SUMMARY

- *This Submission reminds the State Government and SDNRAIDC that the proposed VM and Other Legislation Amendment Bill is superimposing new regulations and rules on land that has been previously assigned by the State for the prime purpose of grazing and agriculture. The new legislation is clearly detrimental to the latter objective.*
- *Further it provides substantial evidence that such new imposts will affect the profitability and therefore viability of many livestock enterprises spread throughout an area of grazed woodlands that alone exceeds the total area of all rural land in NSW.*
- *There is no apparent acknowledgement in the Amended Legislation, or preamble information available to me, that the two agencies steering this Bill into State Parliament have any appreciation or genuine plan to address/redress the financial harm it will inflict on many landholders in the grazed woodlands targeted.*
- *Specific examples of past economic analyses are provided and landholders could well consider challenging SDNRAIDC and the Minister to update the examples given herein; and indeed to produce new financial impact analyses based on long term ecological and production science instigated and published by DAF (formerly DPI) researchers[1].*
- *Failing that it is highly recommended that the responsible Minister, SDNRAIDC members and their assisting staff read or revisit and digest/act upon the ABARES publication "Native Vegetation – cost of preservation in Australia" which focusses on the farm sector and is referenced within this document.*
- *The Submission goes on to highlight DAF's 55 years of research targeting Queensland's grazed woodlands, with emphasis given here on studies relevant to mulga and eucalypt ecosystems respectively.*
- *It is pleasing to acknowledge for the first time in a series of Submissions made to past VMA inquiry Committees that "woodland thickening" is finally recognised in the Bill's Codes as a ubiquitous occurrence across the State's grazed woodlands. However the thinning code (distributed 8 March) then goes on to approve very limited thinning options. Based on eucalypt tree-grass production relationship curves, these codes more or less insure that it will not pay to thin thickening woodlands on grazing lands. One may well ask whether the advisers on eucalypt thinning were ignorant of DAF's long term clearing/thinning experiments in these grazed woodlands (a distinct possibility) or more deviously have deliberately set up guidelines 'designed to fail'?*
- *Regional ecosystems also respond to thickening yet the Thinning Code portrays these as "stable" standards to judge your thinning against. It's a classic activist "move the goalposts" argument and needs to be called out for it. Likewise 'remnant' is not defined in the Code and needs to be spelt out for this purpose.*
- *The most detailed, comprehensive and long term monitoring (up to 35+ years) of woody plant growth rates in Queensland grazed woodlands lies within DAF's TRAPS network. Further, the data acquired in this program is clearly relevant to "thickening" and the thinning code constraints built into this legislation. But again the framers of this Bill and their scientific advisers have more or less completely glossed over the*

[1] Why are no DAF staff apparently inputting into this legislation? Are the Minister and Agencies involved alarmed that they might have to evaluate animal production systems in woodlands? For the benefit of SDNRAIDC this Submission highlights relevant DAF research that is seemingly ignored.

huge research investment (and especially its practical outcomes) that the State made when supporting DAF's 50 + years of woodland management research. ***Why? Why?***

- *There is no greater injustice in this Bill than when it and its prior manifestations attack the control of 'Regrowth' – plant communities that have responded to past perfectly legal clearing events. No landholder ever undertakes a woody plant clearing operation without anticipating the need for repeat cycles of clearing to achieve the objective (of improving the productivity of his/her holding). Honest biologists would also accept that in many (most?) situations regrowth plant composition differs, sometimes markedly, from the original woody stand because regrowth favours root suckering species over those establishing solely from seed.*
- *The Wandobah Eucalypt Clearing Strategies experiment shows both the speed of rebound and the fact that there is still a lot of growth (and therefore competition with underlying pasture) left in woody plants after 15 years. Yet by defining high-value regrowth vegetation as only applying to vegetation not cleared in the previous 15 years the Bill puts a major constraint on clearing. Effectively if country can't be re-cleared (regrowth controlled) after 15 years it sets a major limit on the economic returns that can be expected from the initial clearing operation. Anyone with any real knowledge of our variable climate understands that 5-10 years of below average rainfall is common – especially in our wooded pastoral zone. This 15 year regrowth retreatment limitation is thus simply designed to further constrain woodland development on grazing holdings. The foxes are in charge of the henhouse.*
- *Two other reasons for proposed changes to the vegetation management laws are advanced by DNRME; and referred to in this Submission by way of accessible cross-referencing. Please follow them up. In particular I reference a Submission made to the Commonwealth's Climate Change Policies Review in 2017. This highlights the true nature of Australian and Queensland's net carbon dioxide emissions, noting that in the Land Use Change & Forestry sector any releases of carbon dioxide to the atmosphere, as a result of clearing for vegetation management, are more than offset by uptake resulting from the now inarguable (and DNRME acknowledged) occurrence of grazed woodland thickening. This fact, highlighted in research published in the journal, Global Change Biology in 2002 has again been studiously ignored by the framers of this Bill.*
- *Those wanting to add gravitas and self-righteousness to their repeated attacks on rural land managers for trying to manage their grazed woodlands responsibly, sustainably and as a productive (profitable) enterprise, will invariably invoke the need "to safeguard the health of the Great Barrier Reef". DNRME's flyer promoting 'Proposed new vegetation management laws' is right on cue. Yet here is one simple fact repeatedly ignored by zealots and agenda driven activists – the iconic GBR as commonly portrayed in Australia's tourist promotions (e.g. the Swain Reefs and the Bunker group) lies seawards of the major east coast shipping channels. These channels are much deeper than 15 m and therefore are a major barrier to the advective transport of undesirable material. MODIS imagery plainly verifies this via sediment indicators at any time of major rainfall run-off events.*
- *Finally, we may conclude that these proposed vegetation management laws are completely unbalanced in that they seek to place major constraints on the ability of rural landowners to manage their holdings in a sustainable, responsible and profitable manner. There is no evidence that the Government or its advisers have given any recognition to the economic impact of their Proposals. The message that they convey is that as far as financial viability is concerned they simply do not care. This cavalier attitude to the management of land assigned by Government in the first place <u>for the prime purpose of grazing and agriculture,</u> and on which so many good Queenslanders depend for their life and livelihood, is just beyond belief.*

