they might. As long as they understand you are doing it based on good science and you're not making this stuff up there is a reason you're doing this. So that's the critical issue that you let them understand that you're doing it for good reasons"* (22/06/17 State). Several participants highlighted the need to explain the goals, workings and science behind the policy, one participant emphasising that this should be a proactive rather than reactive process saying "[its] *done in a very passive way at the*

moment and they often wait until they get a request and then provide the detail, so it's moving the government [to be] *more on to the front foot* (25/07/17 Science).

The final learning under public participation was surrounding the activation of public awareness and support for policy. This learning was often voiced from an NGO conservation perspective. For example *"It probably sounds funny but one lesson I did learn was. In order to win a battle like that you have to present things visually, and that's what we were able to do were able to get footage of bulldozers and chains smashing vegetation down. And we were able to get that on TV in people's lounge rooms on a regular basis"* (20/06/17 1PM State-Conservation). The role of media was often mentioned, the use of visuals to create public awareness, and draw political attention. One major concern from one participant was the role of media in creating an unbalanced discourse, with the needed for balanced policy development absent from public discussion, explaining:

> *"… yes we need stronger … regulations but we also need self-regulation where appropriate we also need financial incentives, we also need education, we also need outreach… that sentence is way too long for a soundbite or an us versus them media article which thrive on conflict … so even if you do try to have a more nuanced kind of message it's going to* [get] *lost..."* (18/07/17 Science).

The gaining of wider public support and a cultural acceptance of the laws was viewed as necessary to build a persistent policy, one participant stating "*And my other greatest lesson is that it is only as permanent as the legislation...unless you've embedded it in a way that the community has bought it,"* (12/07/17 State).

Persistence

Persistence appeared to be the next biggest theme to emerge from vegetation management in Queensland as a "lesson" for sustainable policy. This theme was again identified by a wide variety of participants. Again sub-themes emerged as long-term commitment, cultural acceptance, political consistency and timing. Several participants advocated for strong persistence and to "*stick to*" policy, with a long term view and commitment. Some participants identified that this should be reflected in consistent political support and the creation of bipartisanship around policy. A major challenge identified by two participants in their main learnings was the difficulty of creating cultural acceptance - especially in a strongly contrasting historical context. One participant reflected that they felt cultural acceptance had nearly been achieved, before the Campbell Newman policy changes saying "*so the momentum for kind of bedding down the laws culturally and psychological was broken,"* (10/07/17 Science). Finally a couple of participants identified the need for correct timing in the execution of policy. *"We were persistent ... there was a lot of pressure to stop it …*[but] *you wouldn't get the regulations through these days the way parliament is established yeah so there was a timing issue, timing is everything.."* (17/07/17 2PM State)

Information and Monitoring

Information and monitoring formed another key component of lessons identified by participants. There was great value placed on the development of a comprehensive information database and mapping to base policy decision-making on, one participant stating "*"I think you need the maximum amount of good independent science as distinct from political rhetoric"* (17.07.17 2PM State). The ability for real time monitoring to aid enforcement was identified; "*I think the early detection system that the government has in place,"* (11.07.17 9:30AM Conservation). Another theme emphasised was the incorporation of landholder knowledge, into the information that policies are based on. One researcher reflected "*"Another key lesson….is we can't just as environmentalist and academics, we can't just sit here saying this is what needs to happen without ever having had a conversation with the landholder,"*(18/07/17 Science). Another lesson identified was the need to look at corporate knowledge retention - as people move out of the policy and science fields - to avoid repeating mistakes.

Equity

Equity was also a prominent theme in the final lessons identified by participants. Most participants identified that the vegetation management laws lack equity. This concern for equity came predominantly from state and agricultural representatives and almost all participants had a long term association with the laws (pre-1994). This was generally associated with a perceived loss of property rights, poor representation and a bias or targeting of the agricultural sector, whilst urban clearing is generally considered exempt under the laws. One participant identified compensation as important in addressing this. Interestingly within the study a "sector-blind" approach has been identified as a more effective basis for vegetation management policy by participants from both an agricultural and conservation background. The importance of equity to one agriculture representative is portrayed in the following quote:

> *"Yeah and it's still not there so in terms of getting policy that is fair and equitable and sustainable you've got to get a bit of equity back into it is one of the lessons... I think one is you need to take a very careful approach when you're dealing with the property rights of individuals and when the we see … property rights and what people think they own, you know man's home is his castle, when you take or when you're messing around* [with] *livelihoods that needs to be done in a … very equitable and careful manner and I don't think we've seen that. … going from the Land Act in 1994 to what we have here in particularly the spectrum across Queensland and the different types of tenure and what people perceive is a very dangerous space. I think in … some other countries you probably would have seen war breakout … I think* [it's] *fortunate that … no one's died but it is an issue of significance to people that… we've seen what happened in New South Wales."* (01/09/17 Agriculture)

Table 13. A summary of the key themes described as participants as their main three lessons to be learnt from vegetation management.

Ma n essons:
Pub c Pa t c pat on
• Stakeho der engagement w th a part es at a stages of the po cy cyc e, w th the ncorporat on of bottom up know edge potent a y through open po cy p ann ng
• Commun cat on of po cy goa s, eg s at ve mechan sms and sc ence to ga n w der pub c acceptance
• Pub c awareness s necessary for po cy engagement and support
Pers stence
• Long term comm tment to po cy v s on
• Cu tura acceptance created through pers stence po cy
• Po t ca cons stency through b part san support
• T m ng and w ndows of opportun ty for po cy change need to be ut sed
nformat on and Data
• Comprehens ve databases free from po t ca rhetor c
• Rea t me mon tor ng mportant for effect ve enforcement
• Bottom up know edge and ncorporat on of andho der know edge s mportant for research and po cy deve opment
• Corporate know edge retent on s mportant to foster to prevent the repet t on of m stakes
Equ ty
• Percept on of oss of property r ghts, poor representat on and target ng of the agr cu tura sector
• Compensat on perce ved to have not been addressed proper y
• Sector b nd effect ve and equ tab e bas s for vegetat on management po cy

Summary of Chapter 5:

The results of this study covered the ten main themes of sustainable policy development identified in the literature; public participation, information and monitoring, political acceptability, coordination, persistence, flexibility, equity, transparency and effectiveness, as well ask talking to a novel theme, 'landscape approach' that was seen to develop within the interviews. Each theme was explored in depth to understand comments indicating areas of success, failure and improvement of vegetation management. The most significant theme overall was seen to be public participation, followed by information and monitoring and political acceptability. Public participation was seen to be the largest are of failure followed by political acceptability, and coordination. Whilst information and monitoring was consider one of the more successful elements of the VMA, followed by public participation and coordination. When asked for their "main three lessons to be learnt from vegetation management" participant's responses mainly refer to public participation, persistence, information and monitoring, and equity. These results will form the basis for an integrated discussion on sustainable policy with the aim of answering research questions two and three.

Chapter 6 Discussion:

This thesis sought to address the overarching question "*what makes sustainable environmental policy?*" through a case study into vegetation management in Queensland. Given the nature of wicked policy problems it is not surprising the some of the main findings of this study touched on many complex issues within the literature associated with effectiveness, persistence, legitimacy, equity, public participation, transparency, coordination, monitoring and information, political acceptability and flexibility. However, the research also revealed specific insights that have made the vegetation management issues contentious and suboptimal in terms of its sustainability and overall effectiveness.

The following discussion will be organised by addressing each of the three research questions in order, followed by an integrated discussion and conclusion, containing key recommendations. Overall a complex dynamic exists between the effectiveness, legitimacy and persistence domains of vegetation management policy (RQ2). The policy was found to be successful in terms of some aspects of effectively reducing land clearing rates, information and monitoring and coordination (RQ2.a). However the laws not successful in terms of establishing legitimacy through failing to engage the public appropriately, and consequently having poor persistence through political acceptability (RQ2.b). Improvements to the policy largely centre on the development of processes for public participation, flexible mechanisms to address equity, and a holistic landscape approach (RQ3). Silences recognised in the research included a lack of Indigenous and women's voices, as well as a lack of discourse around ecological integrity in vegetation management.

RQ 1. What is an appropriate environmental policy evaluation framework to assess Vegetation Management in Queensland?

