Does improved technology promote planning?

An evaluation of the effectiveness of funding landholders to purchase computer mapping software and other technologies to promote property management planning

By Gina O'Sullivan, and Gavin Peck

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Executive Summary

Background

As part of the Neighbourhood Catchment Incentive Scheme (NCIS), the Fitzroy Basin Association (FBA) provided funding over the past five years for landholders to purchase property mapping and/or planning software, GPS units and imagery. This funding met the M1 management action target stated in the Central Queensland Strategy for Sustainability: 2004 and beyond (CQSS2) (Christensen and Rodgers, 2004) by encouraging a holistic and integrated approach to management at the 'whole of property' and landscape level, and more widespread use of effective and cohesive property and neighbourhood catchment scale planning. In anticipation of the end of the current Natural Heritage Trust funding cycle, FBA initiated a survey of past funding recipients as a means of evaluating the effectiveness of the incentive scheme.

Methodology

The overall aim of this evaluation was to determine whether FBA should continue to promote and fund the purchase of property mapping and recording software and GPS units to promote improved land management. To answer this, three key evaluation questions were identified:

1. Are landholders using the software and GPS technologies?
2. What are the important factors in software and GPS being of use to farmers for property planning?
3. Is funding software an effective way to foster improved property planning?

Original project data was combined with semi-structured telephone interviews to evaluate the effectiveness of the incentive scheme against the key evaluation questions.

Table 1. Results / Discussion Summary

Level	Measurable Indicators
1. Inputs	• The FBA paid $54,346.50 to landholders to purchase software products and services. • An additional $74,962.00 was contributed by the survey participants. • Funding for the survey participants for training in the use of software equalled $5,727.00 from FBA and more than $6,745.00 in kind contributions by landholders.
2. Activities	• 22 landholders who were approved for funding for software products and services were surveyed; 2 are no longer using the software. • 55% of landholders undertook training for purchased software, of these half completed additional training beyond what was identified in the original project proposal.
3. People Involved	• 51 people were recorded as having used the software within the 22 businesses. All were family members with the main users being the grazier / farmer males and the grazier / farmer females. • The ages of 16 out of 51 family members were specified, with 37% in the 50- 60 year old bracket, and 37% in the 30-40 years old bracket.
4. Reactions	• 59% of participants found the software easy to use, 31% did not find it easy to use, and the remainder have not purchased or used the software yet. • The ability for landholders to use the software for property layout work and management decisions was the main reasons why the software has been of use to landholders. • Technical issues, such as incompatibility of maps with software and poor imagery, have been the main factors preventing the software from being of use.
5. KASA change	• Fairport; PAM and gpMapper, and Practical Systems Software; FarmMap and Stockbook, were the two most popular brands of software purchased by the landholders. • The most common reasons for purchasing a particular brand of software were advice from consultants, local catchment group or FBA, word of mouth and local support. • Garmin was the most popular brand of GPS purchased because of brand reliability. • Only 3 of the 22 participants purchased software and or GPS's which were linked to other software which they had or had used previously. • 89% of participants who were funded for software gave a comfort rating of 5 out of 10 or higher (10 being totally comfortable in using the software). 43% of these rated their level of comfort in the use of the software as being between score 7 and 10. Justification for the comfort ratings were the need for increased training, knowledge, understanding, and expertise, and refreshers in the use of both software and GPS.

	• Those who received funding for a GPS and imagery also gave comfort ratings of 7 and 9. • 13 of the 22 participants have an up-to-date property map on their computer; however 20 participants said their property map has led to planning projects or on-ground improvements on farm. This is because 7 of the 9 people who do not have up-to-date property maps on their computer also indicated that they still use these old, non digital maps for planning projects. • When asked if they felt that the purchase of the software/GPS unit had led to an increased skill level within the business, 18 or 82% of landholders surveyed believed it had.
6. Practice change	• 18 (82%) of the 22 participants are currently still using the property mapping and/or planning software, GPS units and imagery. • 4 (18%) of the 22 participants and their family or workers no longer use the software for the business. The reasons for this were poor image quality and map size being too large for the program, or simply no longer a need for it as they are not undertaking any further property planning. • 21 project plans or on-ground improvements have been undertaken using up-to-date digital property maps, with 18 of these being paddock layout and infrastructure plans and improvements. • The survey found that only 5 of the 22 participants had used property mapping and/or planning software, GPS units and imagery prior to funding from the FBA. • Usage frequency of the different products was broken down into three categories; not at all, one – a couple of times, used often. “Used often” was the most common answer given indicating that landholders have gained a lot of usage from the software, GPS and imagery.
7. End results	• A total of 33 project plans or on-ground improvements have been undertaken by participants using both up-to-date digital maps and not up-to date, non digital maps. • 12 project plans or on-ground improvements have been undertaken using not up-to date, non digital maps. • On a scale of 1-10 (1 being a negative impact, 5 being no change, and 10 being greatly improved) none of the landholders reported to have noticed a negative natural resource change, although 3 have not noticed any change. The remaining landholders scored natural resource change of 6 and above, with 1 landholder noticing “greatly improved natural resource change”, giving a score of 10. • The majority of landholders believe they are considerably more aware of cattle movements, property layout etc since purchasing the software, GPS and other property planning technologies.