SUMMARY

- *This Submission reminds the State Government and SDNRAIDC that the proposed VM and Other Legislation Amendment Bill is superimposing new regulations and rules on land that has been previously assigned by the State for the prime purpose of grazing and agriculture. The new legislation is clearly detrimental to the latter objective.*
- *Further it provides substantial evidence that such new imposts will affect the profitability and therefore viability of many livestock enterprises spread throughout an area of grazed woodlands that alone exceeds the total area of all rural land in NSW.*
- *There is no apparent acknowledgement in the Amended Legislation, or preamble information available to me, that the two agencies steering this Bill into State Parliament have any appreciation or genuine plan to address/redress the financial harm it will inflict on many landholders in the grazed woodlands targeted.*
- *Specific examples of past economic analyses are provided and landholders could well consider challenging SDNRAIDC and the Minister to update the examples given herein; and indeed to produce new financial impact analyses based on long term ecological and production science instigated and published by DAF (formerly DPI) researchers[1].*
- *Failing that it is highly recommended that the responsible Minister, SDNRAIDC members and their assisting staff read or revisit and digest/act upon the ABARES publication "Native Vegetation – cost of preservation in Australia" which focusses on the farm sector and is referenced within this document.*
- *The Submission goes on to highlight DAF's 55 years of research targeting Queensland's grazed woodlands, with emphasis given here on studies relevant to mulga and eucalypt ecosystems respectively.*
- *It is pleasing to acknowledge for the first time in a series of Submissions made to past VMA inquiry Committees that "woodland thickening" is finally recognised in the Bill's Codes as a ubiquitous occurrence across the State's grazed woodlands. However the thinning code (distributed 8 March) then goes on to approve very limited thinning options. Based on eucalypt tree-grass production relationship curves, these codes more or less insure that it will not pay to thin thickening woodlands on grazing lands. One may well ask whether the advisers on eucalypt thinning were ignorant of DAF's long term clearing/thinning experiments in these grazed woodlands (a distinct possibility) or more deviously have deliberately set up guidelines 'designed to fail'?*
- *Regional ecosystems also respond to thickening yet the Thinning Code portrays these as "stable" standards to judge your thinning against. It's a classic activist "move the goalposts" argument and needs to be called out for it. Likewise 'remnant' is not defined in the Code and needs to be spelt out for this purpose.*
- *The most detailed, comprehensive and long term monitoring (up to 35+ years) of woody plant growth rates in Queensland grazed woodlands lies within DAF's TRAPS network. Further, the data acquired in this program is clearly relevant to "thickening" and the thinning code constraints built into this legislation. But again the framers of this Bill and their scientific advisers have more or less completely glossed over the huge research investment (and especially its practical outcomes) that the State made when supporting DAF's 50 + years of woodland management research.* ***Why? Why?***

[1] Why are no DAF staff apparently inputting into this legislation? Are the Minister and Agencies involved alarmed that they might have to evaluate animal production systems in woodlands? For the benefit of SDNRAIDC this Submission highlights relevant DAF research that is seemingly ignored.

- *There is no greater injustice in this Bill than when it and its prior manifestations attack the control of 'Regrowth' – plant communities that have responded to past perfectly legal clearing events. No landholder ever undertakes a woody plant clearing operation without anticipating the need for repeat cycles of clearing to achieve the objective (of improving the productivity of his/her holding). Honest biologists would also accept that in many (most?) situations regrowth plant composition differs, sometimes markedly, from the original woody stand because regrowth favours root suckering species over those establishing solely from seed.*
- *The Wandobah Eucalypt Clearing Strategies experiment shows both the speed of rebound and the fact that there is still a lot of growth (and therefore competition with underlying pasture) left in woody plants after 15 years. Yet by defining high-value regrowth vegetation as only applying to vegetation not cleared in the previous 15 years the Bill puts a major constraint on clearing. Effectively if country can't be re-cleared (regrowth controlled) after 15 years it sets a major limit on the economic returns that can be expected from the initial clearing operation. Anyone with any real knowledge of our variable climate understands that 5-10 years of below average rainfall is common – especially in our wooded pastoral zone. This 15 year regrowth retreatment limitation is thus simply designed to further constrain woodland development on grazing holdings. The foxes are in charge of the henhouse.*
- *Two other reasons for proposed changes to the vegetation management laws are advanced by DNRME; and referred to in this Submission by way of accessible cross-referencing. Please follow them up. In particular I reference a Submission made to the Commonwealth's Climate Change Policies Review in 2017. This highlights the true nature of Australian and Queensland's net carbon dioxide emissions, noting that in the Land Use Change & Forestry sector any releases of carbon dioxide to the atmosphere, as a result of clearing for vegetation management, are more than offset by uptake resulting from the now inarguable (and DNRME acknowledged) occurrence of grazed woodland thickening. This fact, highlighted in research published in the journal, Global Change Biology in 2002 has again been studiously ignored by the framers of this Bill.*
- *Those wanting to add gravitas and self-righteousness to their repeated attacks on rural land managers for trying to manage their grazed woodlands responsibly, sustainably and as a productive (profitable) enterprise, will invariably invoke the need "to safeguard the health of the Great Barrier Reef". DNRME's flyer promoting 'Proposed new vegetation management laws' is right on cue. Yet here is one simple fact repeatedly ignored by zealots and agenda driven activists – the iconic GBR as commonly portrayed in Australia's tourist promotions (e.g. the Swain Reefs and the Bunker group) lies seawards of the major east coast shipping channels. These channels are much deeper than 15 m and therefore are a major barrier to the advective transport of undesirable material. MODIS imagery plainly verifies this via sediment indicators at any time of major rainfall run-off events.*
- *Finally, we may conclude that these proposed vegetation management laws are completely unbalanced in that they seek to place major constraints on the ability of rural landowners to manage their holdings in a sustainable, responsible and profitable manner. There is no evidence that the Government or its advisers have given any recognition to the economic impact of their Proposals. The message that they convey is that as far as financial viability is concerned they simply do not care. This cavalier attitude to the management of land assigned by Government in the first place <u>for the prime purpose of grazing and agriculture.</u> and on which so many good Queenslanders depend for their life and livelihood, is just beyond belief.*

The Economics of Grazed Woodland Management for Agricultural Production in Queensland