In addressing the first research question a literature review was conducted to develop a suitable framework to review sustainable environmental policy. A framework was developed (see Fig. 3. Chapter 3.), based on the adaption and merging of commonly identified evaluation criteria across a range of works including Dovers and Wild River (2003), Dovers and Hussey (2013), Mickwitz (2003), Huitema (20011), Hollick (2011), Ervin et al. (2004), Gunningham, Grabosky & Sinclair (1998) and Barlett (1994) (see Table 2. Page 20.). The literature review then further defined each criteria to inform the development of interview questions; and form the basis the thematic analysis used to interpret the data and address research question two and three.

RQ 2. How has vegetation management performed against the criteria derived from the policy evaluation framework (developed to address research question one)?

The results of the interviews gave insight into all of the criteria contained within the sustainable policy framework in the context of vegetation management in Queensland (Fig. 3. Chapter 3.). In analysing the data the sustainable policy framework can be reconceptualise to highlight the findings of the results. An interdependent relationship between persistence; legitimacy and effectiveness was identified (Figure. 7). These factors are considered inherently interdependent, both reinforcing and undermining, overlapping, complex and foundational in the creation of sustainable policy. Other factors within the sustainable policy framework (outside of the circles) are equally as important in the paradigm as they contribute to the establishment of perceptions of persistence, effectiveness and legitimacy.

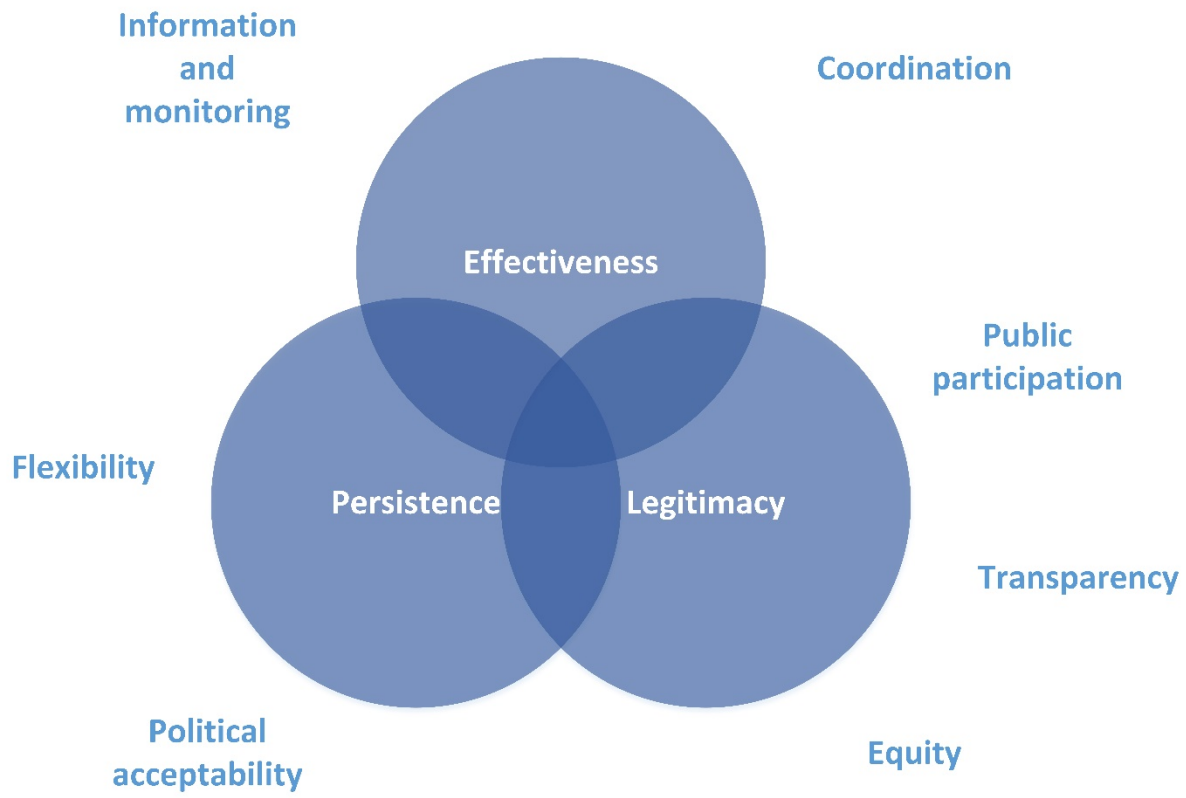

Figure 7. An interdependent relationship between persistence, legitimacy and effectiveness can be conceptualised with strong contributing factors from interacting elements (outside of the circles).

In understanding vegetation management the effectiveness of the policy can be considered reasonably successful, in that land clearing rates were reduced for a time. However a lack of legitimacy (caused by perceptions of poor equality, transparency and public participation), reduced political acceptability, and in turn persistence which attributed to a policy shift and an overall undermining of effectiveness. Lack of persistence can have the effect of further delegitimizing the laws, reducing stability and eroding trust. Lack of legitimacy can be seen to directly reduce effectiveness through stakeholder non-compliance (illegal clearing). Lack of effectiveness can be seen to reduce legitimacy, with the terms like “loopholes” and “poor data” being used by the participants. Effectiveness and persistence are inherently linked through goal setting and in this case a lack agreed ‘vision’ for policy. Figure 8. attempts to illustrate these complex interactions.

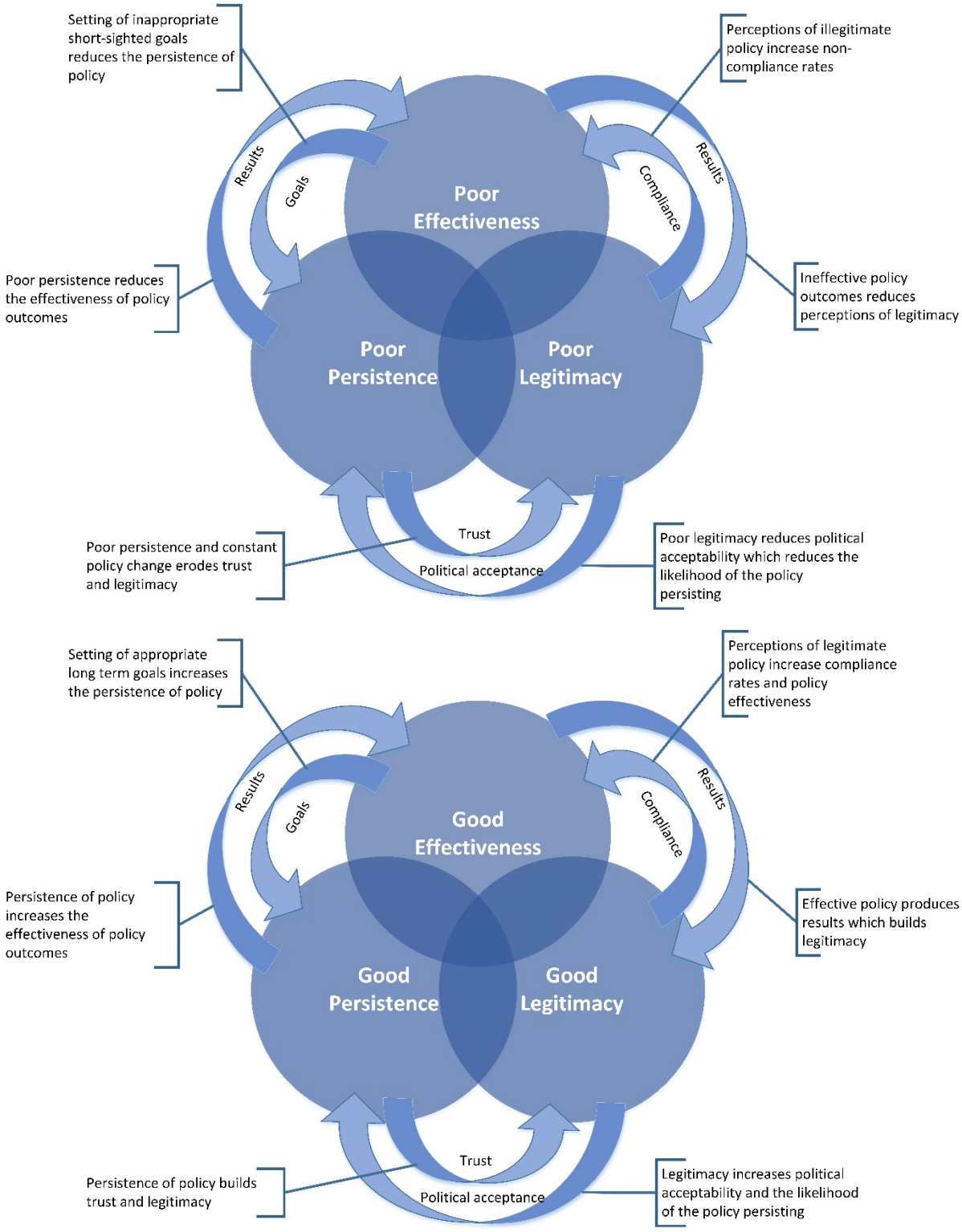

Figure 8. A conceptualization of both negative and positive reinforcing interactions within the sustainable policy paradigm.