Conclusions and Recommendations

Funding the purchase of property mapping and/or planning software, GPS units and imagery for landholders has led to increased property planning and on-ground improvements. The ability for landholders to use the software for property layout work and management decision making has enabled them to continue to use these tools after purchase on an as need basis. Property maps have been the most important tool for project planning and/or on-ground improvements. Continued funding of up to date property maps and satellite imagery would ensure further property planning and on-ground improvements in the Fitzroy Basin.

Minor technical issues were the only reasons why landholders do not still use their software; however this could be resolved with technical support and follow up services. Support in the form of workshops particularly for mapping and software would be supported by the landholders. Information sheets outlining the different software available and the perspective pros and cons of these products determined by past landholder experiences would also help minimize technical problems.

A small number of participants commented that funding for one on one consultancy services had not been very successful. Consultancy services may therefore not be necessary if workshops were available and run at a number of locations throughout the basin regularly, particularly in the more remote areas.

Introduction

For five years the Fitzroy Basin Association (FBA) has provided funds under their Neighbourhood Catchment Incentive Scheme (NCIS) to enable landholders to purchase property mapping and/or planning software, GPS units and imagery. The intention of this funding was increased and improved property planning, thus meeting the M1 management action target stated in the region's natural resource management plan, Central Queensland Strategy for Sustainability: 2004 and beyond (CQSS2), (Christensen and Rodgers, 2004).

The M1 target aims for property management planning to be implemented, incorporating Sustainable Production Systems, across 70 percent of the catchment within 10 years. This specific target forms part of the broader goal of stabilising and improving the condition of the region's land assets through a holistic and integrated approach to management at the 'whole of property' and landscape level. The objective is also to see more widespread use of effective and cohesive property and neighbourhood catchment scale planning. (Christensen and Rodgers, 2004).

Central Queensland University (CQU) was commissioned in 2007 to survey past participants in the NCIS to assess their involvement in the various incentive programs offered under the scheme. This survey formed part of a broader evaluation of the FBA's Neighbourhood Catchment approach to devolved grant funding. A section of the CQU survey covered property planning, however the key evaluation question of "should FBA continue to fund property planning software and GPS units?" was not addressed.

Nearing the end of the present Natural Heritage Trust funding cycle, it was deemed timely to evaluate the practice of funding landholders to purchase software and GPS units. FBA initiated its own survey of past participants that received funding to purchase computer mapping software and other technologies for property management planning.

This evaluation will be used to guide FBA decision-making as to whether or not funding software and GPS units is an effective way of increasing the uptake and level of property management planning.

