



Final Report

July 2019

Contents

Executive Summary	3
Private Native Forestry Extension Program	4
1 Program Overview	6
1.1 The issues	6
1.2 Program objectives	7
1.3 Delivery approach	8
2 Evaluation Methodology	11
2.1 Online landholder survey	11
2.2 Field day evaluation	11
2.3 Workshop evaluation	12
3. Delivering Program Objectives.....	13
3.1 Building landholder and industry understanding	13
3.2 Delivering improvements in private native forest management practices	17
3.3 Developing extension materials	18
3.4 Delivering extension activities	23
3.5 Delivering improvements in management practices.....	29
4. Discussion.....	31
4.1 PNF impediments	31
4.2 Landholder skills, capacity and understanding.....	33
4.3 Workshop evaluations	34
4.4 Barriers to PNF investment.....	35
5. Future Extension Program	36

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Executive Summary

The Department of Agriculture and Fisheries (DAF) funded a private native forestry extension program that was delivered by Private Forestry Services Queensland (PFSQ) to provide information and extension support to landholders and the timber industry to increase investment in private native forestry opportunities.

The project followed an extension delivery plan developed jointly by PFSQ and DAF and run from November 2016 until May 2019. The plan followed a logical progression from the review of past extension projects, development of a methodology and materials through to evaluation of Program delivery and participation. The plan included:

1. A survey of landholders preferred education processes and material
2. An evaluation of past education material including gaps in key elements of legislation, current best practice, new methodologies and impediments to participating in native forest management
3. Compilation of a range of updated and new extension materials including multimedia, hard and soft copy formats, in line with outcomes from the landholder survey
4. Reviewing field day and 4 day workshop formats and delivery strategies
5. Roll-out of 30 extension events and seven 4-day workshops
6. A pilot one-on-one assistance scheme, including incentives to 28 landholders to expedite on-ground management change
7. A report outlining all of the above and the outcomes of the project.

The Private Native Forestry Extension Program:

- Engaged more than 1 200 landholders who are manage over 80 000 hectares of forest in South East Queensland (SEQ)
- Held 18 general introductory field days throughout SEQ and 5 sawmill centred days
- Participated in and organised 18 extension events, including bus trips, forums and information sessions
- Ran seven intensive four-day workshop programs
- Held one industry forum
- Provided a one-on-one landholder assistance scheme, including property-specific advice and support, ameliorating 1 400 hectares of degraded forest under best practice management
- Established forest grower network groups in Gin Gin, Nanango and Monto
- Developed a new native forest management manual
- Created an identification booklet for 22 common commercial species of southern Queensland
- Updated website materials and videos
- Posted 100+ Facebook blogs with over 20 000 views

- Posted 26 YouTube forest management videos
- Sponsored three 'Going Bush' television segments on channel 7PLUS
- Presented papers on the project at two industry conferences.

Private Native Forestry Extension Program

DAF funded the Program to provide information and extension support to landholders and the timber industry to increase investment in private native forestry opportunities. The objectives of the Program were to:

- Build landholder and industry understanding about private native forestry opportunities through the provision of relevant, contemporary and targeted information.
- Engage landholders through a range of extension activities to build their capacity to turn understanding into on-ground practice change.
- Engage with timber industry members and other relevant individuals and organisations to build their knowledge and support for optimum on-ground private native forestry practices.
- Deliver improvements in private native forest management practices that enhance forest productivity and land management outcomes and are complementary to other land uses.

PFSQ liaised with DAF to develop a 3-year delivery plan that outlined the following six key activities:

1. Develop a monitoring and evaluation process capable of collecting sufficient and rigorous data for an ongoing review of program content and process and to allow completion of the final Program Evaluation Report
2. Update current and develop new private native forestry extension support materials
3. Promote and coordinate the private native forestry extension program
4. Deliver of a series of private native forestry extension activities
5. Undertake project governance to support delivery of the private native forestry extension program
6. Develop a report evaluating the success of the private native forestry extension program.

This report addresses Activity 6 and:

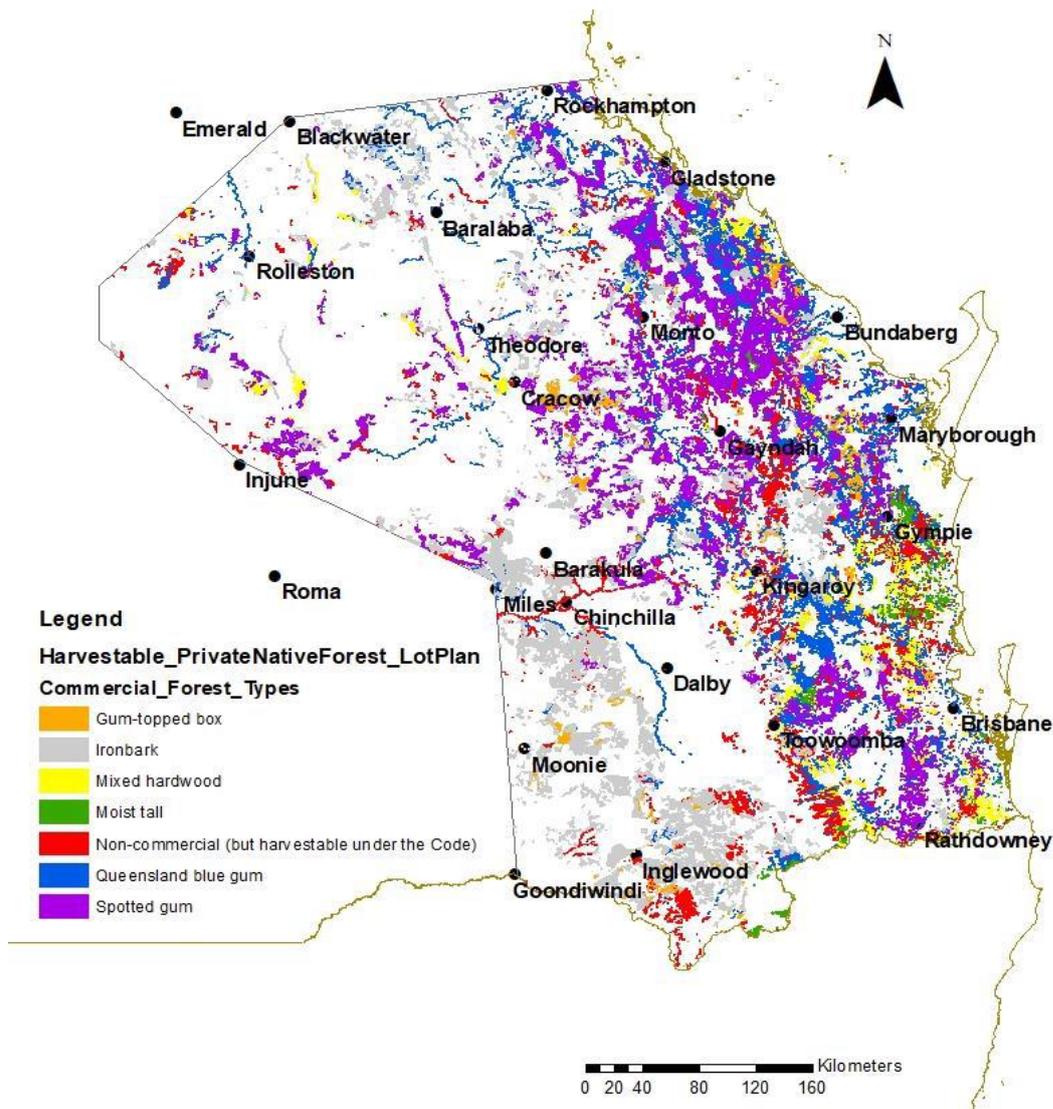
1. Provides an overview of the program, its objectives and the approach taken to its delivery
2. Documents the methodology used to evaluate the program's success
3. Provides an overall assessment of the delivered program against the initial objectives
4. Documents the extension support materials developed and provides guidance on their value and usefulness
5. Documents the type and number of extension activities undertaken, and the number of landholders and stakeholders engaged
6. Documents the outcomes from the one-on-one assistance scheme, including the silvicultural treatment delivered

7. Documents the key messages and feedback from program participants
8. Explores the barriers to investment in on-ground forest management
9. Documents the lessons learnt that could be used to inform a future extension program, including any issues or gaps identified

1 Program Overview

1.1 The issues

There is in excess of 2 million hectares of private native forests (PNF) in southern Queensland, of which approximately 24% is mapped as non-remnant. These forests currently supply 209 000 m³ (63%) of sawlog and poles annually into the primary processing sector. This sector generates \$196 million of income annually (\$119 million for PNF, which is around 60.7%) and employs 891 FTEs (589 FTEs for PNF, which is around 66%).