RQ 2a) What have been the most successful components of vegetation management in Queensland?

Effectiveness, as established in the literature review, is evaluating the social and environmental outcomes of the policy in accordance with policy goals, as well as assessing the value of the goals themselves (Dovers and Wild Rover 2003; Mickwitz 2003). The primary aim of the VMA is to conserve remnant vegetation and associated ecosystem services (see Appendix 8). Therefore it can be argued from a narrow definition of effectiveness, and examining ecological impacts, that the Act was successful in achieving its aims between 2000 and 2010 (SLATS 2017). "*I don't think that there is any question that the waves of reform through the 2000's were instrumental in bringing down clearing rates and reaching carbon targets so that's a pretty positive success story*,"(Conservation 11/07/17 9:30AM). However, when the social elements of vegetation management are considered it can be demonstrated that the Act has been ultimately an ineffective, unsustainable policy (explored in the next section).

The information and monitoring systems informing this analysis are generally considered highly effective and persistent. With world class technology, long term records, and strong coordination between multiple entities including universities, other States and National government. Coordination was also considered strong in that the policy addressed multiple issues "*I think the major successes were in having government committed to a policy to address a multifaceted issue…benefits for things like salinity which was a major emerging issue, sedimentation into water courses, reductions in GHG emissions, the QLD Veg Management Act was the sole reason that Australia met its Kyoto targets in 2008,"* (12/07/17 10AM State) (also evident within the policy goals Appendix 8.). However negative aspects of information, monitoring and coordination can be linked to legitimacy, and persistence will be explored in the next section.

In reflecting on the relevance of the goals of the policy, whilst the policy can be viewed to have achieved its goal there is limited long term vision for land uses such as agriculture made explicit. Hence the perception of a lack of agreed vision and limits to the laws has developed within the rural community. These perceptions have been reinforced by consistent failings in persistence, and policy amendments or a 'ramping up' of policy, explored further in the next section of this discussion.

RQ 2b) What have been the weakest components of vegetation management in Queensland?

Vegetation management can be considered weak in numerous areas of the sustainable policy framework. This section identifies poor policy persistence, in the form of a fast policy regime shift coupled with poor processes in public participation, to be the root of policy failure in vegetation management. This has affected political acceptability and legitimacy of the laws. Weakness in coordination and information and monitoring are also addressed here.

A persistent policy is one that is supported appropriately for long term environmental and social benefits, with the ability to account and adapt for unintended effects. The introduction of the Vegetation Management Act 1995 represented a massive shift in government policy from a pro-clearing regime with incentivised schemes and requirements to clear, to ban on broad scale clearing in under ten years. "[The] *government who sort of went from going to you know being an enabler and a helper to being in inhibitor and a regulator...*" (13/07/17 2PM Agriculture). Since then the Act has been amended almost yearly since and can be considered to have not been persistently supported.

Consequently as one participant put *"...with the chopping and changing there are a lot cheesed off people,"* (07/07/17 2PM).

Whilst Conservation and State representatives identify political persistence within the Goss-Beattie years of government on the issue, sticking to their promises and stopping land clearing; Agricultural representatives identified constant change and a 'ramping up' of vegetation controls, for example the 2009 restrictions on regrowth; *"I said Peter* [Beattie] *they will not stop and of course then Anna Bligh got into power when Beattie left … and they introduced additional controls over regrowth,"* (01/09/17 Agriculture). This created a sense of a lack of limits and uncertainty around land clearing laws, landholders felt the need to push back. PMAVs were identified as the only mechanism to provide landholders with certainty and influence during this period. Despite these unintended and negative social effects the laws were not adapted in response, until the Newman government.

Instrumental to this lack of persistence is a lack of political acceptability. Vegetation management has been a wedge issue for decades. Labour used controls on vegetation to secure "inner-city green" votes e.g. "*And from the green side, politically given the government's very tenuous grip on, and the increasing insurgent in inner city seats, where Labor had numbers, we had to take account of the green vote,"* (22/06/17 State). Meanwhile the Liberal-National party was concerned with securing support from rural Queensland *"soon as* [the LNP] *got into government they acted to pretty much demolish the monitoring enforcement processes … sort of send a message back out to a rural constituencies that clearing was good,"* (11/07/17 9:30AM Conservation). This is reflective of a deeper lack of cultural acceptance. Controls on land clearing have still not become a social norm, and are seen as contestable.

Three participants from State, Conservation and Science backgrounds described the 2012 amendments as disrupting the cultural acceptance of the laws "*the momentum for kind of bedding down the laws culturally and psychologically was broken,"*(10/07/17 Science) and*"... [W]hat wasn't successful of course is it didn't win the hearts and minds of the landholders... ".* (17/07/17 2PM State) Key to gaining this cultural acceptance, policy persistence and sustainable policy therefore becomes the establishment of legitimacy within vegetation management laws.

Legitimacy

Legitimacy equates to public and stakeholder acceptance of a policy. Legitimacy has by far been the largest failing of the laws, attributable to a lack of public participation, transparency and equity within policy process. Poor legitimacy is rooted in failings to engage the public meaningfully. Public participation, is often an expectation within democratic societies but rarely is meaningfully achieved (Carson 2009). Public participation in environmental policy is a large area of academia from which this discussion will draw on. Failings within public participation and vegetation management can be identified within a) representation b) inclusion and c) process.

Representation

It is apparent the distinction between "public" and "stakeholder" is important to understanding public participation in vegetation management. There are benefits and drawbacks of including both the public and stakeholders in policy processes that can help to explain the dilemmas faced in vegetation management in Queensland.

Stakeholder engagement provides an efficient, effective route to engagement, with in-depth knowledge and influence. However Kahane points that stakeholders can be problematic to involve in

policy processes because they may be; unrepresentative; subject to bias selection (as government prefer to deal with discrete organised stakeholders); dominant; likely to act strategically in their own interests rather than deliberately for the greater good; or feel unwilling or not at liberty to change position due to feeling bound by the constituency they represent (Hendriks 2011; Gaynor 2011; Kahane et al. 2013). Consultation of stakeholders, within vegetation management, generally drew on Agforce and conservation NGOs for insights, *"there is the mechanism to feedback to the policies through political processes of NGO's and in the past those NGO have traditionally been the Ag forces the MLA, the industry,"* (07/07/17 11AM Science). However as one participant pointed out these organisations are not always representative, "*Agforce doesn't have all the members. I might be doing them a disservice but I think they might have less than 40%... who do they speak for? That's the big problem,*" (14/06/17 Conservation). Issues associated with transparency, conflicts of interest and lack of cooperation have been consistently identified with NGO involvement within this study which can be linked to concepts of poor representation and the inclusion of stakeholders in policy development (Colvin et al 2015).

Conversely the inclusion of citizens may have a more diversifying and balancing effect; focusing on shared values; and more open to change and deliberation (Kahane et al. 2013). However citizen participation can be limited by: the government's capacity to convene citizen for deliberation; lack of knowledge; and lack of commitment to the issue. Stakeholder consultation can be seen to have government appeal, over citizen consultation, for being efficient whilst still appearing representative. These issues can be seen exemplified in comments from agricultural representatives: "*when you get big populations of urban-based people that possibly don't quite get it...that's influencing your political influences…*" (12/07/17 2pm Agriculture).

Inclusion

Who is included in public policy processes is important to deliberate. Drawing on Dovers' (2005) conceptualisation of "inclusion through exclusion" it can be understood that inclusive processes will inherently be exclusive.