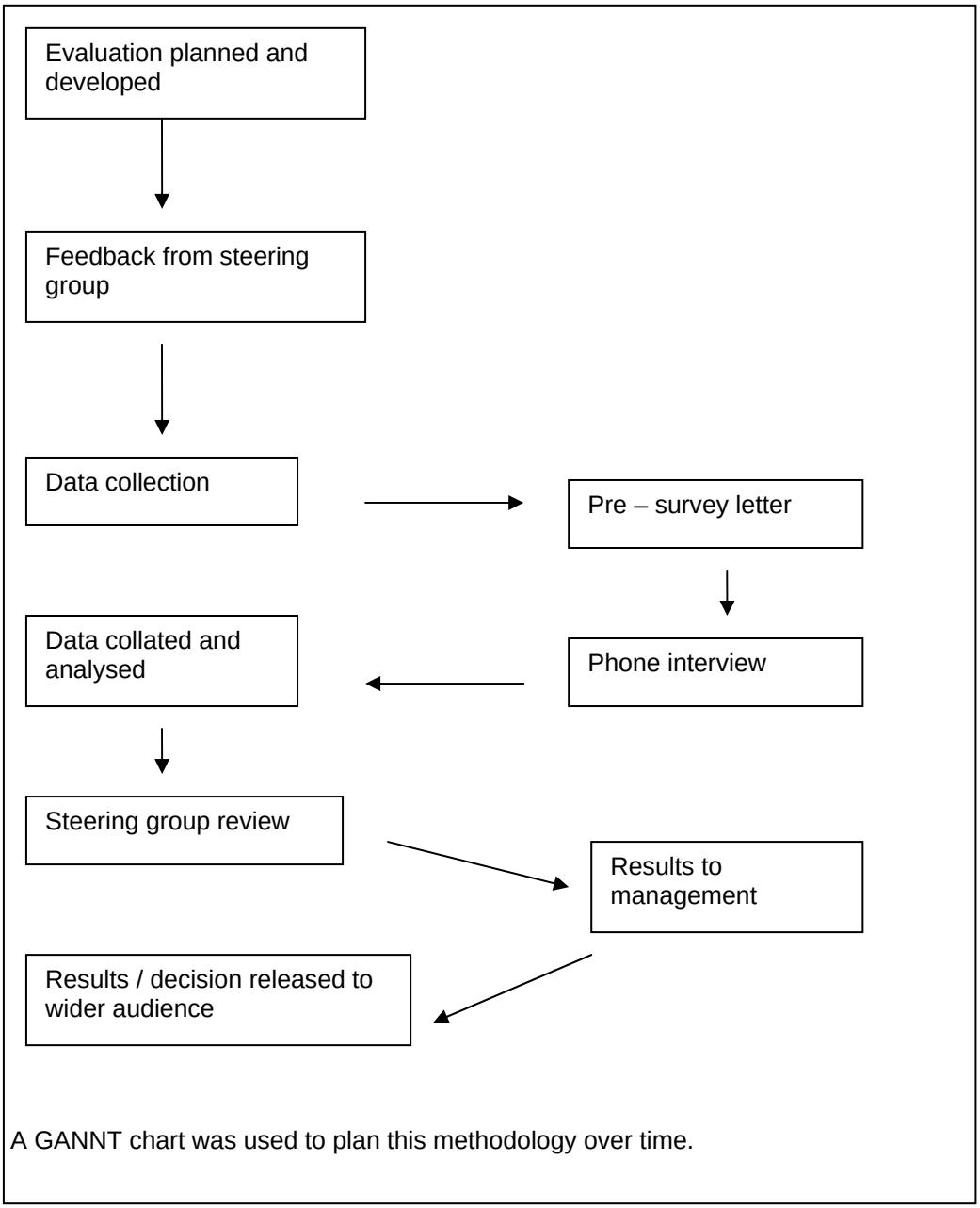
Methods

The planning stage of the project was designed using Wisemann's steps (CRRI-Q, 2007), which is a simple six step theory specifically designed for planning evaluations (Table 2). This was combined with a logic framework known as Modified Bennett's Hierarchy (Adapted from Bennett, 1975 by Coutts (2005)) to design the evaluation and identify the information needs to adequately respond to the three key evaluation questions (Table 3).

Table 2: Wisemann's steps and project methodology.

1	**Why**	**Who**	**Resources**	**Audiences**
	Determine whether to continue funding	Internal evaluation by FBA, for FBA Steering group: Lead person: Land Management Officer, Grazing	Staff time. Project database Limited $$	FBA management Sub – regions Field officers Other regional NRM bodies.
2	**Key Evaluation Questions**			
	Are landholders using the software and GPS technologies? What are the important factors in software being of use to farmers for property planning? Is funding software an effective way to foster property planning?			
3	**Information needs**			
	See Figure 2: Modified Bennett's hierarchy			
4	**Information sources**		**Data collection methods**	
	NCAP2 database CQU devolved grants survey Participants themselves		Use information in database Phone interview all participants	
5	**Methods of data analysis**			
	Simple statistics Visual graphs for reporting purposes Landholder quotes			
6	**Methodology** Figure 1. below outlines the project methodology			

Figure 1. Methodology Flow Chart



A GANNT chart was used to plan this methodology over time.

Table 3: Modified Bennett's hierarchy

Level	Description	Measurable Indicators	Data source
End results	- Improved property planning through the use of software and other technologies.	- Number of people still using software as a regular farm planning / management tool	Phone interview of participants
Practice change	- Landholders continuing to use software after property is mapped - Computer based mapping changed the way the business is run - Computer based mapping changed the way natural resources are managed on farm	- Number of landholders regularly using software programs - Number of landholders using software for monitoring or planning purposes	Phone interview of participants
KASA change	- Increased use of software for property planning activities - Application of software to on farm activities - Change in attitude to computer based property mapping - Software has allowed computer mapping to be used as a planning tool in the business	- Number of landholders using software for property planning - Before and after project use of software - Number of property maps completed - Number of on-ground projects planned as a result of property planning - Continued use (or otherwise) of the software - Improved skill level in farm businesses	Phone interview of participants
Reactions	- Use/ease of use of the software by participants - Support from landholders for software as a means of promoting property planning - Landholders satisfied with their competency in using software	- The way the software has been used in the business - Types of property planning activities the software has been used for - Number of people who found it easy to use, and still use software - Number of people within each business using the software	Phone interview of participants
People involvement	- 40 farm businesses	- Number of people within those businesses using software - Range of people across businesses using the software	NCAP database and phone interview of participants

Activities	- Software purchased and used for property mapping - training undertaken to use mapping software	- Number of projects, - Number of businesses, - FBA dollars spent, - Landholder in kind contributions	NCAP database and phone interview of participants
Inputs /resources	- $ spent purchasing software, GPS units and other mapping technologies - landholder time spent in training to use software - $ (FBA and landholder) spent on training - landholder time spent mapping property	- $ spent FBA - $ spent landholder - time spent landholder	NCAP database NCAP database Participant interview

Once the evaluation logic was finalised, a series of 25 questions were created and set out in a semi-structured telephone survey. Twenty-two landholders who had received funding from the FBA for the purchase of GPS units, mapping and recording software, imagery and training were surveyed.

Results

A total of 51 land holders who had completed projects involving a property planning component with FBA were initially selected to be surveyed. However four could not be contacted, three never received funding, and 22 were not applicable after careful consideration of the end result. Many of the participants who were regarded as being not applicable simply did not actually receive funding, or purchase any property mapping and/or planning software, GPS units or imagery. This led to a total of 22 participants in the evaluation survey.

Interpretation of Results

During the interpretation of results it became apparent that the wording of some questions could have been confusing, and may have been open to misinterpretation by the participants. The fact that more than one person performed the surveys increased the likelihood of misinterpretation. The main cause of potential confusion was questions that were specifically about software, as some of the participants only received funding for GPS' and imagery.

The structure of the survey caused difficulties in the assessment of results due to a considerable number of linked questions. A large percentage of the results were grouped into categories and themes as many of the questions were open-ended.

Results have been presented in a way as to cover the measurable indicators of the Bennett's hierarchy shown previously in Table 3.

1. Inputs

Funds contributed

Participants in the survey were paid $54,346.50 by the FBA for software products and services with an additional $74,962.00 contributed by the survey participants.