Map 1. Distribution of the private native forest resource for southern Queensland

This resource generates significant income for landholders, most of whom are beef producers with low operating margins on sub-commercial beef enterprises. The resource underpins employment for many rural and regional communities with relatively high unemployment, particularly youth unemployment.

However, the majority of the PNF resource is unmanaged regrowth from previously cleared land; or heavily disturbed forest from a succession of debilitating harvests. The forests are now in a poor productive and environmental condition due to the following key aspects:

- Grossly overstocked regrowth stands resulting in limited individual tree growth.
- Poor ground cover on inherently erodible soils on undulating to steep terrain resulting in elevated delivery of sediment to waterways, estuaries and inshore environments.
- Successive harvests that have removed the best trees leaving an ever higher proportion of the stand as non-merchantable while degrading the commercial genetic base.
- Poor habitat values for arboreal and ground dwelling wildlife.
- A lack of understanding of basic silviculture, best practice harvest operations and marketing options.
- Limited knowledge of economic returns from PNF investment.

With a well-directed extension program, the removal of impediments and increased management of the resource, these negative aspects can be ameliorated.

Results from an Forest and Wood Products Australia (FWPA) funded research project into the PNF resource (currently awaiting publication) demonstrates that applying best practice silviculture to around 25% of the resource within southern Qld and northern NSW would result in time in a sustainable yield of 600 000 m³ annually. This is a threefold increase in the entire yield from all native forests in the region. The PNF estates represents the only real opportunity for sustained and ongoing supply of hardwood timber into the future.

1.2 Program objectives

The Program was developed to provide information and extension support to landholders and the timber industry to increase investment in private native forestry opportunities. This program delivered on a number of actions in the *Queensland Forest and Timber Industry Plan*.

The objectives of the private native forestry extension program were to:

- Build landholder and industry understanding about private native forestry opportunities through the provision of relevant, contemporary and targeted information.
- Engage landholders through a range of extension activities to build their capacity to turn understanding into on-ground practice change.
- Engage with timber industry members and other relevant individuals and organisations to build their knowledge and support for optimum on-ground private native forestry practices.
- Deliver improvements in private native forest management practices that enhance forest productivity and land management outcomes and are complementary to other land uses.

1.3 Delivery approach

Historically, a number of related programs were delivered through PFSQ, state government agencies, Greening Australia, Landcare and AgForce, and were funded through the Natural Heritage Trust (1996-2013), the National Action Plan for Salinity and Water Quality (2001-08) and Caring for Country (2010-13).

While these programs were successful in establishing a wide variety of plantations and provided some extension services for the PNF, most had concluded by 2005. There was little follow up extension service after the programs ended, and limited landholder access to the extension material produced.

These earlier programs provided lessons for the delivery of this Program. The current Program acknowledged a role for a complementary suite of extension strategies. There are five broad strategies or models for forestry extension that informed the Program approach:

1. Linear ‘top-down’ transfer of knowledge – extension that is based on new agricultural technologies and knowledge developed and validated by research scientists.
 - The Program had access to 10 years’ growth data from a range of best practice demonstration sites and was delivered concurrently with an FWPA funded research project.
2. Participatory ‘bottom-up’ discussion groups - recognising that farming communities are inherently rich in knowledge and practical skills, the program’s approach encouraged participants to share ideas and information.
 - The extension program was predominantly field-based, looking at, or participating in actual on-ground practices being undertaken by individual landholders, including demonstration sites, and involved forest assessment, harvesting, thinning treatments, paint marking and fire management.
3. One-on-one advisory service – providing information directly applicable to the situation. While this form of extension has generally declined, with the perception that group-based extension is more efficient, there is well supported evidence of the benefits of this approach.
 - The Program facilitated best management silvicultural treatment of 1 400 hectares of PNF on 28 properties across southern Queensland.
4. Structured education and training – formalised approaches to extension delivery, such as the Australian Master Tree Grower course.
 - The four-day workshop series delivered by the Program was a structured, hands-on, demonstrated forest management education program covering all aspects of silviculture.
5. Multi-media campaign – targeted and broad-scale approach using new technologies
 - 26 specific management ‘how to’ YouTube videos
 - Three ‘Going Bush’ TV program episodes
 - 200+ educational facebook posts



Photo 1. Mill log classification discussion, Boyne Valley Sawmill as part of Monto 4 day workshop

Guided by the delivery plan, and drawing on previous experience and landholder feedback, the Program adopted a variety of extension approaches for effective delivery; including

- Updating and producing a complete range of Program materials including hard copy manuals and information sheets and multiple on-line tools including – Facebook posts, television episodes – ‘Going Bush’ series, YouTube clips and demonstration videos, to support written extension materials.
- A participatory approach encouraged sharing of knowledge amongst participants – field days and workshops were delivered in the forest, commencing with the theory and then observing or participating in, on-ground management activities.
- Information and advice informed by current knowledge – the Program utilised forest growth data gathered over 10 years from demonstration sites, innovative in-field thinning techniques, along with current research on native forest management.
- One-on-one advice and support to encourage long- term change – a limited incentive program was used to facilitate property specific management plans, along with technical assistance to help landholders undertake silvicultural treatment.
- The formation of Grower network groups - to facilitate group dynamics and motivation through farm walks etc.

The program’s governance and delivery was overseen through:

1. Quarterly project reporting on key milestones and KPIs to PFSQ Board of Directors.

2. A Project Steering Committee provided advice and guidance on the program's direction and priorities. The committee included representatives from Timber Queensland, AgForce, the Department of Natural Resources, Mines and Energy and the Department of Agriculture and Fisheries.

2 Evaluation Methodology

The Program has been evaluated throughout the delivery through various tools including:

1. An online landholder survey
2. Field day pre- and post- evaluation sheets
3. Field day facilitated participant feedback
4. Workshop pre- and post- evaluation sheets
5. Workshop facilitated participant feedback

2.1 Online landholder survey

The landholder survey was formulated to give the Project a better understanding of current forest management activities in southern Queensland.

The survey formed the foundation for the Project to better understand the knowledge and capacity needs of private forest owners.

This allowed the Program to be tailored in a way that optimized its opportunity to improve forest management and maximize timber and grazing enterprises.

The survey asked a series of 20 questions, including:

1. *Have you registered a notification of intention to clear for a native forest practice on your property?*
2. *When learning a new concept, what forms of communication do you prefer? Written hardcopy; written electronic; video presentation; field day demonstration; workshop group learning; or 1 on 1 consultation?*

184 landholders completed the on-line survey.

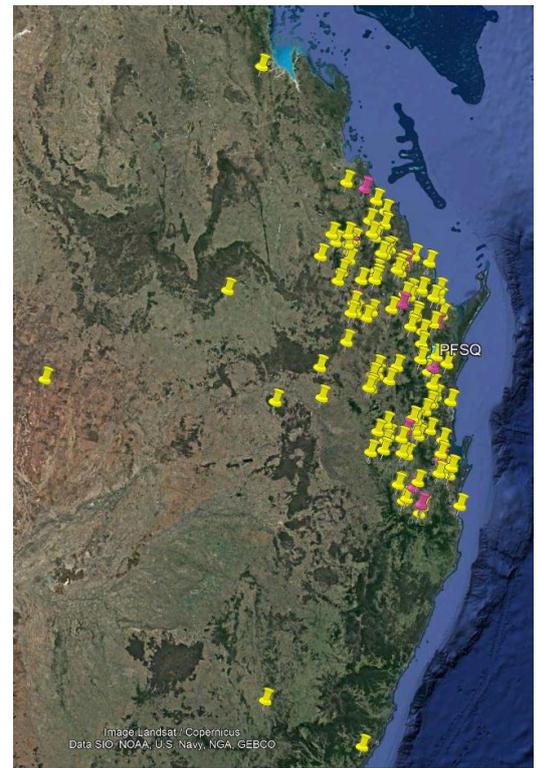
2.2 Field day evaluation

All field day attendees were given a pre- field day evaluation forms to fill out to ascertain their initial understanding of forest management and their intent for participating. This was then followed up by a post-field day evaluation form to determine how effective the field day was.

In addition, each field day would commence with a 'whip around' asking:

1. What is the size of area of forest on their property and its species mix?
2. What were their major issues with management?
3. What are the main points they wanted covered in the day?

Each field day would conclude with a similar 'whip around' asking what were the key take home messages for participants and whether they were interested in participating in a more detailed 4-day workshop.



Map 2. Location of landholder respondents to on line survey

2.3 Workshop evaluation

Most 4-day workshop attendees had previously attended field days, but were still asked to complete pre- and post- workshop evaluation forms. They were also asked to complete the online landholder survey to allow for additional data to be collated.

The 4-day workshop would also commence with a 'whip around' and finish with a discussion around the key take home messages, and most importantly, would ask participants about the first three management actions they intended to commence in their forests.