- The major objection to the VM Act is that it superimposes regulations and codes on rural land that has previously been assigned by Government for the prime purpose of grazing and agriculture. Further, the framers of the regulations and codes (along with their scientific advisers) appear to effectively ignore the impact that their regulations will have on the ability of the owner/lessee to maintain their rural land as a viable agricultural enterprise.
- That "the only sustainable 'agriculture' is profitable agriculture" is a truism that has withstood the test of time (Ainesworth 1989). Yet amongst the stated reasons underpinning the VM Act is the aim to regulate the clearing of vegetation, which at the same time "*allows for sustainable land use*". Just a modicum of common sense tells us that the goal of sustainable land use is not possible in a self-contained and independent farm business, unless the business is profitable.
- In my submission to the Queensland Parliament's AEC Inquiry on the Vegetation Management (Reinstatement) Amendment Bill 2016 (http://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf) I referred to a 2003 study which examined "The Impact of Tree Thickening in Grazed Remnant Woodlands".
- In 2002 selected Shires (as defined at that time) containing remnant woodlands grazed by domestic livestock, occupied 86 M ha (68 M Ha wooded) and supported 5.3 M beef equivalents in Queensland (Table 1).
- There is little argument today that trees and shrubs in 'intact' grazed woodlands are proliferating ("thickening") throughout much of this zone, leading to a progressive decline in livestock carrying capacity, in the absence of ameliorative measures. [See the above referenced AEC Inquiry 2016 Submission #214 for relevant data and citations, and view QImagery and Queensland Globe photo "pairs" for evidence of woodland thickening across the State and the years].
- Apart from fodder trees in the mulga zone and areas elsewhere with access to saleable timber, the vast majority of Queensland's grazed woodland resource supports trees and shrubs that compete strongly with pasture production; and have leaves that are unpalatable to domestic livestock and wood with no timber value.
- Given this reality, I am unaware of any economic study that suggests other than that thickening woodlands (including regrowth from past clearing) have a deleterious financial impact on all landholders restrained by legislation from responsible management of their grazed woodland resources. Resources used for the prime purpose of grazing and agriculture as set out, for example, in most GHPL documentation.
- Estimates of loss from woodland thickening (in the 2003 study referred to above) were based on a (conservatively chosen) minimum 50 m ha (>20% canopy cover) of grazed remnant ('intact') woodlands. This area supported 2.1 m beef equivalents grazing in the woodlands *per se*, worth approximately $600 m per annum to Queensland's $3,000 m per annum grazing industry (in 2002 dollar terms).

Table 1: The number of Beef Equivalents running in wooded areas in Shires affected by woodland thickening (based on latest data in 2003).

Shire	Beef Equivalents in the Shire	Number of Beef Equivalents In Shire Woodlands
Aramac	71599	22400
Balonne	153455	30776
Banana	371476	45759
Bauhinia	365507	95241
Belyando	299058	83674
Booringa	146757	63346
Bowen	282798	168817
Broadsound	211559	52147
Bungil	194189	31228
Calliope	72034	29444
Carpentaria	289744	75321
Chinchilla	64712	24386
Cook	74814	70435
Croydon	52830	48046
Dalyrmple	544961	396656
Duaringa	03539	84220
Emerald	157985	48316
Etheridge	193044	155765
Flinders	247206	62902
Herberton	7664	6701
Jericho	245989	100146
Livingstone	147503	69015
Mareeba	104725	84432
Murweh	167273	71143
Nebo	160898	74316
Paroo	62323	32868
Peak Downs	90244	30371
Quilpie	86570	23841
Taroom	220016	47657
Total	**5390472**	**2129369**

- Based on these data a range of scenarios were analysed and sensitivity analyses undertaken to gauge the economic impact of tree thickening in the grazed remnant woodlands within Queensland.
- Calculated net present value (NPV) of lost grazing production and reduced property values (50 year time frame) were $293 m to affected landholders and $879 m to the community at large. The range, assuming low and high site potentials, was $216 m ($649 m) to $324 m ($971 m) for landholder and community (bracketed) costs respectively. Note again that these figures are based on 2002 interest rates and dollar values ($1 in 2002 ≡ $1.45 in 2017). Lower interest rates prevailing since that

time would also raise the estimated NPV lost by a considerable amount, if recalculated today.

- The trend of increasing tree and shrub thickening in both 'intact' and regrowth communities is ongoing, with resultant declines in stock carrying capacity and productivity. Despite this reality the State has seemingly abandoned the concept of "living areas" and the need to responsibly manage woodland vegetation on designated grazing/farming holdings to improve primary productivity and farm viability. The simple conclusion is that under the proposed VM and Other Legislation Amendment Bill 2018 most rural land managers will not have the option to maintain large tracts of their holding, even in its existing condition – either by managing tree thickening or controlling large areas of regrowth in paddocks. These paddocks are regrowing from past legal clearing to enhance pasture growth and animal production.
- Given the vast number and extent of rural holdings supporting grazed woodlands in Queensland, it is assumed that any responsible government would have examined the overarching economic impact, prior to imposing another layer of regulations and vegetation management codes on all affected rural leasehold and freehold tenures. One looks forward to such information being presented to Parliament when this new legislation is debated?
- In the interim, published results have shown that reducing tree cover by half increased cash flow by $90,000 per year for a self-replacing cattle property of 20,000 ha near Charters Towers (Stafford-Smith *et al.* 1999). At Clermont a 20% tree retention rate, on an 18,000 ha beef holding, increases annual profit by $40,000 compared with 80% retention (Bartholomew and Wilson 1995). Clearing box woodlands near Dingo, with 20 percent retention in retained blocks and strips (Burrows 2002) gave NPVs of $40-64 per ha greater than for uncleared controls. In north-west NSW sheep country, the gross margin for land cleared of unwanted woody plants is double that for land with high tree-shrub densities (Scanlan *et al.* 1992). See Burrows (2004) for further discussion and keep in mind that all these returns need to be converted to present day $ values to highlight current impacts.
- ABARES' Davidson *et al.* (2005) provide a broad overview of the costs of preserving native (woody) vegetation on Australia's rural land holdings. **They conclude that the current regulatory approach to preserving remnant native vegetation is imposing a large cost on the farm sector** (My emphasis). They note that this large cost has not been fully considered in the formulation of environmental policies. [This has been very apparent in the 'selective' pronouncements State Government Ministers have made with regard to the present legislation before Parliament]. They also suggest that the cost of meeting native vegetation regulations is likely to be an important factor in determining the future competitiveness of Australia's broad-acre agricultural industries on world markets. The authors conclude that a more flexible approach to native vegetation conservation may achieve better environmental outcomes at a lower cost to the farm sector.

Studies of Grazed Woodland Production Systems by DAF in Queensland:

- The Queensland Department of Agriculture and Fisheries (formerly Agriculture & Stock, then DPI) commenced detailed research into the management of the State's grazed woodland vegetation **in 1963**. Studies were initially focussed on mulga and brigalow communities – the former because of its perceived fragility and the latter for

its enormous agricultural potential[2]. In due course these studies extended into gidgee land systems and from 1980 into the far more extensive eucalypt woodlands in the central, northern and eastern half of the State. The focus of this research, strongly supported by meat and wool levies collected from rural landholders, covered the full gamut of plant ecology and woodland production systems.

Mulga Lands Studies:

- Long term and permanently positioned vegetation transects to follow woody plant population changes were initially set up in the mulga lands in 1965 (Burrows and Beale 1969). All woody plants were recorded within 20 mile belt transects sited on Humeburn (west of Wyandra) and Nerrigundah (west of Eromanga) stations respectively. Both these sites are arid, with highly variable rainfall. Photo series on the next two pages display some changes recorded on both sites:

[2] It is common for activists to ignore the simple fact that the various brigalow development schemes opened up > 1 M ha of prime hard (bread making) wheat farming land and also support for human consumption an extra 1+ M head of finished cattle each year. The combined positive impact of this on the State's economy has been immense in the years since the scheme commenced.