The agricultural representatives perceived their interests to have been excluded whilst a broad public interest included (as seen in other studies e.g. Witt 2013). For example, *"I think so because none of those like the Greens, the government, the NGOs, none of them have got a financial or a moral social commitment to the land whereas my family for over 100 years ...we've had* [not just] *a financial but a family commitment to that for half of the time this country has been settled by white people and none of the others have any sort of commitment to it except they know better than us,*" (01/09/17 Agriculture). Whereas before the VMA broader public conservation interests can be viewed to have been almost totally excluded "*So we had clearing occurring 24 hours of the day...the whole south-west of Queensland was just getting flattened at an enormous rate. And there was nothing you could do about it*,"(20/06/17 State-Conservation).These perceptions of exclusion, manifested in claims of poor transparency and corruption, exemplified with claims of "secret meetings" and "state-capture" between stakeholder groups and the government:

"*So they completely gutted the effectiveness. And quiet consciously. And that's because it was the foxes running the henhouse. You had the party of the farmers running the legal apparatus which is deeply corrupt, and that's exactly what we saw, what I call state-captur,e so when the state actually gets captured by a vested interest. It's like the worst kind of corruption,"*(20/06/17 10AM Conservation).

"The WWF and the environment societies and all those were getting backroom access to him [Beattie] *and his office all the time and we had to schedule meetings and they were always there… we were never there when they had their secret meetings,"* (01/09/17 Agriculture).

Because of issues with different perceptions of exclusion and inclusion, and a lack of *process* for public participation issues of transparency, conflicts of interest and lack of cooperation have been consistently identified within this study. Best practice methods emphasise the need for strong definition as to the problem, purpose and the type of public and stakeholder participation is necessary (Dovers and Hussey 2013; Reed 2008). Hence defining a process for public participation becomes key to this issue.

Process

A lack of clear process to influence the issue of land clearing, and meaningful public participation has caused a perceptions of poor legitimacy within vegetation management in Queensland. Successful public participation was identified in the form of elections; consultation; community cabinets etc. However when these methods of participation are analysed they can be viewed as exclusive and ungenuine.

Elections have the perception of being *"the ultimate public participation"* (17/07/17 2PM State), but whether that participation is always appropriate and inclusive of all interests is questionable, with landholders feeling excluded by the process in this case. This concept of public participation is not considered to be of a high-standard of community engagement (Colvin et al. 2016). Best practice community engagement promotes consensus building where knowledge is shared and understanding is created (Head 2007). The divisive nature of voting cannot be considered within this category (Colvin et al. 2016).

Community cabinets, whilst described as an inclusive process by some, can be viewed as ungenuine, serving to placate rural communities, rather than allowing them to influence policy processes. These processes happened after policy change had been signalled, and were about calming down communities, rather than giving the communities a chance to influence policy. The formal processes of elections, community cabinets, reference groups etc. generally lacked real policy influence.

Amongst NGOs consultations was seen has happening via informal processes. Transparency issues around consultation or "secret meetings" with stakeholders, can be viewed to come from a lack of clearly defined and agreed processes for influencing policy. The result has been lobby groups and NGO's going to government independently to drive their agenda, instead of coming to decisions collaboratively and deliberatively.

The need for process was reflected in positive comments surrounding the discontinued state tree groups "[Figure 3.] *talks about public participation and legitimacy those vegetation plans were developed by the people that interested parties within each of those 8 or ten region whatever that, and there was incredible ownership over that because they actually you know you had landholders designing their laws and the laws they came up with a lot of cases were tougher than when they have but they had ownership and they'd go out there and those support that,"* (21/07/17 Regional-Agriculture). Landholders understood how to engage and contribute within the state tree groups, and were able to see the outcomes of their contributions which built towards trust, ownership and compliance. Establishment of a process for consultation, that has the potential to influence policy, and emphasises equity, empowerment and trust is key to improving these issues of transparency and consultation (Reed, 2008).

Legitimacy and Information & Monitoring

Complaints against information and monitoring were generally only made by agricultural representatives. This exemplifies the lack of legitimacy and trust held by these stakeholders. Similar studies have observed this mistrust in information by landholders (Witt 2012), which suggest solutions of incorporation of local knowledge through participatory approaches (Martin and Lockie 1993; Curtis and Lockwood 2000; Reed 2008; Witt 2012).

Coordination

Another major weakness was coordination particularly at a state-national level, which included large discrepancies in policy, funding and information. The EPBC Act was continually noted as ineffective in vegetation management, "*so at the federal level in terms of the EPBC act even though… for Threatened species … land clearing in the agricultural sector would be one of the biggest factors leading to vegetation loss yet there was a very low rate of referral to the Federal Minister for assessment*,"(07/07/17 2PM National). Despite vegetation management in Queensland historically being key to addressing Australia's international Kyoto commitments, currently clearing rates are undermining national approaches to tackling climate change including initiatives like the 20 Million Trees program (DSITI 2017; Bulinski et al. 2016): *"I mean it's interesting that right now as Josh Frydenberg talks about another billion tree planting, whilst tree clearing is at levels not seen for the past 20 years* (sic)*,"* (12/07/17 10AM State). This inconsistency in policy approach reduces both state and national policy effectiveness and creates significant uncertainty for landholders (Elks 2016). It is proposed that stronger national support within this issue may provide help to provide more stable political leadership within this issue.

> *"… the state and the federal government has been at war since the Constitution, it would just be great if we could have different levels of government vaguely saying the same thing and not have completely opposite policy agendas. It just reduces the effectiveness of the entire system and legitimacy,"* (18/07/17 Science).

RQ 3. What policy areas can be improved to achieve sustainable outcomes within vegetation management in Queensland?

This research has shown that improvements around legitimacy, effectiveness and persistence need to be addressed holistically. Foremost issues with public participation need to be resolved, however there is need for this to occur through the implementation of a landscape approach with persistent, long term goals and support. Whilst legislation is not considered explicitly within this study, it is observed that references to specific legislative recommendations significantly dropped when participants where asked to identified their top three lessons for vegetation management. This is representative of a need to address and improve on underlying causes and processes within vegetation management, rather than simply amend legislation. Equity can be considered an underlying theme within the issue of vegetation management, which many participants were anxious to see improved and hence is included in this section.

Equity

Equity was not emphasised as a large issue within the overall results; however was elevated as an issue when participants were asked about the "main lessons" they have learnt from vegetation management in Queensland. This concern for equity came predominantly from those with a long term

association with the laws (pre-1994). This potentially indicates those witness to the full policy shift view equity as important to underlying themes within the debate.

Equity was a theme in which dichotomies of public vs private, individual vs society, anthropocentric vs biocentric values played out, with State and Conservation representatives generally saw the laws as fair in terms of biocentrism and public good, and agricultural perspectives as unfair based on anthropocentric and individual rights. This phenomenon has been well recorded within Witt's (2012) exploration of the evolution of responsibility and land ownership in NRM. Value change and perception of equity are unlikely to be rectified quickly, but through long term cultural change fostered by persistent policy.

Depending on stakeholder perspectives financial mechanisms were viewed as adequate or inadequate in addressing inequality within the laws. Conservation and state representatives generally felt compensation had been adequate. Whereas agriculture and science representatives often identified a need for compensation still existed. Market schemes and Payment for Ecosystem Services (PES) systems were identified as having potential to resolve inequities by representatives from nearly all backgrounds.

> *"I've always thought that carrots were better than sticks and it would be better to rather than trying to regulate farmers out of land clearing which is… very difficult to do .. we* [need] *to be accepting if we stop farmers clearing … that they're wearing a direct cost on behalf of society, we as a whole society don't want that to occur because society as a whole gets benefits from maintaining native vegetation and therefore it's totally appropriate to be paying farmers to be effectively stewards of native vegetation," (07/07/17 2PM National).*

However Evans (2016) emphasises *"recent shifts towards self-regulation, flexibility and economic instruments... does not necessarily mean there will be a change in policy effectiveness…"* (p.146). Additionally many participants showed a preference for simple regulations, and certainty over complex schemes "*… we had* [to] *lock everything down so it became very complex. We need to make environment regulations as simple as possible because the more complex they are the more the more people won't comply with them because they can't, they don't understand them,"* (17/07/17 2PM State).

Throughout the results, a major inequity identified by all perspectives however was the unfair prosecution of predominately rural landholders under the laws. There was strong consensus that mining and urban development sectors should be included under the laws. This relates to principles of an integrated landscape approach - which focuses on the land, not sector outcomes.