From experience, when participants committed to an intended action they were more likely to carry it out. Longer term follow-up of these participants would be valuable to ascertain this follow-through, beyond those participants who received incentives.

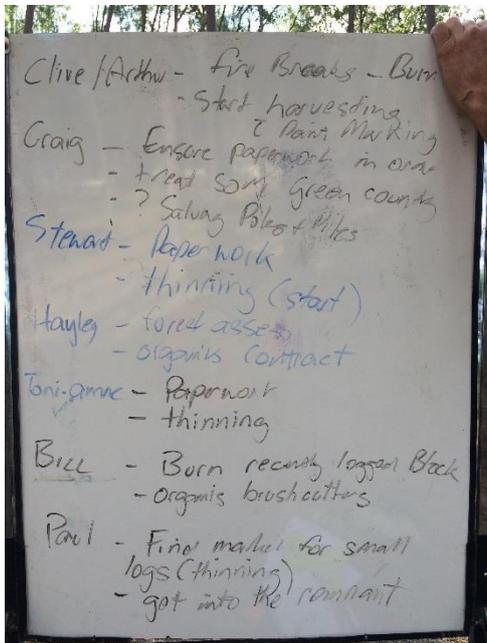


Photo 2. Typical example of a 'whip around' of participants post workshop



Photo 3. Nanango 4 day workshop participants inspecting a demonstration of chopper roller thinning technique

3. Delivering Program Objectives

3.1 Building landholder and industry understanding

Promotion of the Program commenced in the first month and included a broad range of media and targeted information sessions including:

1. ABC rural radio, Rural Weekly and Gympie Times
2. Timber Queensland - Hardwood division meetings
3. Agforce regional managers
4. Fitzroy Basin, Burnett Mary, Burnett Catchment Care and Healthy Land and Water NRM groups
5. Miriam Vale Rural Science group
6. Forest Learning
7. IFA and AFG
8. PFSQ's 650 member grower network
9. USC, UQ and SCU
10. Tiaro Landcare's Open Field day

The Program was delivered concurrently with an FWPA funded project - PNC379-1516: Improving productivity of the sub-tropical private native forest resource. Preliminary results from the FWPA project were incorporated into extension materials and events as they became available. Including:

- The extent of forest potentially available for harvest in key commercial forest types
- The contribution of private native forest to the hardwood industry
- A decision support tool
- Four economic case studies on the impacts of forest management.

Landholder engagement

A total of 1,687 people were engaged in 47 extension events across the Program's delivery (mean attendance 36 per event).

Table 1. Extension activity by attendance numbers

Extension activity	number of events	number of participants	average attendance
Field days	16	388	24.3
Workshops	7	133	19.0
Mill days	10	263	26.3
incentives program	1	28	28.0
extension events	13	875	67.3
	47	1,687	35.9

Timber industry and other stakeholder engagement

Across the Program a large portion of stakeholders from across the timber industry and other relevant entities were engaged.

Table 2. Stakeholder engagement

BMRG - 3 staff completed 4 day workshop - Promoted all extension events	Fire and Biodiversity Consortium – forum presentations
FBA - 4 staff completed 4 day workshop and 2 x 1 day field days	Forest learning, USC careers symposium – stalls and presentations, Conference bus trip,
TQ - Promoted all extension events, presentation at Hardwood meeting, steering Committee	Southern Cross Uni - Presentation and Field day (2 days) 50 - Degree and Master students
Agforce - Promotion of all extension events - 1 bus trip and 1 presentation at ag educators conference 2018 and 2019	USC – FWPA project collaboration
Mill visits, field day attendance etc – Slacks, DTM, Brisbane Valley, Mary Valley, Boundary Creek, Matilda Veneer, Janforest sawmill, Hurford, Parkside, Koppers and Enright's	Green Collar Carbon – presentations at each other's field days
Architect Groups – 5 Mile Radius, Red Hill forum and Bunyaville field day; Phorm – presentation UQ Master students , Gympie field day for UQ students	DAF, DNRME, DES – attendance at field days
Daily Timber News – promotion of events	Tiaro Field Day – information stall x 2 years, forum presentations
QFF- 12 month extension trainee project , 6 trainees 1 x day NFM workshop	IFA and AFG conference 2 x presentations

Sawmill and processor field days

There were a number of events associated with or at sawmills including:

1. Slacks Hardwoods x 2 (Gayndah)
2. Muckerts Sawmill (Laidley)
3. DTM (Tiaro)
4. Brisbane Valley Sawmill (Esk)
5. Mary Valley Sawmills (Dagun)
6. Boundary Creek Sawmill (sth Gin Gin)
7. Janforest Sawmill (Boyne Valley)
8. Parkside (Wondai).

Presentations or attendees at field days included Koppers (Hervey Bay), Matilda Veneers, Hurfords sawmills and Green Collar Carbon.

Tordon contractors

Three field days were held to improve thinning contractor gang practices, focusing on understanding their regulatory obligations, correct herbicide application, tree selection standards, paint marking and calculation of tree stocking rates. Four other contractors attended one day field training days.

There are few thinning gangs specialising in native forest management and this is an area that would benefit from a greater understanding of the principles of best practice forest management activities.

Other engagement

1. Five Mile Radius architects - forum discussion on the utilisation and sourcing of accredited hardwood and what that means (Redhill, Brisbane)
2. Field day - Bunya Conservation Reserve - flow on from the above forum with topics that included principles of forest management, species selection and forest health
3. Shingle making workshop and forest management presentation (Woodworks Museum)
4. UQ Architectural Research Group - presentation to Masters students and field trip to look at forest management in the field (Gympie)
5. Presentation at the Food, Fibre and Agricultural Educators Conference
6. Forest management presentations – Salisbury Research Station, with associated field trip to inspect a range of forest management issues
7. IFA conference presentations - Private native forest management in South-East Queensland – ‘innovate or immolate’; Private Native Forests and Grazing - A sustainable, viable and logical land use combination

PNF Forum

The Program hosted a PNF Forum on Thursday the 9th November 2017 in Gympie. The Forum considered the extent and importance of the PNF resource in southern Queensland and the critical role that it will play in the future supply of hardwood timber in the state and in northern NSW.

The Forum was attended by eighty industry representatives including growers (16), sawmillers (10), harvesting and haulage contractors (8), consultants (6), researchers (8), officials from Federal, Queensland and NSW governments (9), ancillary processors within the veneering, bio-fuels and power pole sectors (9), industry training organisations (8) and associate groups (6).

The day was structured around fifteen ‘State of the Industry’ presentations, focused on current processes driving the industry and the significant impediments and issues impacting on it.

Attendees were encouraged to post questions and comments on designated white boards (resource, social licence etc.) throughout the day, as well as contribute to an industry SWOT analysis. The day culminated in a group brainstorming session, where participants discussed solutions to impediments and pathways towards a more sustainable future for the industry.

The outcome of the day was a set of urgent priority resolutions that were agreed upon, by the majority of participants and that, we hope will gain support and momentum from the broader industry. They specifically relate to:

1. Optimising resource availability and security;
2. Expanding on opportunities offered by the emerging bio-economy; and
3. Promoting the social and environmental credentials of the industry.

1. Optimising resource availability and security

Harvest security is the major recurring factor impeding landholder investment into the management of the resource. Forest management is a long-term activity that provides rural employment opportunities and environmental benefits. For forest owners to make long-term investment decisions (20 to 60 years) they need to have secure rights to use the land for forestry purposes in the long term.

Resolution: that the Forum delegates:

Urge the Queensland Government to establish a Vegetation Category (Category F) similar to Tasmania's Private Timber Reserves (1989) within Queensland's Planning Act. A private timber reserve is an area of private land set aside for forestry purposes and registered on the title.

2. Expanding on opportunities offered by the emerging bio-economy

Silvicultural thinning of non-commercial stems is traditionally undertaken by chemical injection, which is expensive, uses high volumes of residual herbicide, and leaves a framework of dead trees which pose a long term WH&S risk. The rapidly developing biomass industry provides a unique opportunity to utilise the grossly over-stocked section of the stand, providing financial incentive for thinning, supporting rural employment, producing a local biofuel and increasing the health and quality of the forest.

Resolution: that Forum delegates:

Urge the Qld Government to recognise that emerging technologies can enable landholders to carry out best practice silvicultural thinning for the improvement of forest health and productivity. Further, delegates wish to emphasise that these technologies would only utilise the non-commercial and non-habitat portion of the stand that would normally go to waste.

3. Promoting the social and environmental credentials of the industry

Many Forum presenters and delegates raised the following issue regarding government policy, that inconsistent policy and regulatory changes adversely impact investment confidence. Farmers are not inclined to invest in improving the health and productivity of their forests, without a consistent policy and regulatory environment.