1965

1974

1980

1984

2006

Notes: Very stony low open mulga shrub-land west of Eromanga. Seasonal differences are obvious. Mulga has thickened perceptively in the background

1965

1969

1974

1979

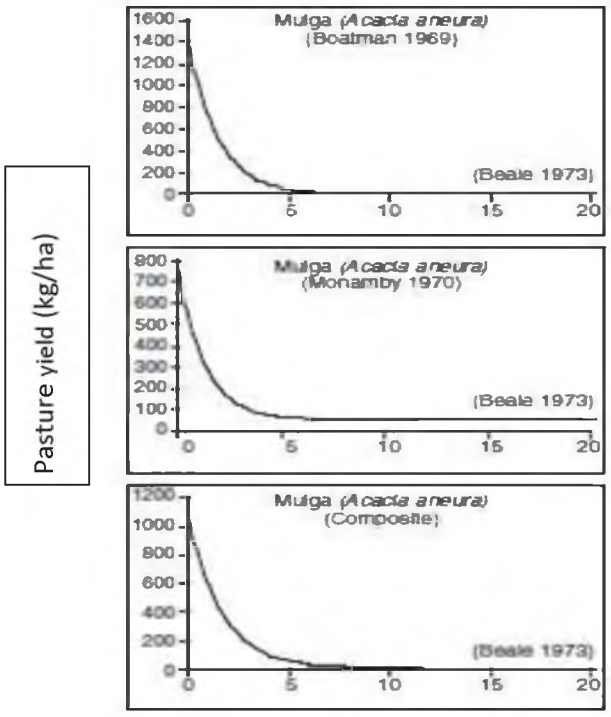
1984

2006

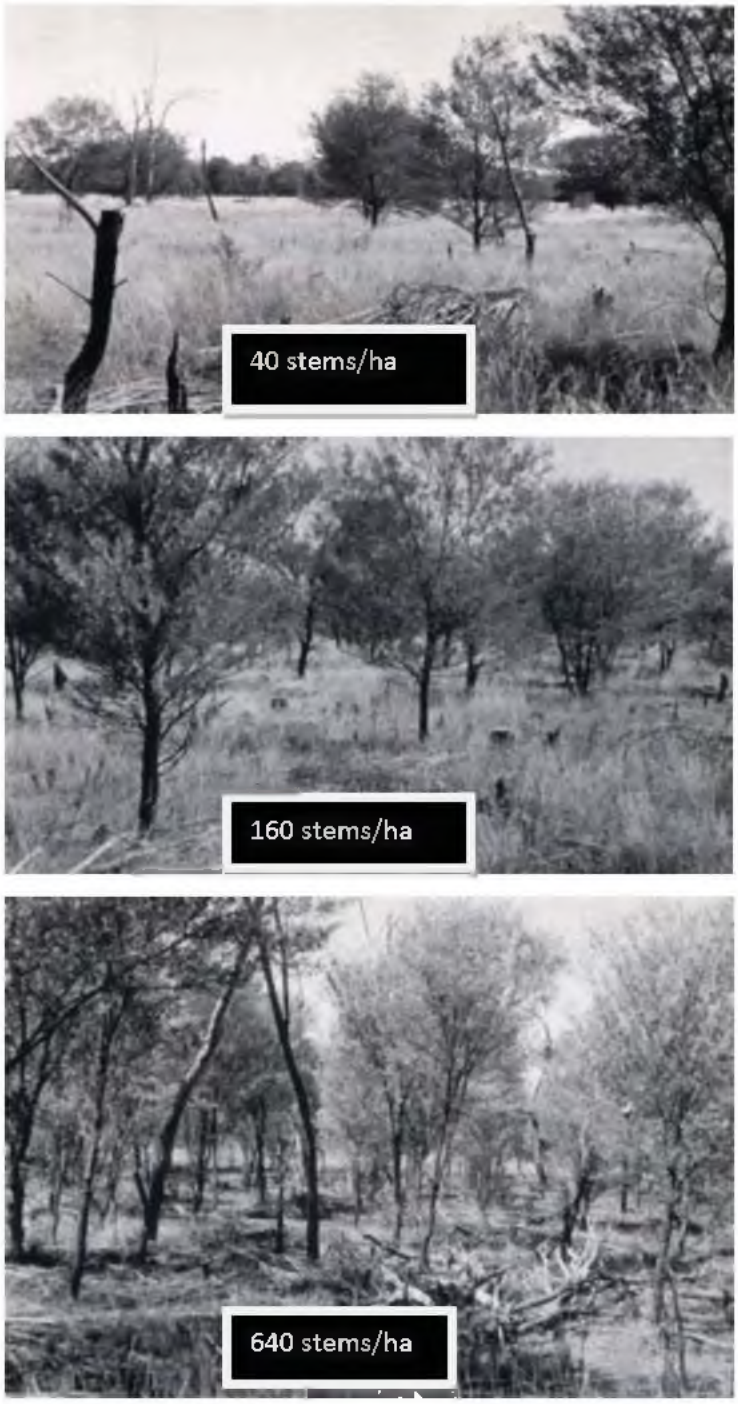
Notes: Box-mulga country near the Paroo River. Seasonal differences are again obvious. Hopbushes invaded this site after the 1965 drought. Mulga is regenerating and growing rapidly here. Compare the tree on the left side, mid-background in 1984 with its form in 2006.

- Most of the dense thickening in mulga lands has occurred east of the Warrego River. See illustrations and citations in Burrows 2016 - http://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf .

- This fact was very apparent in the early 1960's, leading DPI researchers to establish **clearing trials** at Boatman and Monamby stations in 1964/65. A summary of the early results of these trials was published by Beale (1973). The trials imposed 3 thinning treatments (40, 160 and 640 trees per ha) to mulga woodlands supporting 5570 and 1946 mulga stems per ha respectively before treatments were imposed. The effects that increasing stem density has in reducing pasture production is very obvious in the thinning response diagrams detailed below. Photo comparisons of treatment plots at Boatman are also very telling (see following page). It is apparent that even thinning to very low mulga stem densities has a marked depressant effect on potential pasture production. [This finding is analogously repeated for a Eucalypt Clearing Strategies trial established at Dingo in 1987 – see later in this submission].

- 

Tree – pasture relationships in mulga woodland



Pasture response to mulga thinning at Boatman Station. The pre-thinning stand density was 5570 stems per ha.

- These points are further illustrated by aerial imagery of the Boatman trial site as captured in 1980 and 2018 (?) in the most recent Queensland Globe scenes (next page).