Landscape Approach

The development of a landscape approach to vegetation management was a novel theme to emerge from the interviews. The concept of "a landscape approach" has gained considerable recognition within the international environmental policy field (Landscapes for People Food and Nature 2015; UNEP 2017). Literature on landscape approaches describe the concept as "constructively ambiguous" and "vague", with methods explicitly describing implementation remaining limited (Freeman, Duguma, and Minang 2015; Bürgi et al. 2017; Reed et al. 2017). Despite this, high potential is identified within landscape approaches to *"reconcile conservation and development and improve social capital, enhance community income and employment opportunities as well as reduce land degradation and conserve natural resources,"* (Reed et al. 2017, p481). Key features include explicitly defined objectives, integration and cross-sectoral approaches, collaborative participation, adaptive

management and iterative process to address the inherent complexity within environmental systems (Freeman, Duguma, and Minang 2015).

This approach was viewed by participants as able to address issues of persistence, public participation, flexibility, coordination, effectiveness and equality, identified by participants. A landscape approach was described be able emphasised a long term vision, and address issues of persistence and effectiveness through goal setting:

> "*...so we need to build a vision around that agreement based on good science and capturing social expectations as well as some productive realities and then we need to get the parties together and work towards that vision that's where I think the future lies,*" (21/07/17 Regional-Agriculture).

Public participation scoped at regional levels within a landscape approach is viewed as appropriate and legitimate within this study. Features such as multilevel and polycentric governance structures associated with landscape approaches are likely to facilitate this engagement well (Reed et al 2017). "Regionalisation" is often viewed as a middle ground between 'top-down' and 'bottom-up' approaches to governance, favoured by government at all levels. However Jennings and Moore (2000) in their case-study attempting to break through the rhetoric surrounding regionalization argue "*successful strategic planning relies on government guidance and stable institutions, irrespective of geographic scale."* Therefore this research does not argue for regionalisation on a governance basis, but on the basis that participants have explicitly identified the regional-scale as appropriate to engaging communities as well as tackling flexibility issues associated with management of different vegetation types. For example:

"*...we are strong advocates of the regional veg management plans, rather than having a veg management plan for all of the state there…* [is] *regional veg management plans…. based bioregions. So the New England tablelands had its own veg management plan, the mulga lands had their own veg management plan, Mitchell grass* [etc.]*...*"(21/07/17 Regional-Agriculture)

Opportunities for policy coordination and integration were raised. Planning laws have the potential to be better integrated and strengthened to allow for appropriate vegetation and landscape management. "*...but if you actually did landscape level planning about how to maintain biodiversity you could actually let stuff go and be more flexible if you kept the parts and if you're planning laws were much stronger and allowed prohibition and you had all the things you wanted to achieve in connectivity and biodiversity that's essential habitat - if you actually planned your landscape,*" (12/07/17 State). Land-focused rather than sector-focused outcomes, and the integration and application of vegetation management laws to include urban development and mining sectors, will improve perceptions of coordination and equity. A successful landscape approach with meaningful public involvement will hopefully achieve the cultural embedding of appropriate vegetation management controls. This will reduce the ability for the problem to be used as a wedge issue by politicians.

Restoration is rarely mentioned within discourse around vegetation management, however a landscape approach would provide a way to *"seriously negotiate a meaningful land management and land restoration pattern,"* (11/07/17 11:30AM National). Queensland can plan for net gains in habitat, connectivity and biodiversity as well as sustainable development and agriculture.

> "*… we have reached this stage where we have to start revegetating areas. And that may be as simple as removing stock from the area and introducing fire management, and allow those areas to revegetate. But we* [have] *definitely got a lot of area to revegetation. And we should use a lot of new technology available to us. Stuff like drones. Fill drones up with big bins of*

> *seed and spray it everywhere let nature do the rest. Once you get your cattle out of there, control your feral animals, your pigs and what not*," (20/06/17 1PM State-Conservation)

Public participation a way forward.

Integral to the development of a landscape approach to vegetation management should be a process for public participation. As the analysis has shown there is a need for a clearly defined processes to address issues with public participation and legitimacy. It is considered outside of the scope to provide specific suggestions to address public participation, however the study shows a dominance of two very specific stakeholder groups in this issue affecting sustainable policy outcomes. Literature surrounding public participation in environmental policy issues often suggests a deliberative democracy approach as it offers a process that reduces stakeholder interests and allows for a more balanced consideration of broader public interests (Dovers 2005; Reed 2008; Soma and Vatn 2014). Deliberative democracy processes do not exclude stakeholders, but seek to include everyone through thoughtful framing of policy issues as one of broad public interests; often with stakeholders providing fundamental contributions through information provision to deliberating citizens (Soma and Vatn 2014). The extent of influence available through public participation processes should be made clear (Reed 2008), and influence through formal processes should be meaningful to avoid stakeholders seeking informal processes. Public participation should be incorporated throughout the whole process (Reed 2008). In the context of developing an integrated landscape approach to vegetation management, public participation should be foundational to the development of a "shared vision", establishing clearly defined roles for the Commonwealth, State, stakeholders and the public.

There is a loud call from conservation biologists, academics and environmental NGOs for stronger regulation of land clearing, however this research highlights underlying factors of legitimacy have led to political unacceptability and ineffective policy. Election cycles are an inherent part of environmental policy development and implementation, of any environmental policy that is going to be effective and enduring needs to be able to survive a change on government. Vegetation management policy is clearly one is that needs to be able to transcend changes of government. This thesis proposes that tighter and stronger regulation in the absence of appropriate participation, to ensure legitimacy, will not lead to an effective and enduring vegetation management policy. Land clearing in Queensland will only stabilise once an agreed and shared vision is reached by the key stakeholder in the issue, which until now has been undermined by over politicisation of the issue.

Silences:

Diversity

A number of silences and gaps were identified within this research which were unable to be explored further do to the scope of the study. Foremost the absence of Indigenous voices in this issue is apparent. No representatives identified with an indigenous background. Out of 20 interviews, the total references to Indigenous can be summarised in seven references, these references were very brief, and largely associated with parliamentarian Bill Gordon and the Cape York (in reference to the most recent failed amendments in 2016) e.g. "[Billy] *Gordon refused to back it, he had been approached by indigenous interests in Cape York,"* (20/06/17 State-Conservation). Queensland reaps both agricultural and environmental benefits from land stolen from highly-skilled, long-term sustainable land managers. Clearly, there is a need to include more direct indigenous interests in the development of vegetation management policy. This is recognised as a major silence in the issue of vegetation management but has been determined as outside the scope of this study.

The demographic diversity of the participants is generally recognised as low. Only two women were seen to participate in the study. This limited diversity within the people that are having "the vegetation management conversation" is potentially detrimental to the diversity of policy solutions being developed to improve vegetation management in Queensland.

Environmental quality

Discourse within this study centred on the legal and physical protection of vegetation management. Largely absent from the discussion was the environmental quality of the vegetation protected including the presence of pests, weeds and vegetation thickening which can result in reduced biodiversity and other ecological imbalances. This important discussion is being developed within protected area management (Hockings and Philips 1999; McIntyre and Hobbs 1999). The academic community is realising that conservation is more dynamic than simply protecting areas, but requires active management (McIntyre and Hobbs 1999). Hence this is a large area for potential research as protecting vegetation management through laws, is only the first step in restoring Queensland's ecological health.

Conclusions and Implications for Policy

Environmental policy and laws are employed to solve society's most significant, complex and often desperate environmental problems, however they are rarely evaluated in term of sustainability. Vegetation management in Queensland, Australia, represents over twenty years of environmental policy failure, and despite multiple amendments, land clearing rates continue to fluctuate. The aim of this thesis was to evaluate vegetation management policy in Queensland over the past 20 years in order to recommend areas for improvements to achieve sustainable policy outcomes within vegetation management in Queensland. This thesis asked the follow research questions;

RQ 1. What is an appropriate environmental policy evaluation framework to assess Vegetation Management in Queensland?
RQ 2. How has vegetation management performed against the criteria derived from the policy evaluation framework (developed to address research question one)?
  RQ 2 a. What have been the most successful components of vegetation management in Queensland?
  RQ 2 b. What have been the weakest components of vegetation management in Queensland?
RQ 3. What policy areas can be improved to achieve sustainable outcomes within vegetation management in Queensland?

This thesis developed a sustainability policy framework, based on a review of environmental policy evaluation literature, which formed the basis of a comprehensive evaluation of vegetation management. Twenty in-depth interviews with professional associated with vegetation management were analysis thematically to understand participant's concepts of success, failure and improvements associated the laws. It was found that a complex interdependent relationship exists between effectiveness, legitimacy and persistence of a policy that contributes to over sustainability. Other contributing factors include perceptions of political acceptability, equity, transparency, public participation, information and monitoring, coordination and flexibility.