The following issue was not raised at the forum, due to lack of time but addresses one aspect of those concerns. Namely, that in 2014 the *Managing a native forest practice - A self-assessable vegetation clearing code* introduced a list of regional ecosystems (REs) in which harvesting and thinning could be undertaken.

The clear intent of the code was to limit a native forest practice to the regional ecosystems that only supported recognised commercial species. However in the compilation of the list up to sixty legitimate REs were omitted (e.g. 11.11.15 - Eucalyptus crebra woodland on deformed and metamorphosed sediments and interbedded volcanics, current remnant forest area 521,000 hectares). E. crebra is the second highest harvested species by volume after Spotted Gum in Queensland and it is discriminatory to those landholders prevented from managing and eventually harvesting within those REs.

Post Forum delegates Resolution:

Urge the Queensland Government to immediately amend the 'Managing a native forest practice - A self-assessable vegetation clearing code' to include all Regional Ecosystems that support a dominance or codominance of hardwood commercial species.

The realisation of these resolutions will contribute to the goal of tripling the value of the forest industry by 2050 and provide increased rural employment opportunities.

3.2 Delivering improvements in private native forest management practices

The Program ran in parallel to FWPA funded project - Improving productivity of the sub-tropical private native forest resource (Project No. PNC379-1516).

The projects complimented each other, with the completion of two demonstration sites that considered potential new products such as bio-fuels and small diameter veneer billets as part of the thinning operation. It also completed time and motion studies on various silvicultural techniques, brush cutting, stem injection and chopper rolling.

The FWPA project developed an economic decision support tool that was trialled during field days in the latter half of the Project to demonstrate the economic benefits of managing forests for grazing and timber production, as opposed to the return received if no management was undertaken.

An independent economic calculator is a powerful tool to convince landholders of the economic benefits of forest management, especially when they may not have received good returns in the past from their unmanaged forests, coupled with an ad-hoc approach to grazing within their forest areas.

The demonstration sites are a critical extension tool that can illustrate a block of managed forest with demonstrated growth results, in comparison to an unmanaged adjacent block with significantly less growth.

3.3 Developing extension materials

Management guides

The Native Forest Management Workshop Series manual with all guides was updated, reformatted and 200 copies printed. All workshop participants received a copy. The manual included information on:

1. Native Forest Management: Dry Forest Types
2. Native Forest Management: Wet Forest Types
3. Native Forest Management: Forest Products and Marketing
4. Native Forest Management: Native Forest Harvest Guide
5. Native Forest Management: Grazing & Forestry
6. Fire Management for Timber Production Guide
7. Hardwood Sawlog Classification Guidelines
8. Managing a native forest practice - A self-assessable vegetation clearing code

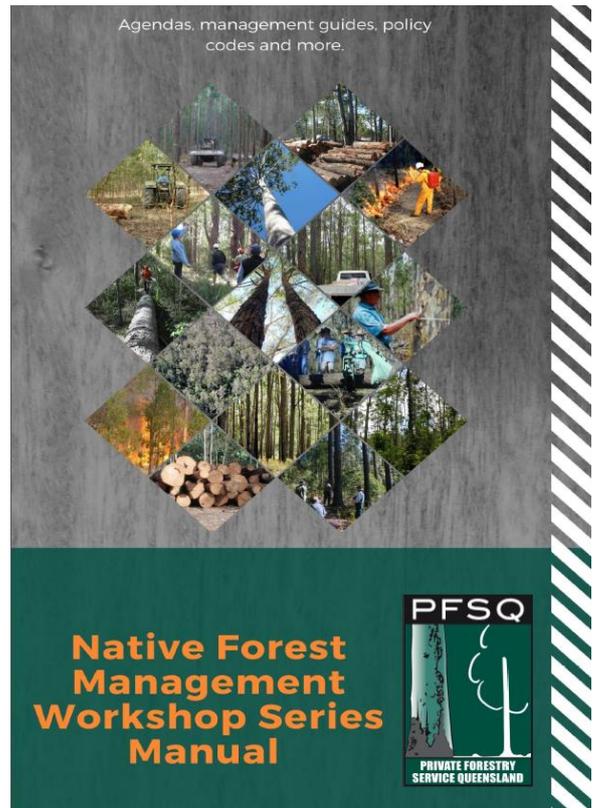


Figure 1. Native Forest Management Workshop Manual

Tree recognition booklet

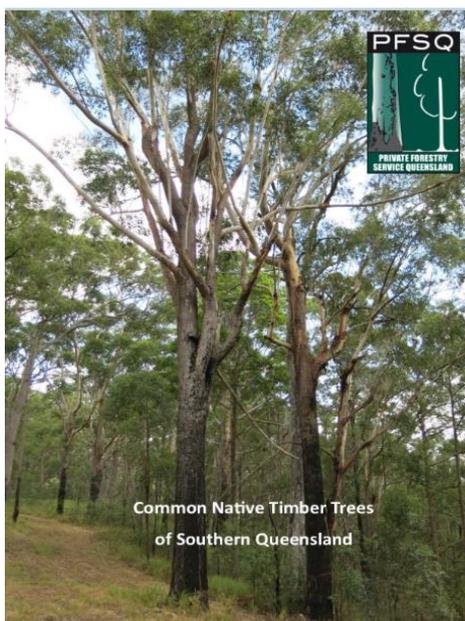


Figure 2. Common Native Timber Trees of Southern Queensland

Many landholders, particularly new comers struggle to recognise tree species. To assist counter that a small booklet (backed up by a descriptive video) describing, principally by bark characteristics, 22 species of the most common commercial species was produced (700 copies were printed and distributed). This proved to be a very popular production.

Log volume calculator

200 copies of a log volume calculator were printed and given out at field days and workshop series coupled with a demonstration on how it works. The Log volume calculator pocket sized booklet allows landholders to calculate the volume of any log that it is harvested. There is also a dbh to centre diameter conversion table to estimate the volume of a standing tree once the log length is estimated. This can be used to work out standing volume but also individually calculate if the tree has reached its optimal value and should be extracted or retained.

Pole and other reference cards

Reference cards are pocket size tables that are simple decision support tools to aid NFM decisions. The cards are given out at each field day and workshop with appropriate in field explanation on how they work. The pole table provides each pole size class with what diameter that pole has to reach for its kN class and what value it is. In a stand assessment it assists with understanding the size that pole has to reach to maximise its return and what each class value is . eg a 15.5 m spotted gum pole has a D line diameter of 425 mm, it is worth \$246, but if it grows 10 more millimetres, it is worth \$386 (a gain of \$140 in around 2 years growth). The Tordoner's® guide is a simple Code of Practice reference guide with the application rates per size class. Each card has additional information on the back.

Table 3. Pole Card

LEN	KN	\$	STRENGTH 1		STRENGTH 2		STRENGTH 3	
			D-Line	HEAD	D-Line	HEAD	D-Line	HEAD
8.0	5	15	195	135	210	145	220	155
	8	26	230	165	245	175	280	190
9.5	3	9	180	110	190	120	200	125
	5	26	210	135	225	150	240	160
50	8	3	250	170	265	185	280	195
	12	62	284	199	299	214	319	229
11.0	3	13	190	110	200	120	215	130
	5	39	225	135	240	150	255	160
60	8	65	265	170	280	185	295	195
	12	93	300	200	320	220	335	230
12.5	3	26	200	115	215	125	225	130
	5	55	235	140	250	150	265	160
70	8	91	275	170	295	185	310	195
	12	129	315	200	335	215	355	235
14.0	3	28	210	120	220	130	235	140
	5	76	250	145	265	165	280	165
70	8	122	290	170	305	185	325	200
	12	178	330	205	350	215	370	235
20	251	400	250	420	260	440	300	
15.5	8	157	300	180	320	195	335	205
	12	246	345	210	365	230	385	245
80	20	386	410	255	435	285	455	300
17.0	8	204	310	190	330	200	340	215
	12	314	355	220	380	235	400	250
90	20	481	420	165	450	285	475	305
18.5	8	251	320	195	350	210	360	220
	12	397	370	225	390	240	410	255
90	20	606	465	270	465	290	490	310
20.0	8	314	330	200	350	215	370	225
	12	491	380	230	400	250	425	265
100	20	742	450	280	475	295	505	315
21.5	8	387	340	205	360	220	380	235
	12	606	390	240	415	255	435	270
100	20	910	460	285	490	305	515	235
23.0	8	470	350	210	370	225	390	240
	12	732	400	245	425	260	556	270
100	20	1077	470	295	500	310	530	330