2. Activities

Number of businesses who purchased software for property mapping

A total of 22 businesses who received funding for the purchase of property mapping and/or planning software, GPS units and imagery were surveyed. The breakdown of the number of property mapping and/or planning software, GPS units and imagery funded by the FBA can be seen in Table 2.

Table 4: Breakdown of property mapping and/or planning software, GPS units and imagery purchased.

Purchase	Number	Percentage
GPS	12	54%
Software	19	86%
Imagery	14	63%
Training	14	63%
Total Landholders	**22**	

Two participants never used their purchased software as a result of not actually receiving it or incompatibility issues.

Training

Funding provided to survey participants for training in the use of software was $5727.00 from FBA and more than $6745.00 in in-kind contributions by the landholders.

Number of businesses that undertook training in computer software use

A total of 55% of landholders undertook training for the software as part of their PMP project with FBA. Training undertaken as outlined in their FBA project included:

- One hour, one-on-one with the provider when received, but not everything covered
- Spent 1.5 hours when software was downloaded
- Training in the program but only two hours
- No training, went to general mapping and GPS day
- Private consultant for three participants

Of the 55% who undertook training, half completed additional training outside of their project with FBA. Additional training included:

- Property management planning course one year prior to the farm map course.

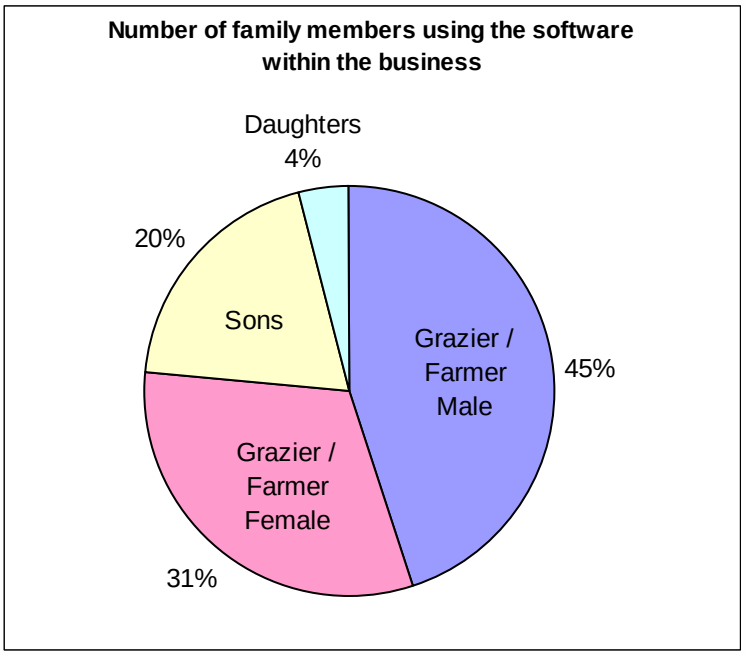
- Private tutor
- One-on-one with supplier
- Half a day training with David Hickey (Department of Primary Industries and Fisheries) as not a lot of training for Farm Map was on offer.
- Private consultant

3. People Involvement

People involvement with the software in each business

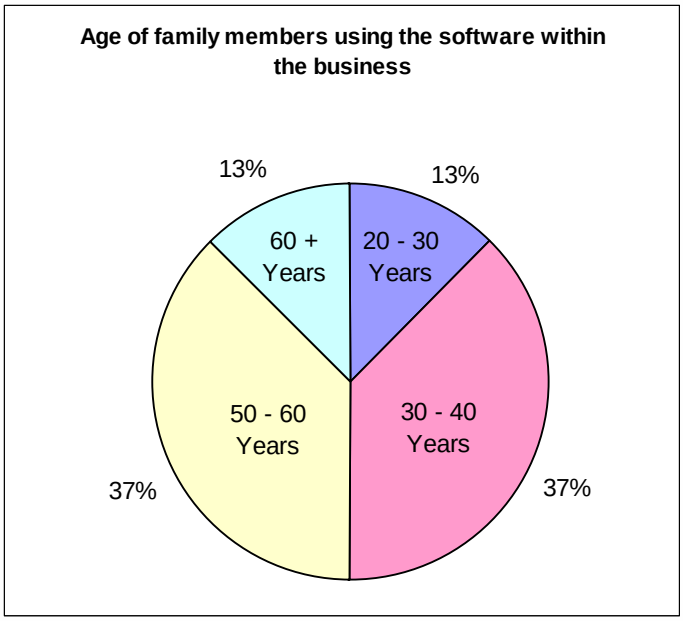
Of the 22 businesses surveyed, 51 people were recorded as having used the software within the businesses. All were family members with the main users being the Grazier/Farmer Males and the Grazier /Farmer Females (Figure 2).

Figure 2: Range of people across businesses using the software.



Only a small number of participants were willing to disclose the ages of the family members using the software within the business. The ages of 16 family members were given, with 37% in the 50- 60 year old bracket, and 37% in the 30-40 years old bracket (see Figure 3).

Figure 3: Age of 16 family members across businesses using the software.



It can be seen in Figure 3 that the main users of the software within the business range in age from 30-60 years.

4. Reactions

Ease of use with software

When asked if they found the software easy to use**,** 13 (59%) participants said yes, seven (31%) said no, and two were not applicable as they had not purchased their software yet, or hadn't used the software much due to issues with their map size.