The effectiveness of the vegetation management policy if measured only in reduction of the spatial extent of land clearing, was successful for a period of time. Land clearing rates declined significantly between 2000 and 2010. Information and monitoring that informed the policy were also considered highly successful. However weakness in the laws including lack of legitimacy, and a failure to engage the public appropriately, saw reduced political acceptability, which in turn affected the persistence of the laws and an overall undermining of effectiveness.

Key to this policy issue it has been revealed is poor public participation and a lack of defined process contributing to poor representation and inclusion of stakeholders and broader public interests. Public participation was not was working in isolation and other factors at play include: a lack of long term goals that included provision for agricultural land use; a lack of national-state policy coordination; poor perception of equity and transparency; and wedge politics a lack of bipartisan agreement weakened policy sustainability. A landscape approach and financial mechanisms developed as a novel themes within this research, viewed as able to provide way forward for vegetation management in Queensland.

There is a call for stronger regulation in vegetation management, however this research has shown that underlying themes of poor legitimacy and political acceptability will continue to undermine effective policy solutions unless addressed explicitly. It is necessary for the development of an adaptive landscape approach to vegetation management, based on the foundations of appropriate public participation, to build and achieve a shared vision. Land clearing in Queensland will only

stabilise once an agreed and shared vision is reached by the key stakeholder in the issue, which until now has been undermined by over politicisation of the issue.

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Appendix:

Appendix 1: Laws controlling vegetation clearing in Queensland (McGrath 2010)

Subject area	Relevant legislation
1. Operational work that is clearing of native vegetation (other than on protected areas under the *Nature Conservation Act* 1992, State forests, forestry reserves, timber reserves or forest entitlement areas).	*Vegetation Management Act* 1999 (Qld) (VMA), *Sustainable Planning Act* 2009 (Qld) (SPA), Ch 6 (IDAS) and s 578, and the *Sustainable Planning Regulation* 2009 (Qld) (SP Regulation), Sch 3, Part 1, Table 4, item 1 and Sch 24. Assessment codes are provided under the VMA.
2. Material change of use or reconfiguration of a lot on lot sizes 2 ha or greater containing remnant vegetation.	VMA, SPA, Ch 6, s 578, and the SP Regulation, Sch 7, Table 2, item 4 and Sch 7, Table 7, item 10. Assessment codes are provided under the VMA.
3. Vegetation protected through general planning controls restricting development of land (e.g. vegetation: on land outside an "urban footprint" in a regional plan; on land designated as "open space" in a planning scheme; on land outside a "building location envelope" imposed as a condition of a development approval).	SPA, Ch 6 and ss 578 and 580, any relevant regional plan, planning scheme, planning scheme policy, code, State planning policy, other planning instrument, or condition on a development approval.
4. Clearing and rehabilitation for mining and petroleum activities and pipelines.	*Environmental Protection Act* 1994 (Qld), Parts 5 and 5A, and ss 319, 426-440 and 493A.
5. Vegetation subject to a local law.	*Local Government Act* 1993 (Qld), ss 25-26 & relevant local law passed by a local government.
6. Protected areas such as National Parks (4% of Queensland) and taking protected wildlife.	*Nature Conservation Act* 1992 (Qld), ss 62, 88 & 89.
7. Forestry practices and forest products on State land.	*Forestry Act* 1959 (Qld), ss 53 and 54.
8. Riparian vegetation (in watercourse)	*Water Act* 2000 (Qld), s 814
9. Clearing causing serious or material environmental harm	*Environmental Protection Act* 1994 (Qld) ss 319, 426-440 and 493A.
10. Marine plants and fish habitat areas.	*Fisheries Act* 1994 (Qld) ss122 and 123 and SPA Ch 6, s 578, and SP Regulation.
11. Serious environmental harm in a marine park.	*Marine Parks Act* 2004 (Qld), s 50.
12. Vegetation declared to be controlled vegetation in an urban development area	*Urban Land Development Authority (Vegetation Management) By-law 2009* created under the *Urban Land Development Authority Act 2007* (Qld).
13. Matter of national environmental significance; Commonwealth entity or area.	*Environment Protection and Biodiversity Conservation Act* 1999 (Cth), ss 12-28.
14. Wet tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act* 1995 (Qld), s 56.
15. Land subject to a coastal protection notice (e.g. not to damage vegetation)	*Coastal Protection and Management Act* 1995 (Qld), s 59.
16. Fire hazard reduction (e.g. burning-off)	*Fire and Rescue Service Act* 1990 (Qld).
17. Soil erosion	*Soil Conservation Act* 1986 (Qld).
18. Weed / declared pest control	*Land Protection (Pest & Stock Route Management) Act* 2002 (Qld).

Appendix 2: The definition of high value regrowth under the Vegetation Management and Other Legislation Amendment Act 2009

20AB What is the regrowth vegetation map

'The regrowth vegetation map is a map certified by the chief executive as the regrowth vegetation map for the

State and showing for the State

(a) areas of regrowth vegetation, identified on the map as high value regrowth vegetation, that

(i) are any of the following
(A) an endangered regional ecosystem;
(B) an of concern regional ecosystem;
(C) a least concern regional ecosystem; and
(ii) have not been cleared since 31 December 1989;
and

(b) particular watercourses in the Burdekin, Mackay Whitsunday and Wet Tropics catchments, identified on the map as regrowth watercourses; and

Editor's note
At the date of assent, a map showing the Burdekin, Mackay Whitsunday and Wet Tropics catchments can be inspected on the department's website at <www.derm.qld.gov.au>.

(c) areas the chief executive decides under section 20AI to show on the map as high value regrowth vegetation.

Note
The chief executive may decide under section 20AI to show an area on the regrowth vegetation map as high value regrowth vegetation even though the vegetation is not regrowth vegetation that satisfies paragraph (a).

Appendix 3: Interview Guide

Interview Script: Evaluating for Sustainable Environmental Policy in Vegetation Management, Queensland.

Question One:

Please describe your role within the development of vegetation management policy in Queensland.

Question Two:

From your perspective, what have been the major success within vegetation management policy in Queensland?

Question Three:

From your perspective, what have been the major failure within vegetation management policy in Queensland?

Question Four:

What would be your main recommendations towards improving vegetation management in Queensland?

Question Five:

I've complied this set of key criteria for sustainable environmental policy from the literature. Do you think this diagram captures areas of strengths and weaknesses present in Queensland vegetation management policy?

a) Can you please identify these areas of strengths/weakness?
b) Can you please identify areas that can be improved?
c) Is there any elements you would consider missing from this diagram?

Question Six:

In reference to this timeline, is there any other aspects of vegetation management you would like to cover?

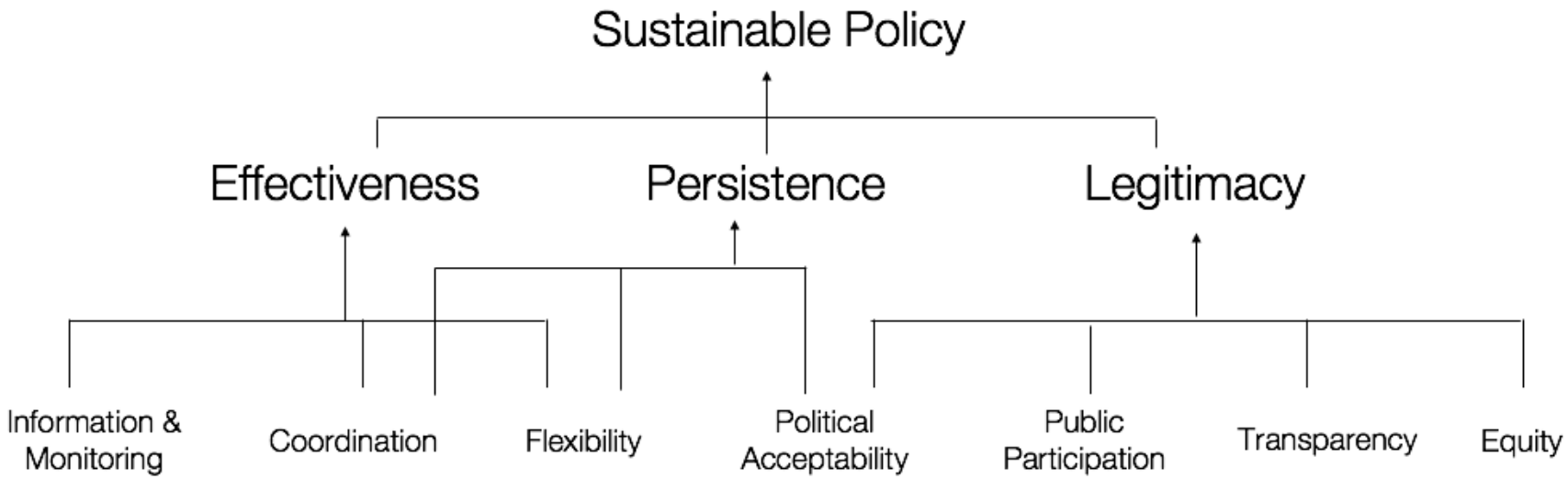
Question Seven:

From your perspective what are the three main themes that emerge as lessons to be learnt from vegetation management in Queensland?