Table 4 . Tordoner's Guide Card

Tordoner's Guide to the Code of Practice	
1. Have a map of the regulated vegetation for the property with the designated stream lines	
2. Establish where the coloured country is and the designated stream lines	
3. Ensure there is a Notification in place for the property	
4. Check the REs that you are to thin are in the Code table	
5. Check there are no Blue dots (endangered species) on the regulated mapping	
Compliance	
1. Maintain 6 habitat trees/ha - 40x40m	
2. Retain 150 stems/ha	
3. No go zones 5 m - streams 3-4, 10m for 5-6	
4. Maintain species mix	
5. Protect active feed tree	
6. Protect any trees with eagles nests	
Technique	
Gun set at 1ml	
Cuts at 5"centres, mix 4:1,	
1ml /cut <25cm Ø at base, 2ml/cut if > 25cm	

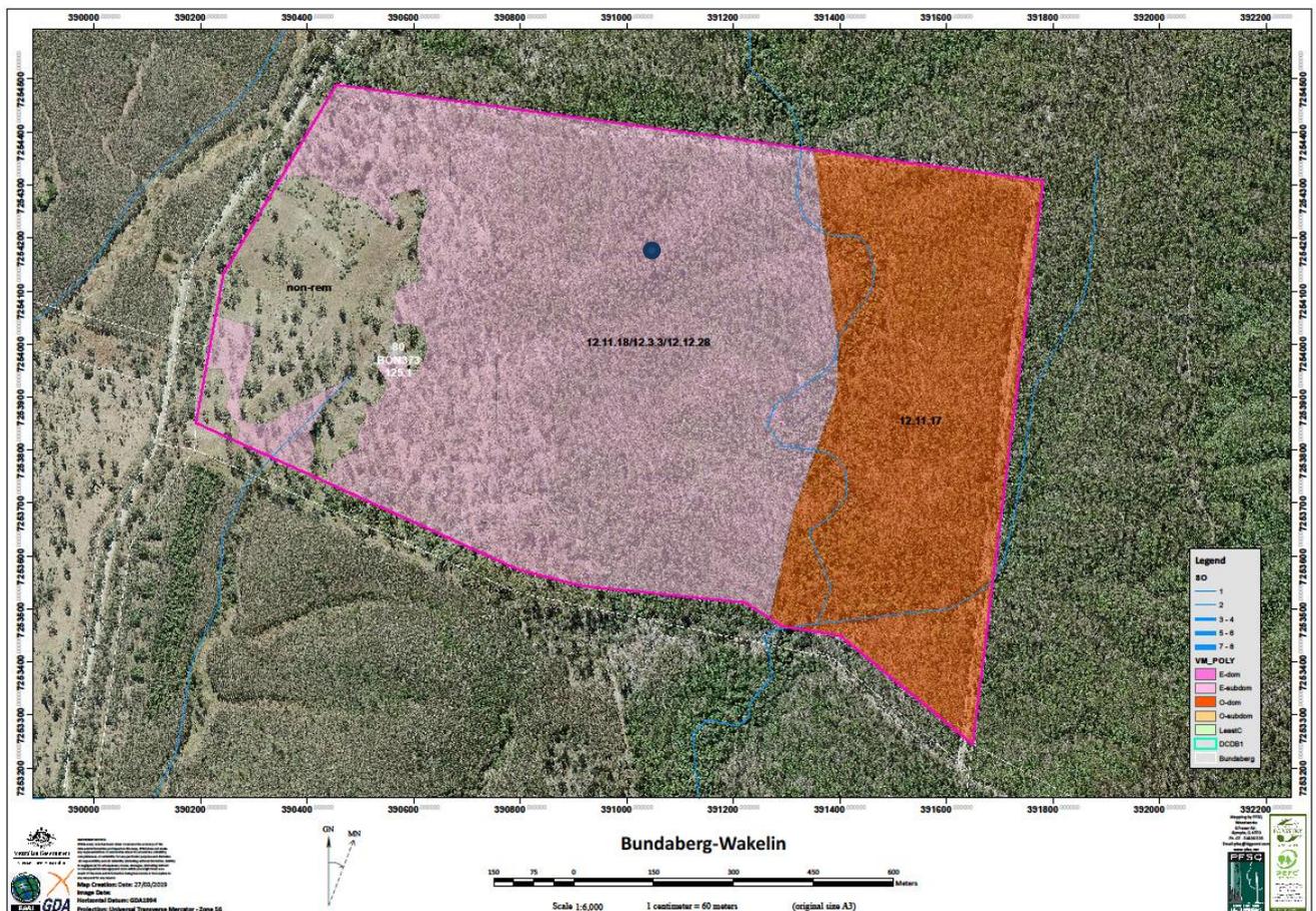
Avenza property maps

Over 200+ property maps with RE mapping and stream order overlays have been produced for landholders through the Program.

Early in the Program PFSQ determined that the free Avenza Mapping app would be an invaluable tool for landholders. Prior to each field day and workshop, attendees were encouraged to download the app to their smart phones, and send to PFSQ their Lot and Plan number.

PFSQ then generated a property map which was integrated into the app, so landholders could map their property by GIS.

At the field days, participants were given training in the use of the app which allowed them to locate the boundaries between regulated and unregulated vegetation and determine stream orders at any given point for compliance. They could also map tracks, log dumps and fence lines, measure areas and distances, and mark photo points.



Map 3. Example of mapping provided by the Project showing RE mapping, stream orders and property boundaries with the GIS location shown as a blue dot

'Avenza' Mapping App – Link to 'how to' video and guides.

Link to:

[How to download Avenza and the map](#)

Link to:

[How to use the Avenza app](#)

'Going Bush' television program

'Going Bush' is a forestry advocacy program aired on Chanel 7 plus, each season usually airs five programs each with four x six minute topics. The season is often repeated during the year and available permanently on their website. For the last 3 years they have repeated one of our earlier topics in addition to the current one. Each video costs \$15 000 to produce with the video being available to post on our website post airing. The project milestone was to produce one video but completed three. The program is reported to rate close to one million viewers and is noted for a simple explanation of a complex topic. – pfsq.net YouTube

1. Fire Management - November 2016,
2. Forest Thinning - 13th January 2018,
3. Forestry Education – May 2019

Photo 4. Going Bush - Fire Management with Andrew Hart and Nick Duigan



Forest Management 'YouTube' videos

Twenty six YouTube videos on various aspects of forest management were produced. This is an area that still requires additional material and has two functions, namely

- As an 'how to' reference that landholders can refresh knowledge and techniques post field days and workshops
- As a general educator when people are searching for information on the internet and encourage them to attend field days and workshop

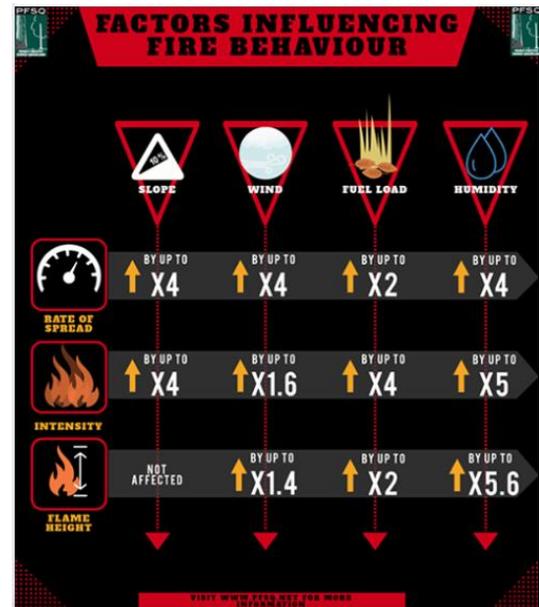
1. [Silver-leaved Ironbark of Eucalyptus melanophloia.](#)
2. [Chemical Thinning in your Native Forest](#)
3. [Mechanical Thinning in a Native Forest](#)



Figure 3. Mechanical thinning in a native forest (video)

Facebook

Facebook posts are used to give short sharp pieces of information to attract the attention of a wider audience with the expectation that they will seek further information if needed, or that it just raises the profile and understanding of Forest Management. Over 100 posts were initiated and are now on a repeat schedule each week. In the first round the series on the Code of practice and legislation had the largest number of hits with over 1000 for each post which further demonstrates the lack of understanding surrounding the Vegetation Management Act and its associated requirements. This compares to an average of less than 200 for other posts.



Figures 4 - 6. Facebook posts – on tree selection, fire behaviour and the Code of Practice



3.4 Delivering extension activities

Introductory and topic specific field days

The project hosted 16 field days, of which 13 were introductory days with landholders. Three of these were co-hosted with a specific sawmill.

There were three other topic specific field days, which included a treatment contractor training day and a Gin Gin grower's network follow-up day.

A total of 388 landholders participated in a field day (on average, 24 participants per event). These participants manage a combined estimated forest area of 240 300 hectares (an average of 619 hectares per participant).