1980 2018

Aerial imagery of the Boatman mulga thinning trial (see Beale 1973). There were 3 thinning treatments (40, 160 & 640 trees per ha) in 0.4ha plots, with 7 replications aligned from north to south. The tree densities retained are clearly discernible in the 1980 B&W aerial, while it is readily apparent that mulga foliage cover in the coloured 2018 overview for the 160 stems per ha treatment now matches that evident in the 640 stems per ha treatments. The implications of these observation are clear, when seen against the mulga stem basal area vs. pasture yield curves and ground photo points provided on the previous pages.

- There are a plethora of other studies relevant to the management of mulga lands as pastoral systems (e.g. nutrient cycling and hydrology in mulga vegetation) that have been carried out over the past 55 years by DAF (and its predecessor agencies within the Queensland government). Along with the research detailed here these studies have seemingly been glossed over or ignored in the scientific advice provided to government prior to formulation of the current legislation. If the thrust of that advice was directed at National Park management (the current availability of historical photo 'pairs' is highly informative here – time for SLATS to have a good look at our 'pristine' NPs and their stable 'remnants'?) one could understand the narrow focus provided. But the reader gets the distinct impression that the advice and its target legislation are framed on the basis that the prime purpose of agricultural land use is **conservation** - rather than grazing and agriculture!
- In fact there clearly needs to be compromise, especially where conflicting land use objectives are involved. This is more so when superimposing a new set of rules that impact the life and livelihood of persons who made economic decisions based on long standing statutes. Foremost amongst these were the concept of "living areas" and the need (even a Government enforced compulsory condition) to open up country by clearing woody species to ensure grazing and agriculture remained both profitable and sustainable.

Grazed Eucalypt Woodland studies:

- It is fortunate that in mulga land systems thinning of dense mulga stands can still leave useful fodder reserves, by way of edible mulga phyllodes ('leaves'). This is so even if the tree-grass yield response curves show little pasture can be produced under still intense 'thinned' mulga competition.
- Mulga ecosystems are a very important component of Queensland's grazed woodland communities, but they are confined to the south-west of the State and have neither the huge range nor extent of the far more widespread grazed eucalypt woodlands.
- Most of the early studies in eucalypt woodlands centred on the management of native "woody weeds" or INS ('invasive native species') as they are more commonly referred to in NSW. This focus (extending back to the 1950's) was in simple recognition of the severe impact of tree and shrub regrowth/encroachment in suppressing pasture production on these grazing lands.
- By the early 1980's DAF researchers concluded that a far more informed approach was required to better understand the ecology and production characteristics of these systems. So a network of >100 vegetation transects was established throughout the eucalypt woodlands to study their population dynamics under grazing by domestic livestock (Again see: http://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf). Repeated recording of these transects over the years provided the first concrete evidence that the so called remnant ('intact') grazed eucalypt systems were not 'stable' but thickening up (Increasing in size, stem density/basal area and/or canopy cover). Of course this was common knowledge to landholders who had long been seeking the best way to manage this on-going problem, because of its economic impact on their grazing enterprise.

1982 (above) cf. 2004 (below)