Reasons why they found it easy to use included:

- "The more you use the easier it gets."
- "Not impossible to use but getting a good map in the program is a major hurdle."
- "Once you have a good handle on it."

Reasons why they found it hard to use included:

- "Initially no, inadequate training. Later with practice, yes."
- "Not very user friendly."
- "The mapping program OK, but not the rest of the program."
- "Had a few problems with it. Hard when only using it a few days every month."

Factors contributing to software being of use or not of use in the business

Technical issues, such as incompatibility of maps with software and poor imagery, were the main factors preventing the software from being of use (see Table 5). The ability to use the software for property

layout work and management decisions were the main reasons why the software was of use to landholders.

Table 5. Factors which have led to the software being of use / not of use in the business.

	Factors	No. of Landholders	Percentage
Of Use	Property Layout	12	55%
	Management	5	23%
	Learning and Education	1	4%
Not of use	Technical Issues	3	14%
	Time and Education	1	4%
Total		22	100%

Below are some quotes from landholders who were asked the question; *"what factors do you believe have led to the software being of use / not of use in the business?"*

Of Use:

- *"A lot easier to distinguish landtype, water courses and watering points. A lot more efficient in the use of pipes and dams."*
- *"Mainly being able to map paddock areas and fence lines. Better and more accurate spread of watering points."*
- *"The fact that we can ascertain the areas to fence for each paddock. Fence to soil type. Take notice and space out watering points and much easier to even out the pasture utilisation and not over graze."*
- *"Used for marking bad weed outbreaks, fox sightings, contour bank breaches, and measuring paddock areas. Also specific uses of the GPS for general property business, property management tool rather than a development tool."*
- *"Useful tool to know paddock areas, fence line distances, distance to water, property layout and planning."*

Not of Use:

- *"Lack of education and time due to seasons"*
- *"GPS has been wonderful, mapping infrastructure etc. Poor imagery (small scale property) led to software not being very useful. Hoping it will be rectified by new FBA imagery."*

5. Knowledge, Attitude, Skills, and Aspiration (KASA) Change

Brand of software purchased and why

Fairport: PAM and gpMapper, and Practical Systems Software: FarmMap and Stockbook, were the two most popular brands of software purchased by the landholders. Garmin was the most popular brand of GPS purchased, however three of the 12 landholders who purchased a GPS could not recall the brand of the product.

Table 6. Brand of software and GPS purchased and reasons why.

Brand	Reason Why Purchased	Number
Fairport GP Mapper	Told it was good	1
	Advised by local catchment group (CHRRUP)	1
	On offer with course & advised to purchase	1
	Advised by Consultant	2
	Local Support	1
	Total	6
Fairport PAM	No reason given	1
	Unsure	3
	Local Support	1
	Word of Mouth	1
	Advised by FBA and local catchment group (CHRRUP)	1
	Consultant's advice	1
	Total	8
Practical Systems Software - FarmMap, Stockbook	Good Value	2
	Simplicity and covers all their needs	1
	Word of mouth	1
	User Friendly	1
	Total	5
Farm Works	No reason	1
Total Software Purchased		**19**
GPS - Garmin	Reliable Brand	9
GPS - No Brand / Brand unknown	Unknown	3
Total GPS		**12**

Table 6 shows that the most common reasons for purchasing a particular brand of software were advice from consultants, local catchment group or FBA, word of mouth and local support. However five of the 19

landholders who purchased software were unsure of why they purchased a particular brand, or did not give a reason why. The most common reason for purchasing the Garmin GPS was because of reliability of the brand.

Only three (14%) of the 22 participants purchased software/GPS that was linked to other software they had or had used previously. This software included GPS - guidance and yield maps, Farm Mapper – Practical Systems, and P.A.M. The remaining 18 participants did not purchase software/GPS that was related to other software they had, or had used previously, and one participant did not answer this question.