Table 5. Project field days (location and attendee numbers)

Field day	date	Co-operator	topic	number of participants	area of forest managed (ha)
Esk	9/10/2016	Jess family	Mill centred introductory and silviculture response	42	24,244
Biggenden	10/12/2016	White family	Mill centred introductory and harvest management	30	61,423
Kolan Flats	18/02/2017	Tobin family	introductory and mechanical thinning	40	31,028
Rathdowney	23/03/2017	Salisbury family	introductory and silviculture response	19	2,514
Ravensbourne	20/05/2017	Ergon	introductory and silviculture response	20	3,345
Mundubbera	28/07/2017	Deen family	introductory and thinning techniques	22	22,083
Nanango	29/07/2017	Gentry family	introductory and silviculture response	24	3,279
Childers	31/10/2017	Slack family	Tordon contractor training	14	20,000
Calliope	3/10/2017	Quin family	introductory and thinning (plantation)	14	19,407
Mulgildie	11/10/2017	Salisbury family	introductory and general management	23	15,223
Childers	9/03/2018	Slack family	introductory and general management	22	11,222
Gaeta	2/03/2018	Ballantyne family	Gin Gin Timber growers network	17	6,523
Woolooga	14/07/2018	Dray family	Mill centred introductory and general management	31	2,063
Gayndah	13/04/2018	Bambling family	introductory and silviculture response	17	5,236
Boonah	26/05/2018	Fearby family	introductory and general management	35	12,710
Bunya Conservation park	21/07/2018	5 Mile Radius architectural group	introductory and general management	18	-
			Total	388	240,300
16			average (participants/field day; ha/participant)	24	619



Photo 5. Participants inspecting tree growth rates at “Penwauple”, Gayndah

Workshops

The Project funded seven, 4-day workshops. These workshops were attended by 133 participants who collectively manage a combined estimated forest area of 105 000 hectares (on average, 787 hectares per participant).

Table 6. Project workshops x Participants and Forest Area

Workshop	date	number of participants	area of forest managed (ha)
Esk	Feb/Mar 2017	14	1,974
Gin Gin	Oct/Nov 2017	12	6,100
Monto	May/Jun 2018	31	72,000
Nanango	Jun/Jul 2018	22	12,265
Rathdowney	Oct 2018	18	3,941
Benham Valley	Nov 2018	10	1,500
Biggenden	Mar 2019	26	6,900
Total		133	104,680
average (participants/workshop; ha/participant)		19	787

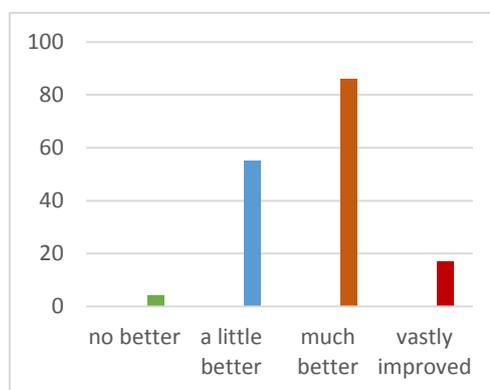
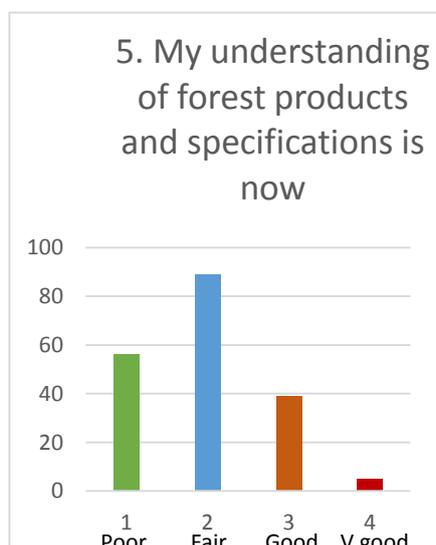


Photo 6. Participants enthralled at the Monto workshop

Sawmill field days

The Project facilitated 10 sawmill centred field days and training events, involving 9 sawmills and pole processors. A total of 263 participants attended these events (on average, 26 participants per event) and they collectively manage a combined estimated forest area 192 000 hectares.

Sawmill visits provide information for landholders to help understanding about forest products and specifications. They provide real time examples of recovery rates and why a log may be downgraded due to fault such as log ring.



Graph 2 & 3. Before and after response to field day questionnaire on understanding of forest products



Photo 7. Participants visiting Boundary Creek sawmill



Photo 8. Example of a log ring and resultant board fault



Photo 9. Girder presentation

Table 7. Mill Centred Field Days

Event location	Date	Sawmill	Topic	Number of Participants	Area of forests (hectares)
Esk	9.10.2016	Brisbane Valley sawmill	Introductory and silviculture	42	24 244
Biggenden	10.12.2016	Slacks Hardwood	Introductory and harvest management	30	61 423
Esk 7.8.2017	7.3.2017	Brisbane Valley sawmill	Workshop series sawmill visit	14	1 974
Woolooga	14.7.2017	Mary Valley Sawmill	Introductory and silviculture	31	2 063
Gympie	24.7.2017	Parkside timbers	Sawmill owners and scrub bosses	20	n/a
Tiaro	22.9.2017	DTM	Contractor training	23	5 000
Gin Gin	2.11.2017	Boundary Ck Timber	Workshop series sawmill visit	14	6 100
Boulyn	13.6.2018	Boulyn Sawmill	Workshop series sawmill visit	31	72 000
Nanango	11.7.2018	Slacks hardwood and Muckerts	Workshop series harvest management and log grading	32	12 265
Gayndah	21.3.2019	Slacks Hardwood	Workshop series sawmill visit	26	6 900
Monduran	10.5.2019	Parkside Group	Harvest and log grading	51	
11				324	191 969

3.5 Delivering improvements in management practices

Twenty eight landholders participated in the one on one incentives scheme. This included 22 landholders who received individual consultancy and incentive funding for forest treatments and 6 landholders who opted to only receive the consultancy, mostly in the form of on-ground paint marking their stand for harvest and treatment.

Generally each landholder had an ocular assessment of their forests undertaken with recommendation on areas of priority that the scheme should focus on, what were the management issues and an example area paint marked for retention and ready for thinning as a basis for the rest of the block. The area was then inspected post treatment.

Combined, these landholders own 61 730 ha (mean 2,200 ha/landholder) of which 28,600 ha is remnant and regrowth PNF (mean 1 021 ha/landholder. On average PNF occupies 46.3% of the property.

Of the 30 landholders who signed up for the incentives funding, 22 had completed (or significantly completed mostly held up by extreme dry conditions) the work by April 2019 with a total of 11 94ha treated. When all work is completed the total area treated under the program will be >1,400 ha.

Table 9. Property information for each Landholder receiving assistance from the program

Participant	Property area (ha)	Forest area (ha)	Proportion of property with PNF	Consultancy Type	Area completed (ha)	Area yet to treat (ha)
Ahern	4648.6	54.9	1%	consultancy and incentive	30	20
Atkinson	545.1	473.7	87%	consultancy and incentive	50	
Ballantyne	3756.1	1526.0	41%	consultancy and incentive	25	25
Cross	862.5	46.1	18%	consultancy and incentive	50	
Cusack	1191.8	338.7	28%	consultancy and incentive	50	
Davis	2261.3	2134.5	94%	consultancy and incentive	20	30
Delroy	4415.4	2233.7	51%	consultancy and incentive	20	
Dingle Arthur	3127.5	1461.3	47%	consultancy and incentive	50	
Dingle Clive	1507.5	60.2	25%	consultancy and incentive	50	
Doran	586.1	422.7	72%	consultancy and incentive	50	
Dray	3533.3	1972.2	56%	consultancy and incentive	50	
Ehret	302.6	269.9	89%	consultancy and incentive	25	
Golding	104.0	65.0	65%	consultancy and incentive	50	
Hall	134.5	93.2	69%	consultancy and incentive	38	
Henderson	4669.5	44.6	1%	consultancy and incentive	10	40
Illet	559.0	138.4	25%	consultancy and incentive	50	
Kirkwood	3718.7	3437.6	92%	consultancy and incentive		50
Krisanski	117.9	35.0	30%	consultancy and incentive	50	
McKee	224.0	130.6	58%	consultancy and incentive	30	20
Paskins	307.0	277.9	91%	consultancy and incentive	50	
Peters	3387.7	2330.7	69%	Paint marking	50	
Roffey	14369.6	7880.4	55%	consultancy and incentive	100	
Salisbury	468.5	129.8	28%	consultancy and incentive	50	
Solyma	52.0	36.0	69%	consultancy and incentive	36	
Swift	1326.6	698.5	53%	consultancy and incentive	50	

Ward and Bauman	176.2	75.2	43%	consultancy and incentive	25	25
Webster	2414.6	52.2	2%	consultancy and incentive	50	
Welze&Lolback	929.3	573.7	62%	consultancy only		
White_Josh	1168.5	912.2	78%	consultancy and incentive	50	
Wittwer	1020.7	795.4	78%	consultancy and incentive	35	15
	61 886.1	28 700.3	46.3%		1 194	225

4. Discussion

The Project met with a high level of interest and landholder participation, with 1 330 attending some form of extension event.