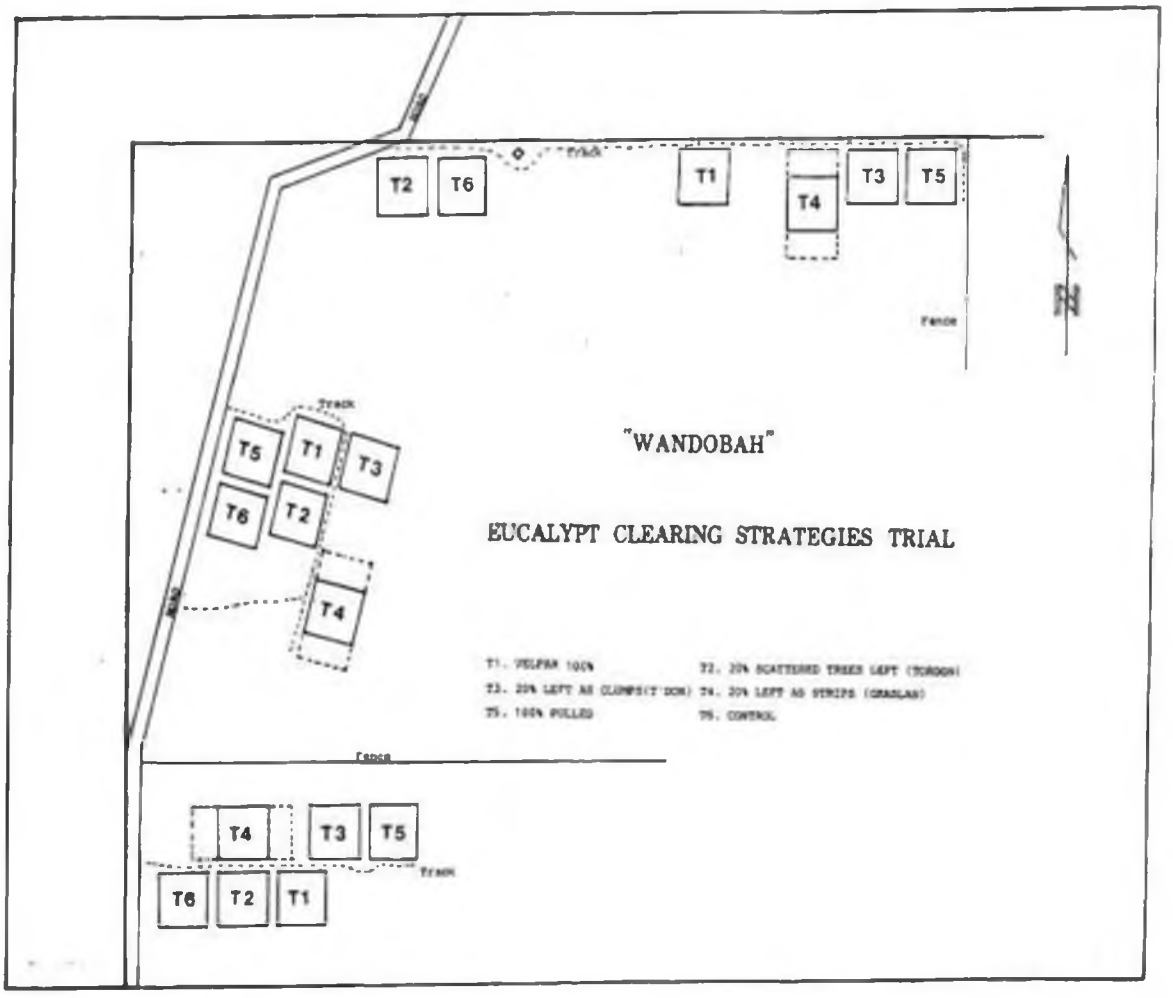
1984

1999

- In 1987, twelve years before the VMA 1999 was first introduced into the Queensland Parliament and 31 years before the current Bill was reincarnated, DAF staff recognised the desirability of encouraging rural landholders to adopt a more considered approach to the management of their grazed eucalypt woodlands.
- Accordingly, and with the support of meat industry research funds (AMLRDC) they produced an extension video which was widely distributed within the grazing industry, and copies were made available on loan from most DAF regional offices. This video runs for 10 minutes and because of its file size has been uploaded to YouTube so it can be perused by readers of this digital submission. See: https://www.youtube.com/watch?v=AmGWTfS3UN0&feature=youtu.be . Please observe that this video entitled "Clearing Eucalypt Country 1987" is plainly annotated by the additional title descriptor "Note: Filmed before the VMA 1999".
- The purpose of alerting members of parliament's SDNRAIDC to this video is simply to reinforce the message that a Government agency, with research and extension staff stationed throughout the regions, long had a program of educating rural landholders about balanced and responsible use of their woodland resources. The clear difference between that program and the current Government approach is simply that the former acknowledges that the prime use of land assigned for agricultural purposes is for grazing and agriculture. By way of contrast the Government in its wisdom appears to have decided unilaterally that conservation should take precedence over agricultural production on land already assigned for the latter purpose. Time to recall, rewrite and renegotiate its

leases? Or by restricting responsible grazing land use is this a de facto form of resumption, without the necessity to pay compensation?

- To reinforce its message on the management of eucalypt woodlands DAF also established a large scale 'Clearing Strategies Trial' at Wandobah, Dingo in 1987. Layout and treatments are set out below along with aerial imagery of Rep 2. Each plot covered 9 ha with inner datum areas of 4 ha. Replicates were sited over a total area of 200 ha to obtain 'uniform' plots for treatment. Stem growth rate recordings in response to trial treatment effects were made over 18 years, concluding in 2005.

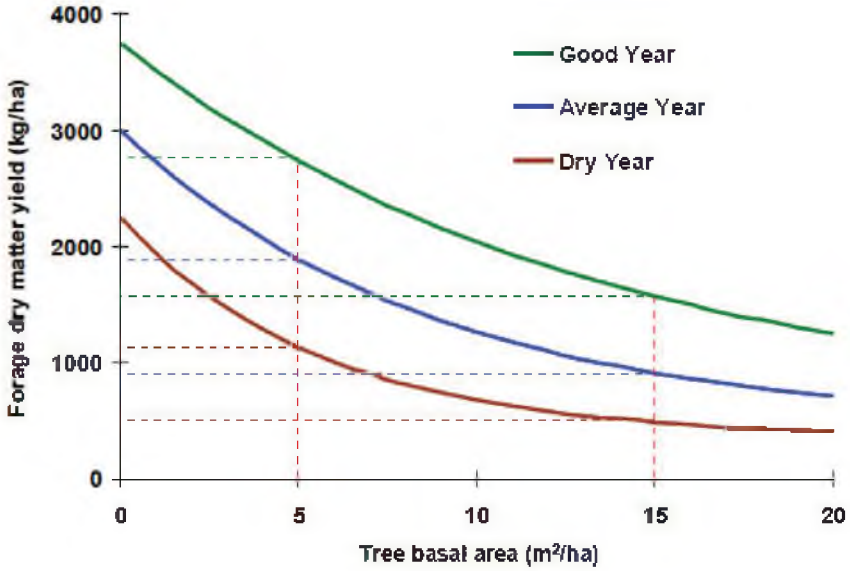


2018 1989

Aerial imagery (1989) on right compared with latest Queensland Globe 2018 imagery on left for Rep 2. Treatment boundaries marked are approximate. The treatment effects apparent in 1989 are almost completely negated by woody plant regrowth/thickening in 2018. See Back *et al*. (2009 a, b) for more details

<u>Thinning and regrowth control in grazed Eucalypt woodlands:</u>

- An obvious intention of the new thinning regulations/codes inserted or consequent to the present Bill is to drastically constrain the conditions under which landholders can manage country that was previously legally cleared.

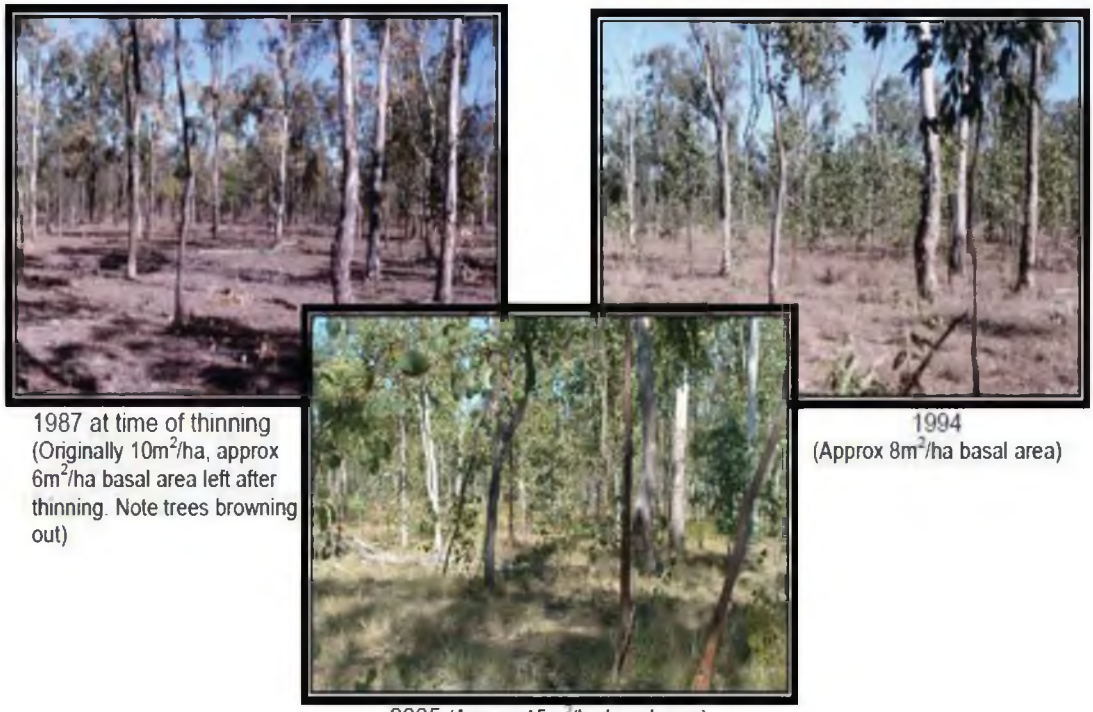


The relationship between tree basal area and potential pasture yield for a poplar box woodland at Dingo, Central Queensland. <u>Note:</u> Basal area is a far better indicator of competitive effects than stem density –used by DNRME -because basal area integrates both tree size and number effects.