Comfort with software usage

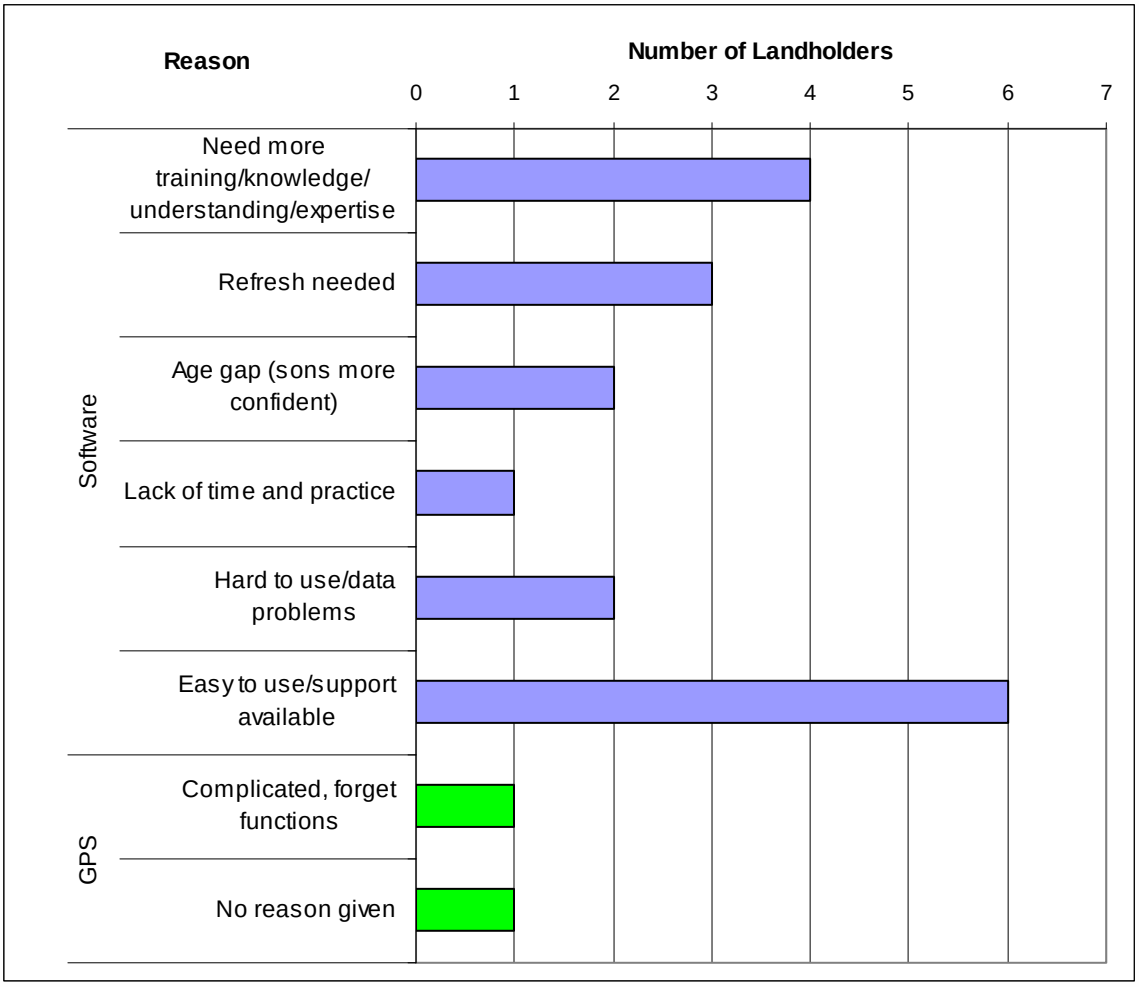
When asked about their level of comfort in using the software program, using a scale of 1-10 (1 being totally uncomfortable and 10 being totally comfortable), 16 out of 20, or 89% of participants who were funded for software said 5 or higher (see Table 7). Seven (43%) of the 16 participants rated their comfort level as being between 7 and 10. The two participants who received funding for a GPS and imagery also gave answers of 7 and 9. Two participants were exempt from this question as they either did not have the software yet, or were unable to use software because of map incompatibility issues.

Table 7. Level of comfort ratings for Software and GPS usage (scale 1-10).

Product	Scale	Number of Landholders	Percent
Software	1	1	5
	3	1	5
	5	5	25
	6	4	20
	7	2	10
	8	3	15
	10	2	10
Software Total		**18**	
GPS	7	1	5
	9	1	5
GPS Total		**2**	
Overall Total		**20**	**100**

Participants were then asked to justify their software and GPS level of comfort rating in the previous question. Figure 4 shows the reasons for the 20 participants that answered this question.

Figure 4: Reasons for comfort ratings for software and GPS usage.



The results show that although 16 participants gave a rating of 5 or above when asked to describe their comfort level in using the software, only six believe the software is easy to use with adequate support available. In general the reasons identified were impediments to greater levels of comfort for both software and GPS, with the need for increased training, knowledge, understanding, and expertise, and refreshers being the most common reasons.

Number of landholders using property maps and software for property planning

Just over 50% (13) of the 22 participants had an up-to-date property map on their computer; however 20 of the 22 participants said their property map had led to planning projects or on-ground improvements on their farm. This is because seven of the nine people who did not have up-to-date property maps on their computer also indicated that they still use old/non digital maps for planning projects.