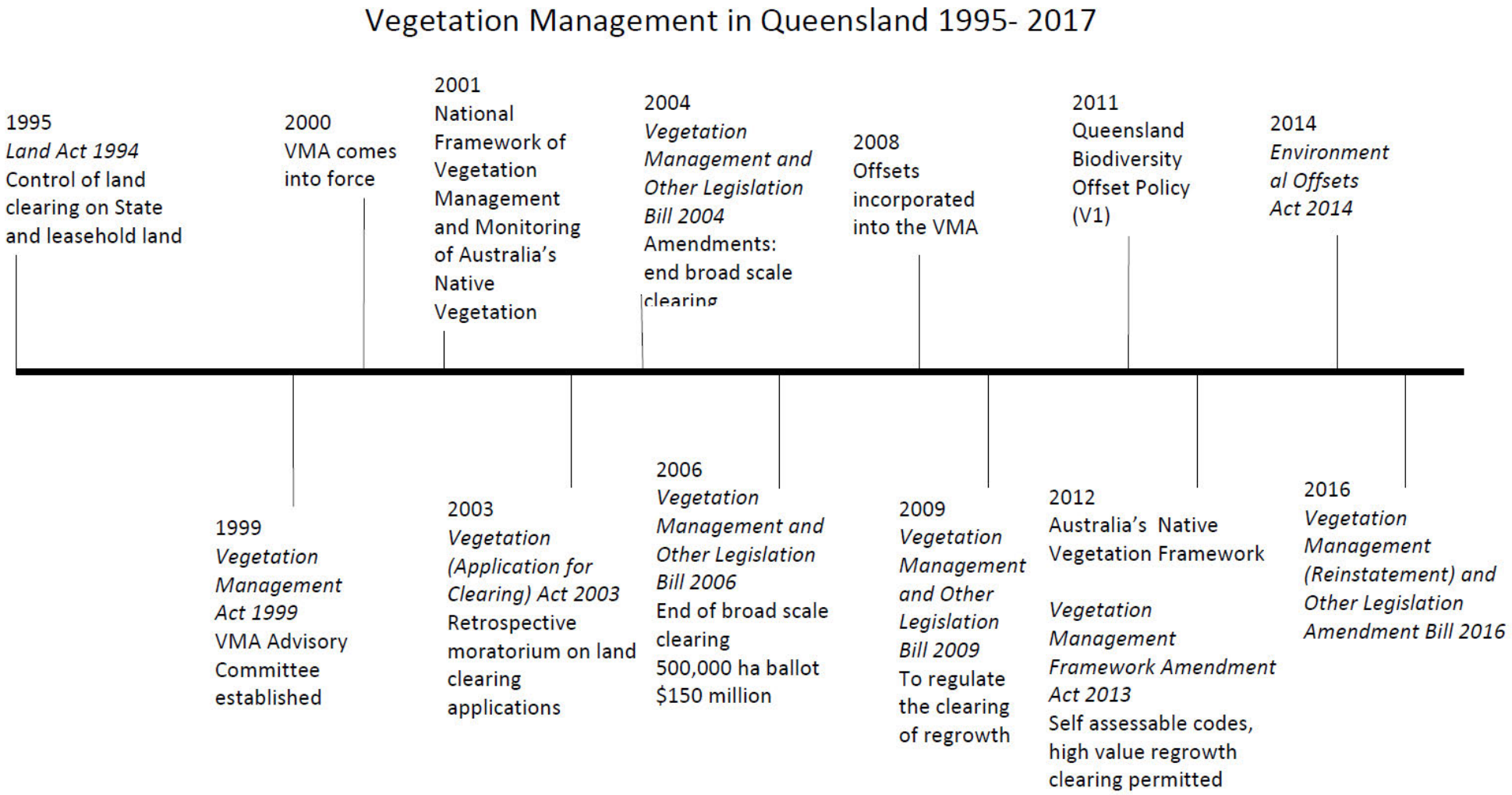
Question Eight:

Can you recommend any other professionals connected to vegetation management that would be willing to partake in this research?

Appendix 4: Interview Aid "Policy Evaluation Framework" (referred to in Question 5 of the interview)



Appendix 5: Interview Aid "Timeline" (referred to in Question 6 of the interview)



Appendix 6: Participants Information

Dear Sir/Madam,

My name is Alexandra Brown, I am currently undertaking research toward my honours thesis within the School of Environmental and Earth Science, University of Queensland. My research aims to understand best practice methods for evaluating environmental policy, using vegetation management in Queensland as a case study, in order to provide recommendations for improvements towards developing a more sustainable policy. I am seeking your assistance, as professional closely associated with the development of vegetation management policy within Queensland.

I would like to invite you participate in a one hour interview exploring the development of vegetation management policy in Queensland. This interview will be semi-structured exploring what have been successful and unsuccessful elements of vegetation management policy, and asking what improvements can be made. This research is investigating *policy process*, and is not concerned with individuals, or their activities. The interview will be recorded and transcribed to ensure accuracy. I will be aiming to conduct interviews between June and July 2017. Should you choose to accept this invitation, I will be in further contact to arrange a date, time and meeting place most convenient for you.

Participating in the interview should involve no physical or mental risks, however you may withdraw from participation in the survey at any time, and choose to provide no response to some or all questions. The information you provide will be protected and stored confidentially. The information you provide will remain confidential at all times, only myself and my academic supervisor will view the results. If you would like more information about the interview please feel free to contact me via email .

If you would like a summary of results from this interview process please indicate so and include your contact details on the participant information sheet. A copy of the final policy analysis developed from this research will be emailed to all participants by September 2017. The final thesis will be published and available by November 2017.

This study adheres to the Guidelines of the ethical review process of The University of Queensland. You are free to discuss your participation in this study with my thesis supervisor, Bradd Witt (Phone: If you wish to speak to an officer of the University involved in the study, you may contact our Ethics Officer: Karen McNamara

Thank-you for your time and support,

Kind Regards,

Alexandra Brown

Title: Understanding Sustainable Policy – Vegetation Management in Queensland

Chief Investigator:

Alexandra Brown
Environmental Management Honours
School of Environment and Earth Science
The University of Queensland
Phone: Email:

Supervisors:

Ethics Supervisor: Karen McNamara

Thesis Supervisors:

Bradd Witt

Karen Hussey

Participants Consent Form:

I hereby consent to take part in the research project titled: *Understanding Sustainable Policy – Vegetation Management in Queensland*

- I have read the information sheet given to me, and I understand what the researcher has explained to me about the study. I agree to be a part of this project.
- I understand how much time I have to spend to be a part of this project, and participate in the interview.
- I understand information I provide will inform the research for a thesis and potentially further studies.
- I understand the information I provide in this interview will not be shared with anyone else, and the researchers will keep everything private to the best of their abilities.
- I understand that I do not have to take part in this study and I can stop at any time, and that I do not have to answer all of the questions
- I am aware that I may ask any further questions about the research study at any time.

If you have any question please feel free to contact the principal investigator of this study, Alexandra or the thesis supervisor.

Participants Name: …….. Signature: ……..

Date: ……..

Witness Name: …….. Signature: ……..

Date: ……..