DAF staff also found that stem basal area photo standards (checked against a Forester's dendrometer readings) were far easier for landholders to use and judge in the field. This begs the question – why is the 'Accepted development vegetation clearing code' published by DNRME on 8 March 2018 based on the much more impractical to measure, stem density metric? Perish the thought that the Code writers were trying to redirect landholders from quickly discovering (via widely distributed tree basal area – grass relationship curves (e.g. see previous page)) just how much pasture production they were forgoing through imposed clearing restraints. The GRASSMAN model (also requiring basal area input) is another important educational tool for such calculations. By being directed to focus on estimates of stem density, rather than basal area, the connection between a meaningful indicator of tree competition and underlying pasture production is lost. Perhaps the instigators of the Government's Code requirements just know how to count stems and not how to 'measure' them?.

Two woodlands in central Queensland. The one on the left has an approximate basal area of $5m^2/ha$ and the other $15m^2/ha$. Landholders learn to use such easily produced photo standards quickly in the field.

- The need to be able to manage thinning responses in eucalypt country is very evident in the following examples (next page) from sampling sites within DAF's Wandobah experiment:



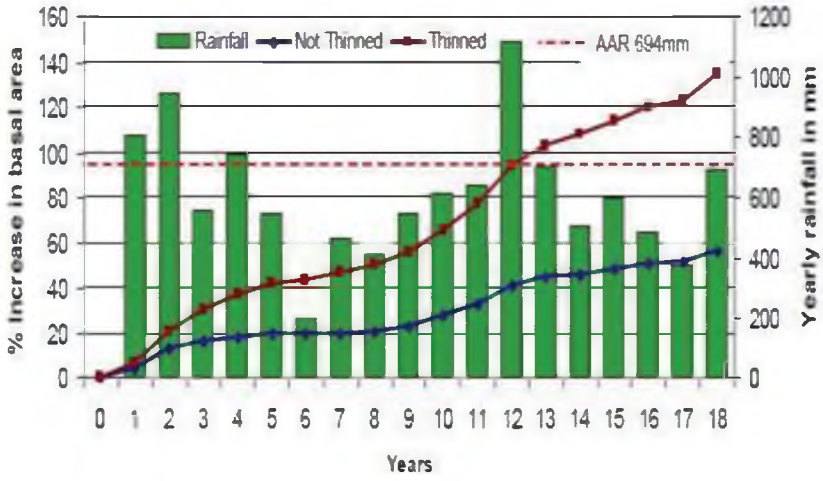
1987 at time of thinning (Originally 10m^2/ha, approx 6m^2/ha basal area left after thinning. Note trees browning out)

1994 (Approx 8m^2/ha basal area)

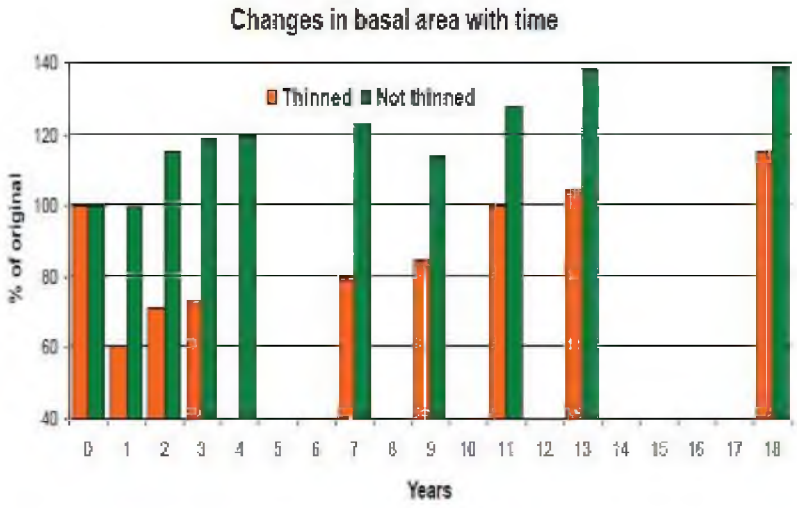
2005 (Approx 15m^2/ha basal area)

Note that 7 years after initial thinning there was significant recovery in tree basal area (a measure of tree competiveness with pasture) and 18 years after initial thinning was applied the thinned plot now had a tree basal area that was 50% greater than that existing before the activity took place!

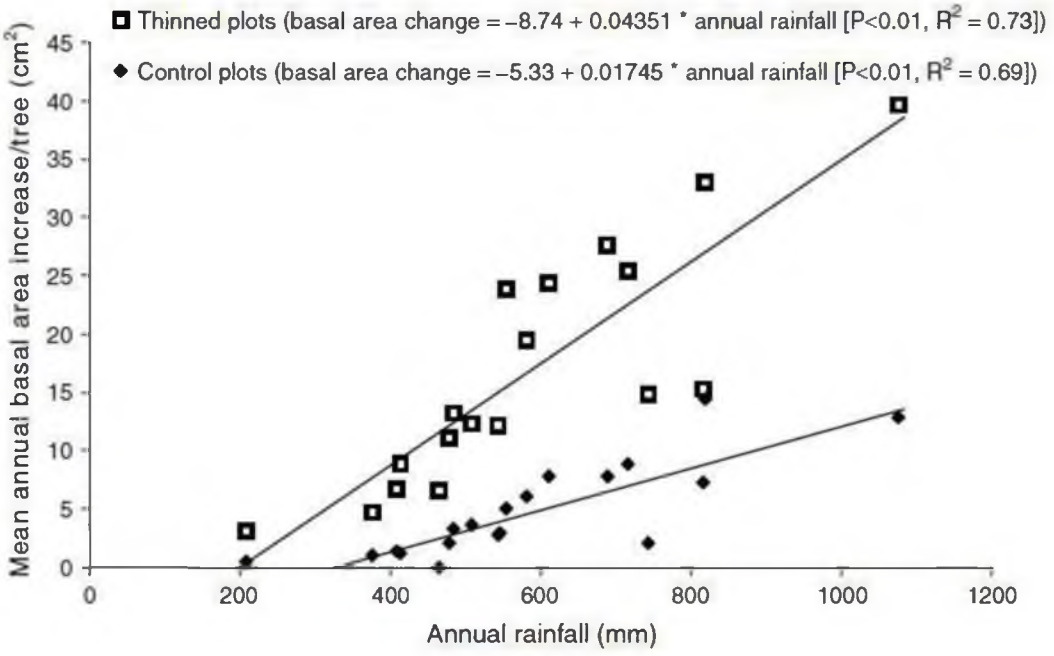
- These observations are borne out in the following diagrams:



The basal area increase of poplar box trees in thinned and 'intact' (not thinned) stands over time. Rainfall influences are also apparent. [In extended dry periods it was not unusual to have individual tree circumferences shrink, although overall trends remain for increasing tree basal areas across the years.]



Stand basal area (all trees and shrubs) over time as a percentage of the original basal area prior to thinning.