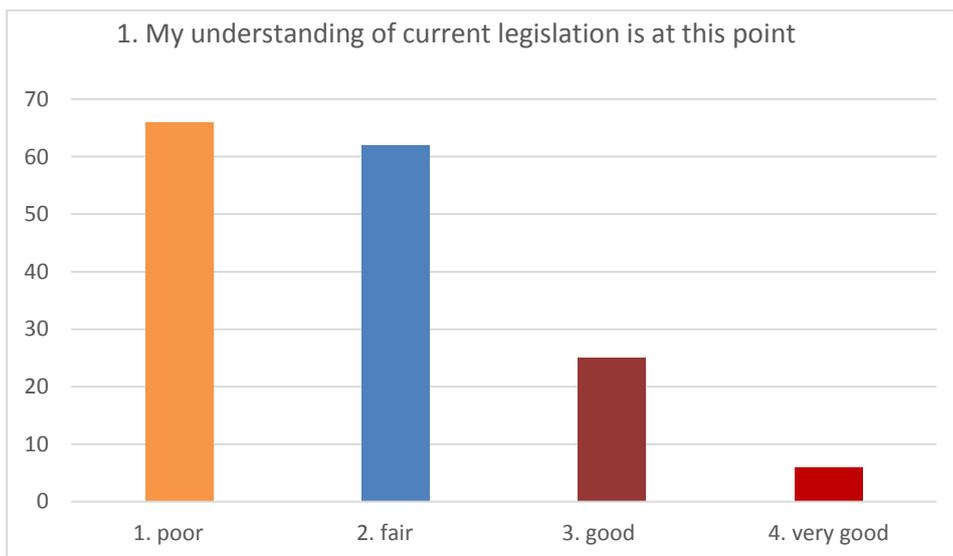
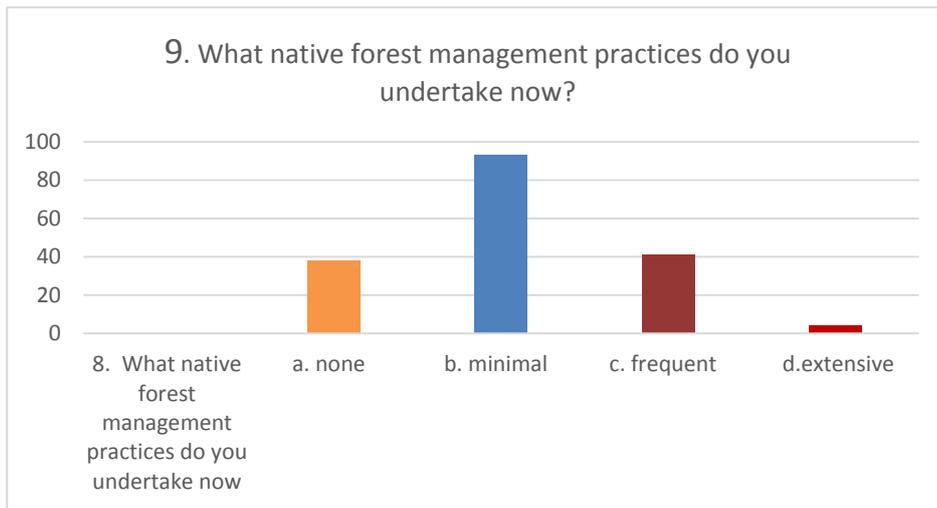
Of the 388 landholders who attended introductory field days, 133 went on to complete a 4-day workshop, 150 attended specific topic days and 128 received incentives to treat approximately 1 100 hectares of forests.

4.1 PNF impediments

Impediments to optimal forest management abound, however the three key limiting factors are:

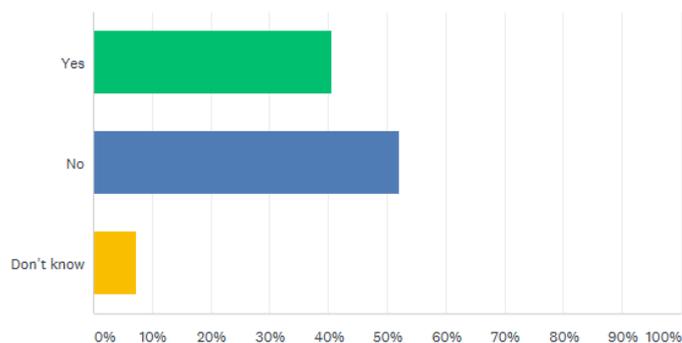
1. Low levels of government understanding about the attributes of a forest that meets productive, environmental and social sustainability functions, leading to:
 - Policy and legislative frameworks that have perverse outcomes for forest management
 - Government departments that, due to a lack of understanding, promote views that are not supported by scientific evidence
 - Policy and legislative changes that are restrictive, and result from three yearly government cycles in an industry that takes 50 years to grow a product.
2. A processing industry that undertakes the majority of the harvesting with no regard, capacity or skill set to achieve positive forest management outcomes due to:
 - A 'cutter' tree selection system that is based on maximising cutter returns by removing every available tree of merchantable size
 - No requirement for an independent tree selection process based on auditable best practice forest management
 - A processing industry coming under increasing pressure to find an adequate log supply to meet demand.
3. Landholders' general lack of understanding on all areas of native forest management, this is demonstrated by the following:
 - Pre-field day surveys indicated that of those who responded 130 of the 172 landholders undertook nil to minimal forest management practices, and 129 had a poor to fair understanding of the specific legislation.
 - The majority of respondents to the survey (60%) had not submitted an 'Intention to Harvest Notification' under the Managing a native forest practice, accepted development vegetation clearing code. This is the 20th year since the introduction of the Vegetation Management Act. Additional changes to legislation will have a major negative impact on convincing landholders to invest considerable monies into the management of their forests, when the returns will not be met for decades into the future, and each legislative change is more restrictive than the last.
 - A similar percentage had not submitted a Property Map of Assessable Vegetation (PMAV) for their property, resulting in a considerable area of vegetation now being mapped as High Value Regrowth and subject to the accepted development vegetation clearing code - this is

counterintuitive, considering that property rights and vegetation laws are stated as one of the main impediments to undertaking forest management on their properties.



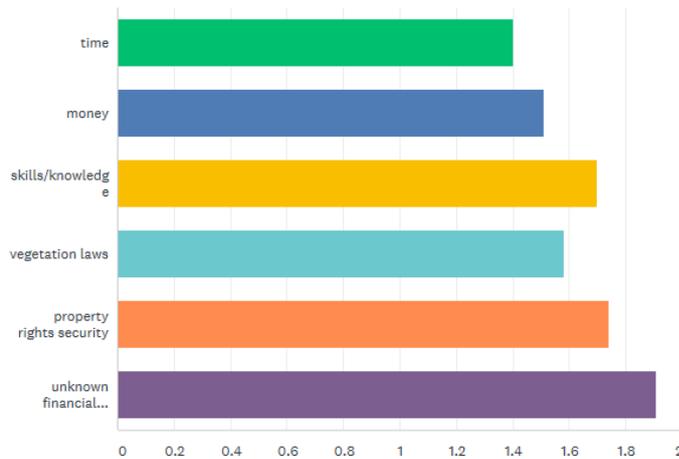
Have you registered a notification of intention to clear for a native forest practice on your property?

Answered: 138 Skipped: 4



Our work has shown there is most often 5 main impediments to managing forests for timber production on private land. How would you rate the significance of these impediments to your situation?

Answered: 136 Skipped: 6



4.2 Landholder skills, capacity and understanding

The field day and on-line survey clearly showed a very low landholder understanding about forest management, however the Project demonstrated there were high numbers of landholders keen to improve their skills and capacity.

Initial survey responses regarding preferred educational formats showed a preference for workshops and field days, but all forms of media were considered positively.

'The four day workshop was conducted very professionally and we were able to take away documents which when we are able to start a serious look at our property will be of great value so we can refer back to the correct calculations'.

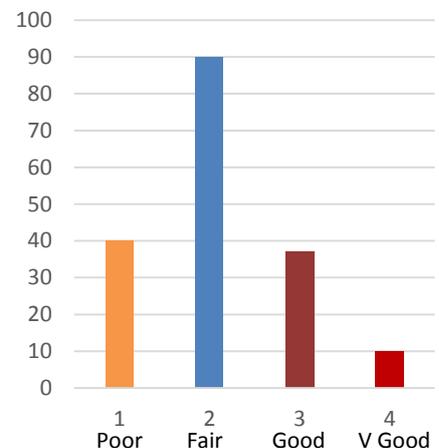
Wendy Harris

'I had just about given up on my native forest due to my lack of knowledge and understanding of basic forestry principals ...