Appendix 7: Coding book

Theme	Theme Def n t on	Examp es
Leg t macy	Does the pub c accept the po c es, does the po cy meet cr ter a of democrat c accountab ty such as transparency? Refers to fa th w th n the system, when the system s perce ved as eg t mate stakeho ders start to work outs de the system	*"Anna Bligh in an made a grab for this high value regrowth protection and the white areas on the map and I reckon that was a bit of a betrayal of the process … it pushed it too far and so that was a failure and then you got massive backlash … what it did was make it sort of then became yeah unreasonable"* 10 07 17 Sc ence]
		"…and there was incredible ownership over that because they actually you know you had landholders designing their laws and the laws they came up with a lot of cases were tougher than when they have but they had ownership and they'd go out there and those support that" 21/07/17 Reg ona Agr cu ture]
Transparency	To what degree are the outputs, outcomes of the env ronmenta po cy nstrument, as we as the processes used n the mp ementat on observab e for outs ders? How open s the po cy deve opment process to the pub c/stakeho ders? nc udes accountab ty	*"I was directed to take certain aspects out of my report because according to the department they were outside of the brief I was given those aspects were critical of the way the government was implementing it, the lack of permanent staff etc. A few of the recommendations were accepted but not all of them "* 14 06 17 State Conservat on]
		"…so that's hard the other thing around the self assessable codes is I think that's a good way of trying to maybe reduce the bureaucracy but self assessable codes removes or it moves the emphasis of accountability from the department to the individuals" 21 07 17 Reg ona Agr cu ture]
		"It is very transparent you know the maps you can go long say what's mapped and I like that about the policy." 10/07/17 Sc ence]
Equ ty	How are the outcomes and costs of the env ronmenta po cy nstrument d str buted? Do a pa t c pants have equa opportun t es to take part n and nf uence the processes used by the adm n strat on?	*"Equity well they got $150 million and compensation and then when Newman came in they cleared it anyway so I'm actually rather cranky about that actually."* 20/06/17 Conservat on]
		"So the whole country works on a process of approvals and regulation yet we still have these people in the bush who believe they have a god given right to do what they like." 20/06/17 Conservat on]
		"Equality, why is the rural sector being penalised and not the urban development? Why is all the pain being borne in the bush? Just to keep those greenies in the South East corner happy?" 14/06/17 State Conservat on]
		"Some of the demonstrations in support of the laws. The wilderness society staged a demonstration at one of the ALP state conferences" 20/06/17 Conservat on]
Pub c Part c pat on	Po cy management earn ng and mprovement requ res the nc us on and part c pat on of those nvo ved and affected (the degree and k nd of nc us on be ng context dependent) Pub c part c pat on & stakeho der nvo vement	*"In those days we used to have things called regional cabinet meetings, so you took the whole cabinet to say places like Longreach or Charleville, you would end up with huge demonstration from farmers. I always remember you had 2000 people screaming at you…"* 20/06/17 State Conservat on]
		"Well we sort of in the last where was it 2016 they got a a consulting group they pulled us together in term of a stakeholder groups they had industry and conservation around that table to look at typically some of the issues…" 21/07/17 Reg ona Agr cu ture]
		"Unless you get cooperation from the people that are going to deliver, the Landholders. Unless they can thoroughly understand why they're supposed to be doing what they do, then it's not going to work. You've also got to be prepared to listen to why they can't do what you want " 14/06/17 State Conservat on]
Pers stence	Po cy effects are pers stent n such a way that they have a ast ng effect on the state of the env ronment and soc ety and supported and ma nta ned over t me by adequate resources and eg s at on	*"Well that was world war II. That was like a cracker. The idea that the government could go out and buy property, good sheep land, good cattle country as they saw it, and turn it into national park, take the sheep and cattle off it, and manage it for conservation and a bit of tourism. That was a violent introduction to the conservation at a political level"* 20/06/17 Conservat on]
		"If they wanted to hold their lease they and to clear and suddenly the government's saying the opposite. That was a very difficult point and we still live with the legacy of the government having two every different positions close together" 20/06/17 Conservat on]
Po t ca Acceptab ty	t s po t ca y acceptab e for a party to ho d a pos t on n the eyes of the pub c? *"Any policy can only be successful to the extent that it attracts support from politicians and the general*	*"And they went to Newman and said look we would like it in writing that you'll leave the tree clearing laws alone. And he gave that to them in writing".* 20/06/17 Conservat on]
		"The other lesson is that said that you've got to try and gain right up from political solutions and solutions that are politically acceptable to both sides and part of the spectrum otherwise you're just going to have a tennis match and leave the poor are landholders in the middle but they will and cop the ball a fair bit so you need that that vision" 21/07/17 Reg ona Agr cu ture]

	public, and avoids causing opposition from powerful lobby groups."	*"We're not consistent (persistent?) and we don't maintain the effort flexibility I'm not so sure about I don't think it's really an issue If you haven't got a system in place flexibility is not so much the concern or you can look at it in other ways other so much flexibility there's no form to its".* 07/07/17 Sc ence]
F ex b ty	Adapt veness mp es a preparedness to earn and mprovement requ res the nc us on and part c pat on of those nvo ved and affected (the degree and k nd of nc us on be ng context dependent)	*"yeah and there was a recognition that they should be able to harvest mulga for fodder that was it important that was really important for producers because they know it is an important part of to make those mulga properties viable to able to clear fodder in drought."* 10/07/17 Sc ence]
		"Another thing is you know there is PMAVs? Landholder likes the look of a vegetation map for their property might even apply to have adjusted and then it's locked in which means that if there's any errors or whatever it's not relevant to the legislation you can't change the mapping to yeah its locked in forever more." 10/07/17 Sc ence]
Effect veness	To what degree do the ach eved outcomes correspond to the ntended goa s of the po cy nstrument? S m ar y, the effect veness of reach ng other pub c goa s can a so be assessed as ong as these are f rst dent f ed Perhaps nc ude goa sett ng/formu at on	*"I don't know how effective they were at the state level in Queensland but I think at a national level they haven't been nearly as effective as they ought to be yeah sure have another huge factor in Queensland as well just that lack of reporting to the EPBC"* 07/07/17 Sc ence]
		"…they were issuing permits like jelly beans you know yes and she was keeping them honest on leasehold land saying provisions in the land act on sustainable development the protection of the environment you should be issuing permits the clear from fence to fence know what's that not what the act...in the past it was like you got to be kidding they're just words you know yeah it's the productive stuff that we're interested in Labor the early Goss government they were like hang on yeah may we should do this." 10/07/17 Sc ence]
Coord nat on	Po cy coord nat on and ntegrat on across and w th n po cy f e ds, depa tments and eve s of government	*"So we said as the Queensland government well you come up with half the 150 million and we'll come up with the other half. We'll get a biodiversity outcome we'll still have remnant stands of different vegetation, and the species it supports. And you'll still get a climate change return. And we had meetings with Howard, the prime minister at the time we thought he was going to cooperate unfortunately other political forces came into play they refused to pay the 75, and it became a head butting exercise, between Beattie and Howard and to a lesser extent Robert Hill was the federal environment minister at the time."* 20/06/17 Conservat on]
Mon tor ng & nformat on	Po cy adaptat on depends on the c ose mon tor ng of the env ronment and po cy process, w th ntens ve use and w der ownersh p of the nformat on produce A so assoc ated w th the nformat on produced and pub c educat on, and research nform ng/ nf uence po cy outcomes	*"And the other big thing is I don't know whether or not certain governments having to talk to people out there and respect them, and their knowledge. They need to have people out there and they need to be out in there bush as well. Essential "* 14/07/17 State Conservat on]
		"…well the mapping yeah, yeah so the successes have been the clarity of mapping for the policy the thinning the thinning policy the original policy was something I designed as well that required that in order to thin, unlike NSW again." 10/07/17 Sc ence]
Nove themes		
Landscape approach	ncorporates themes around goa sett ng/effect veness, coord nat on, pers stence, f ex b ty, and nformat on and mon tor ng	*"I think behind that we need a much better bioregional planning system to work out to identify first what it is that needs to be concerned. Because I don't think you can just wandered around the bush randomly saying oh there's a there's couple of hectares let's protect that yeah you know you need a strategic approach and that requires not only mapping not only what slats is doing."* 07/07/17 Sc ence]

Appendix 8: Aim of the Vegetation Management Act 1999

(1)The purpose of this Act is to regulate the clearing of vegetation in a way that
(a) conserves remnant vegetation that is
(i) an endangered regional ecosystem; or
(ii) an of concern regional ecosystem; or
(iii) a least concern regional ecosystem; and
(b) conserves vegetation in declared areas; and
(c) ensures the clearing does not cause land degradation; and
(d) prevents the loss of biodiversity; and
(e) maintains ecological processes; and
(f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e); and
(g) reduces greenhouse gas emissions; and
(h) allows for sustainable land use