Improved skill level in farm businesses

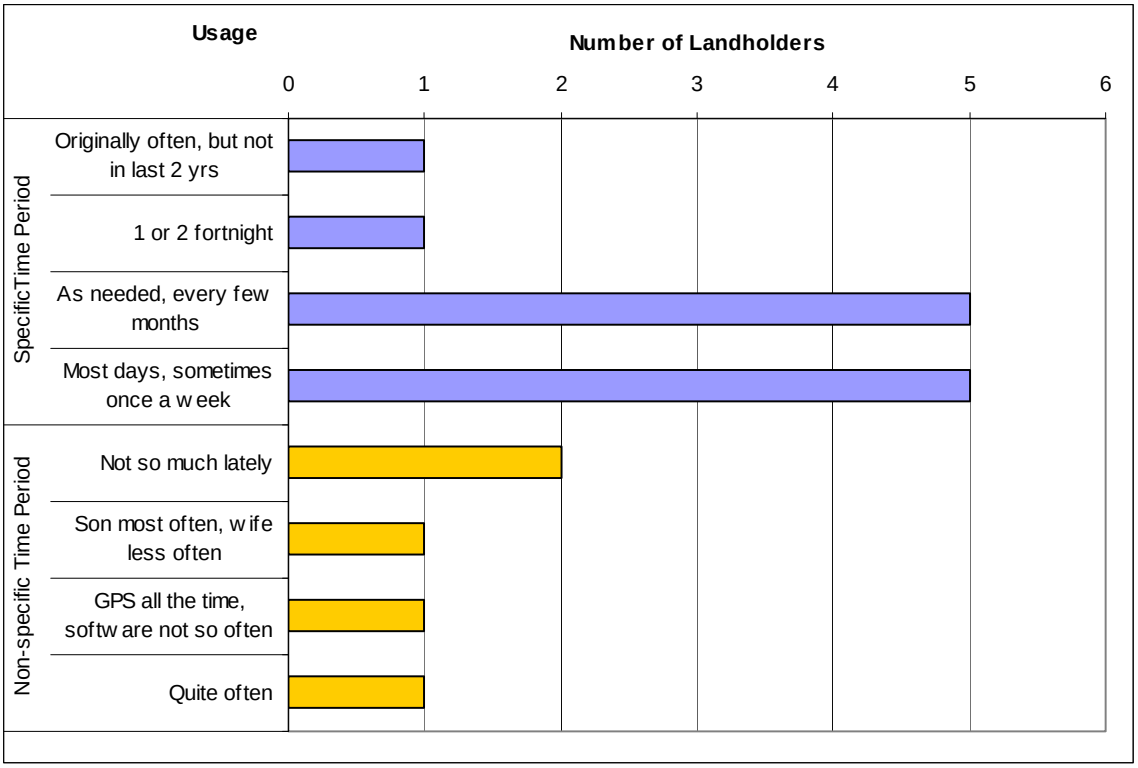
When asked if they felt that the purchase of the software/GPS unit had led to an increased skill level within the business, 18 or 82% of landholders surveyed believed it had.

6. Practice Change

Continued use of the property mapping / planning computer software and GPS

Of the 22 survey participants, 17 (77%) actively used the property mapping and/or planning software, GPS units and imagery. Answers ranged from specific time periods for usage such as “most days” and “per fortnight”, to broad, non-specific time periods, such as "quite often”, "not so much lately", "GPS all the time but software not so often" and "son most often, husband and wife lest often" (see Figure 5). Figure 6 shows that of the 17 landholders still using the software, 11 or 65% had usages of “weekly”, “fortnightly” and “every few months as needed”.

Figure 5: Frequency of the software / GPS / imagery usage of 17 landholders.



Three of the 22 participants and their family/ workers no longer use the software for the business. The reasons for this were poor image quality, lack of time or simply no longer a need for it as they were not undertaking any further property planning.

Project plans or on-ground improvements using up-to-date digital maps

A total of 21 project plans or on-ground improvements were undertaken using up-to-date digital property maps, with 18 of these being paddock layout and infrastructure plans and improvements.

Project plans or on-ground improvements using maps (up-to-date and not up-to-date)

A total of 33 project plans or on-ground improvements were undertaken by participants using both up-to-date digital maps and not up-to date, non digital maps (see Table 8).

Table 8. Types of property planning activities and on-ground improvements the software has been used for.

Projects / on-ground improvements		Number including up-to-date digital, and non up-to-date digital maps	Non up-to-date, digital maps
Paddock layout/infrastructure	Fencing	11	2
	Waters	8	1
	Contour Banks	1	1
	Land & soil type, and regional ecosystem identification	3	2
	Graslans™ application/re-growth control	1	
	Power line Placement	1	1
	Project unspecified	1	1
Total paddock layout/infrastructure projects		**26**	**8**
PMAV / Envirofund assistance		3	2
Calculating cost of proposed infrastructure		1	1
Unspecified projects		3	1
Total projects		**33**	**12**

Usage of property mapping and/or planning software, GPS units and imagery before and after FBA funding

The survey found that only five of the 22 participants had used property mapping and/or planning software, GPS units and imagery prior to funding from the FBA.

Usage frequency of the software / GPS since purchase

Usage frequency of the different products was broken down into three categories according to product; GPS, Software and Imagery. This was necessary as landholders who had received funding for more than one product reported different usages for these products.

“Used often” was the most common answer given when landholders were asked about their usage of the property mapping and/or planning software, GPS units and imagery (see Figures 6, 7 and 8).

Figure 6: Frequency of software usage since purchase (out of 19)

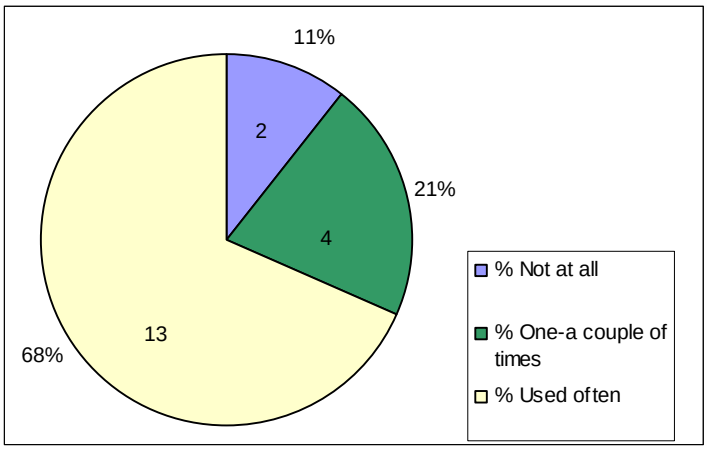


Figure 7: Frequency of GPS usage since purchase (out of 12)