Relationship between annual rainfall and mean annual increase in tree basal area for the Wandobah Eucalypt Clearing Strategies trial Control (un-thinned) treatment and thinned stands of poplar box trees.

- The rapid response of thinned out stands and regrowth trees after "clearing" treatments have been applied highlights the need for landholders to be able to apply repeat treatments to previously disturbed areas or paddocks – as for poplar box one and five years after initial clearing below: Of course by restricting the control of so called 'high-value regrowth' vegetation to that <15 years old the proposed new laws are presupposing that the landholder has the time, finances, favourable markets and weather conditions to treat such regrowth in this time-frame. But what if the weather turns nasty out there (5-10 year 'droughts' are not uncommon in many areas, especially those west of the Divide), where are your funds to pay contractors if markets turn unfavourable (e.g. wool in 2000. or you had to send kids away to college & so on). The 15 year time limit is too short in which to manage regrowth from past legal clearing – fix it!

Lower carbon dioxide emissions and better safeguard the health of the GBR

- These two Government mantras make their compulsory appearance in the Explanatory Flier outlining the proposed new vegetation management laws. I discussed them in my Submission to the previous round of this debate in 2016. See pp. 31-32 and 36-37 in the following link: http://www.parliament.qld.gov.au/documents/committees/AEC/2016/rpt19-11-VegetationMangt/submissions/214.pdf . Since access is but a click away to the digital reader of this submission, I urge you to revisit that document.
- Those wanting a more comprehensive overview of net carbon dioxide emissions in Australia and Queensland might appreciate perusing the Submission I made to the Federal Government's Climate Change Policies Review Discussion Paper in 2017. See: http://www.environment.gov.au/submissions/climate-change/review-climate-change-policies-2017/bill-burrows.docx . The import of the latter article is that it includes the impact of carbon accruing in thickening woodlands in its evaluation of net emissions. Governments (both State and Federal) notoriously ignore the sinks in thickening woodlands when only highlighting carbon dioxide returns to the atmosphere as a result of tree clearing in our grazed woodlands. Nice propaganda but very poor science, so it is disappointing to see this charade continue in the explanatory flier to the new legislation.

Conclusion

This Submission focusses on the fact that the Queensland Government is proposing strict new constraints on the ability of landholders to optimise the management of grazed woodlands for predominantly livestock grazing, along with some agriculture (farming) use. Widespread tenure documentation confirms that the prime purpose of these landholdings is for grazing and agriculture. Based on 2003 NRM figures a selected 29 LG Areas (excluding the S.E. corner) contained approximately 68 M ha of grazed woodland. The LGAs supported about 5.4 M head of beef equivalents of which around 2.1 M (or 39.5%) were grazing inside the woodland areas. I suggest that more up to date data would only change these relativities in a minor way, as any benefits in carrying capacity from subsequent clearing operations would be largely offset by carrying capacity reductions resulting from vegetation thickening and aging regrowth.

Given the obvious myopic intent of the proposed new VM laws, it is clear that the Government has little concern for the livelihood and welfare of landowners in the State's grazed woodlands, especially those not meeting previous living area standards. This is exemplified by its failure to present (to the best of my knowledge) economic studies that examine the potential impact of the new laws on sustainable grazing in the woodlands, and the profitability of grazing enterprises affected by them. Hopefully those studies on likely economic impacts that have been highlighted in this Submission will give the SDNRAIDC food for thought?

Finally, it astounds me that the laws governing the management of a huge area of the State's grazing industry can be overlaid with new laws or amendments that are essentially opposed to sustainable land use for grazing purposes - while apparently ignoring any potential input from the government agency (DAF) that was given responsibility for researching this issue over a 50+ years' timeframe. This is readily seen when one looks at most grazed woodland systems in this State, but it is embarrassing when the grazed eucalypt woodlands are targeted. Hopefully I have included sufficient data and published sources in this Submission to give a good lead to future production ecologists/range scientists, so they can give a more balanced view of the best ways to utilise Queensland's grazed woodland resources. As it stands this whole saga is an outstanding example of a Government that has substituted regulation for education. Poor fellow my country.

References

Ainesworth, E. (1989) LISA men have called you. *Farm Journal* **113**: 1.

Back, P.V., Anderson, E.R., Burrows, W.H. and Playford, C. (2009a) Woody plant responses to various clearing strategies imposed on a poplar box (*Eucalyptus populnea*) community at Dingo in central Queensland. *Tropical Grasslands* **43:** 37-52.

Back, P.V., Anderson, E.R., Burrows, W.H. and Playford, C. (2009b) Research note: Poplar box (*Eucalyptus populnea*) growth rates in thinned and intact woodlands in central Queensland. *Tropical Grasslands* **43:** 188-19.

Bartholomew, B. and Wilson, T. (1995) *New Timber Clearing Guidelines: The Likely Effect on Farm Profitability in Two Clearing Zones.* (Economic Analysis Section, DPI: Brisbane).

Beale, I.F. (1973) Tree density effects on yields of herbage and tree components in south west Queensland mulga (*Acacia aneura* F. Muell.) scrub. *Tropical Grasslands* **7**: 135-142.

Burrows, W.H. (2002) Seeing the wood(land) for the trees – An individual perspective of Queensland woodland studies (1965-2005). *Tropical Grasslands* **37**: 202-217.

Burrows, Bill (2004) The tree clearing ban in 2006 is good for Queensland – the debate. *Tropical Grassland Society News and Views* **20**(3): 8-10.

Burrows, W.H. and Beale, I.F.(1969) Structure and association in the mulga (*Acacia aneura*) lands of south western Queensland. *Australian Journal of Botany* **17**: 539-552.

Burrows, W.H., Henry, B. K., Back, P.V., Hoffmann, M.B., Tait, L.J., Anderson, E.R., Menke, N., Danaher, T., Carter, J.O. and McKeon, G.M. (2002) Growth and carbon stock change in eucalypt woodlands in northeast Australia: ecologival and greenhouse sink implications. *Global Change Biology* **8**: 769-784.

Davidson, Alistair, Elliston, Lisa, Kokic, Phil and Lawson, Kenton (2005) Native Vegetation – cost of preservation in Australia. *Australian Commodities* **12** (3): 543-548.

Scanlan, J.C., Prinsley,R., Pigott, J.P., Wakefield, S., van der Sommen, F., Duncan, F., Stadler,T., McLellan, R. and Farago, A. (1992) Retention of native woody vegetation on farms in Australia: Management considerations, planning guidelines and information gaps. *Agroforestry Systems* **20**: 141-166.

Stafford Smith, M., McKeon, G., Buxton, R. and Breen, J. (1999) The integrated impacts of price, policy and productivity changes on land use in northern Australia. *Proceedings VIth International Rangeland Congress* **2**:864-866.

Sgd. Bill Burrows

21 March 2018