The workshop offered tools in understanding legislation, products and stand assessment, methods of thinning and stand improvement, harvest preparation and post-harvest management. This type of practical hands on work combined with the AV presentations and concise commentary cannot be beaten for communicating what we folk want to learn and what we need to do.'

Jenny Thompson

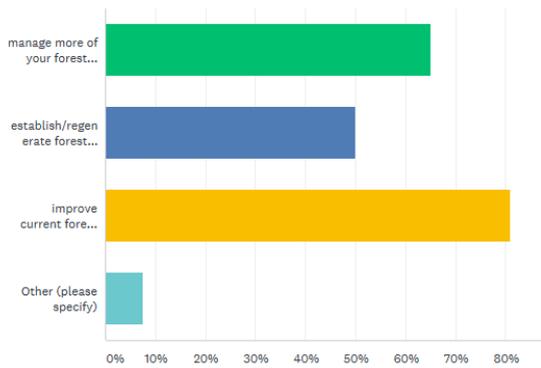
2. My understanding of Native Forest Management is at this point



Q17

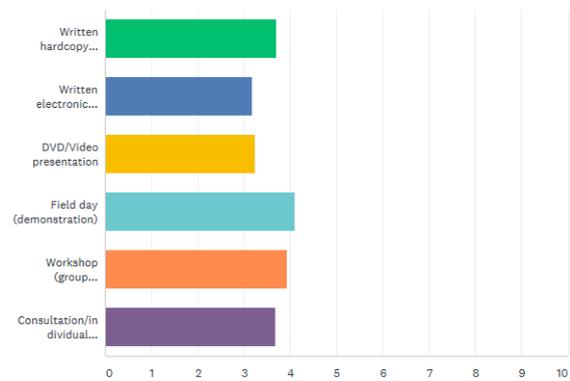
Would a training and extension program assist you to

Answered: 132 Skipped: 10



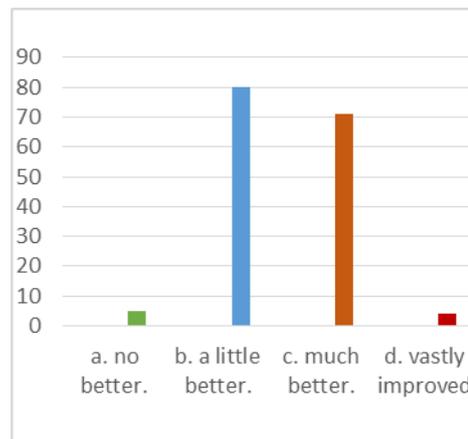
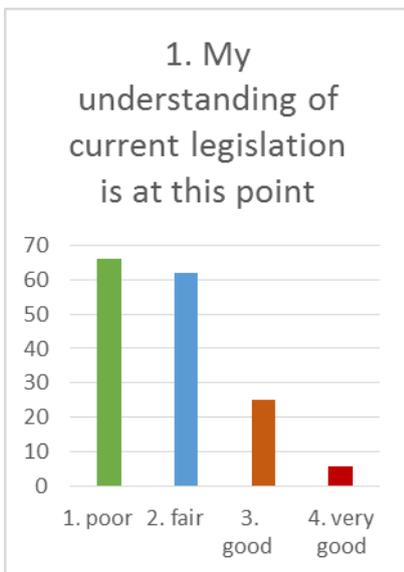
When learning a new concept, what forms of communication do you prefer? 1 lowest to 5 highest

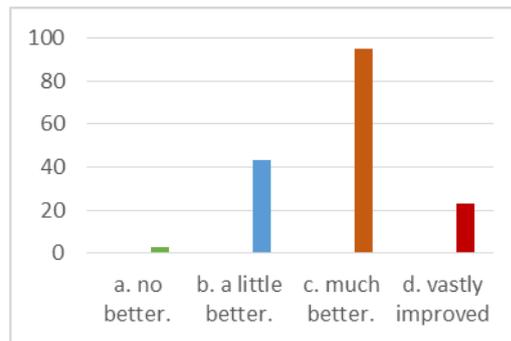
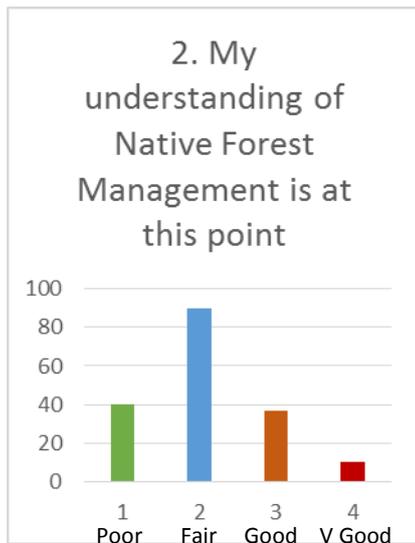
Answered: 138 Skipped: 4



4.3 Workshop evaluations

Pre and post evaluations were taken at all field days and workshops and generally showed a strong improvement in understanding. eg *Understanding of Legislation* - pre field day showed 130 attendees had a poor to fair understanding of current legislation, moving to 80 'a little better' and 70 'much better'. While this is probably not as high as is required, there is only one hour dedicated to a complex and dry topic that they feel negative about to begin with. Whereas - *My understanding of NFM*, Moved from 130 with poor or fair understanding, to 120 much better or vastly improved. This is also a reflection of the topic being a mix of theory and practical demonstration, covering a broader range of learning techniques. Of concern is the response to 'What native forest practice do you undertake now' with 38 responding *none*, and 93, *minimal* out of 174 respondents.





4.4 Barriers to PNF investment

The following barriers to PNF investment were consistently identified:

1. Government legislation and the constant 'death by a thousand cuts' regressive approach to legislative changes and code reviews - there is never a positive outcome from these processes, and the landholders have lost all trust in government's support for the industry
2. Lack of landholder knowledge and confidence in making the right decisions
3. Returns from previous harvests have not been good and landholders do not attribute the problem to the fact that their forests are in a very unproductive state
4. Native forest management is a long term investment and the average age of growers is >60+ years
5. Landholders see themselves as graziers not foresters
6. Landholders are struggling to keep up with their workload as it is
7. Native forest management is a low priority and they never really 'get around to it'

5. Future Extension Program

The private native forestry extension program has demonstrated the success of this type of intervention methodology to generate on-ground management change, improving the productivity of PNF tenfold.

Logical planning processes and development of high quality multi-media extension material, effective one day introductory field days followed by 4-day comprehensive workshops has developed the interest and capacity for landholders.

The Program also enabled landholders to participate and invest in co-funded management intervention in their over stocked forests. Incentive payments provided the most effective tool for achieving on ground change.

With the diminished availability of the hardwood resource from State forests, PNF will becoming increasingly more important for the sawmills in SEQ.

A multi-million dollar program of financial assistance to forest growers could be implemented, based on a \$1 in \$4 public-private partnership, with a \$1 public incentive leveraging \$4 of private investment in active forest management.

The public contribution to the assistance program will achieve the recognised social benefit of improved forest health, habitat values, carbon sequestration and soil condition (improved ground cover substantially reduces soil erosion into the reef lagoon).

This program could be up and running immediately on the tail of this Project, using the same administrative, overseeing protocols and highly experienced extension officers already in place.

It is of paramount importance to the future of the SEQ industry and the thousands of people the extended industry employs that the area of managed private native forests is increased to 500 000 hectares. Over time, this improved productivity is estimated to provide an additional 500 000m³ of hardwood per annum into the timber industry.

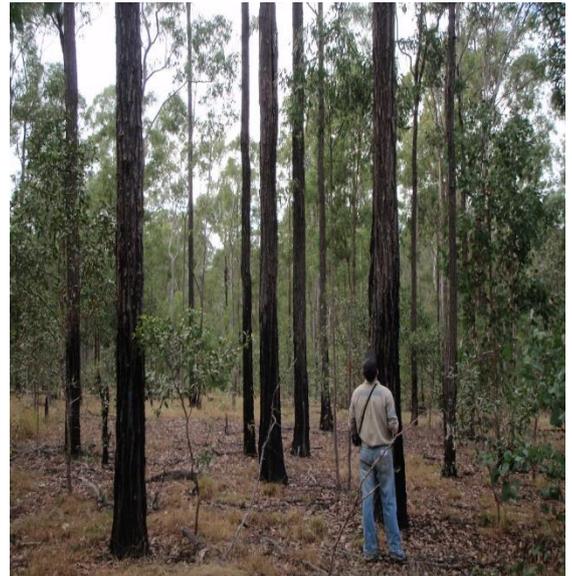


Photo 11. High quality forest with good ground cover and shrub layer