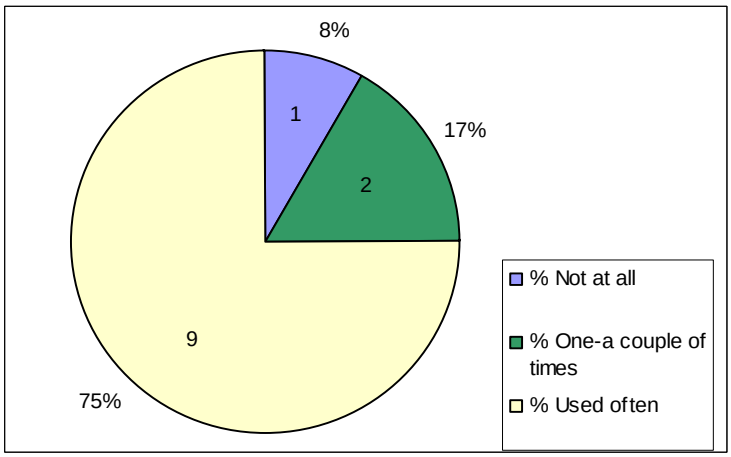
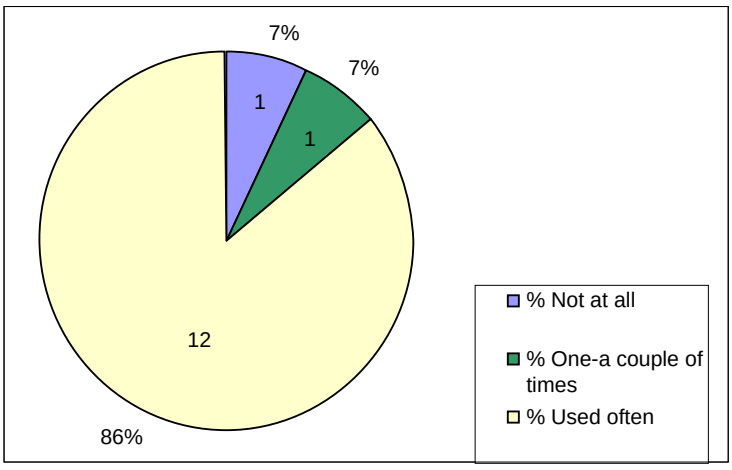


Figure 8: Frequency of imagery usage since purchase (out of 14)



Two landholders who received funding for both software and imagery answered “not at all” as they either had incompatibility problems with the map size, or simply because they had not purchased their software yet. The results indicate that landholders have gained a lot of usage from the software, GPS and imagery.

7. End Results

Total on-farm projects

In total the survey participants had undertaken 33 project plans or on-ground improvements using **both** up-to-date digital property maps and not up-to date, non digital property maps.

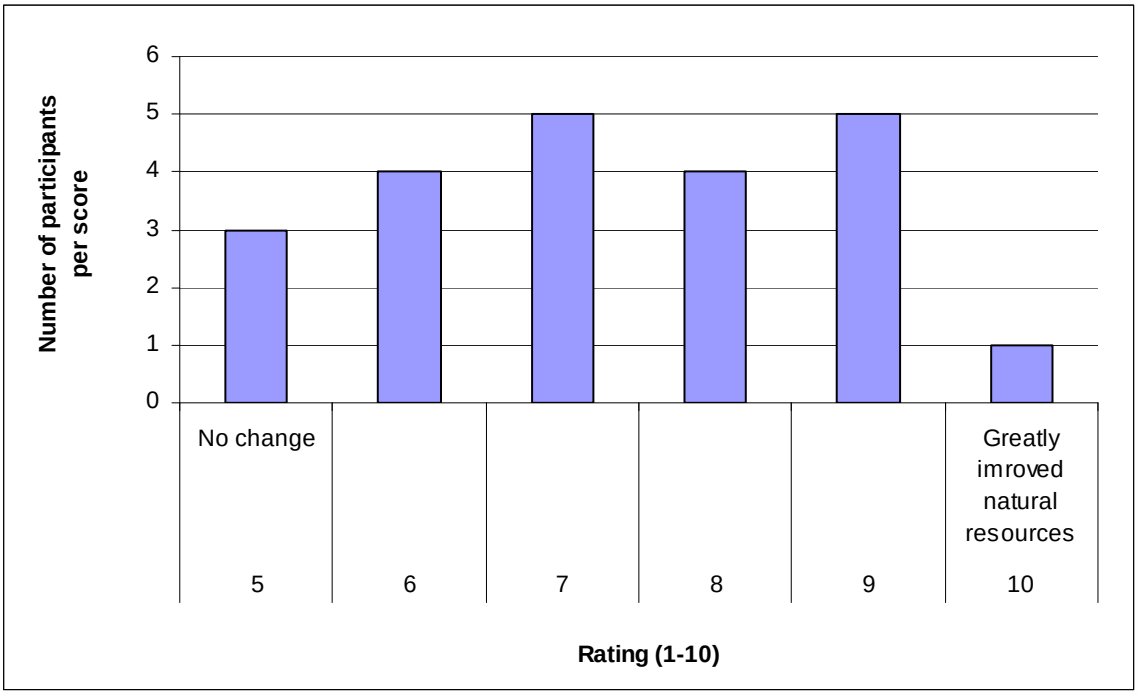
Planned and on-ground projects without software

The survey indicated that 12 project plans or on-ground improvements were undertaken using not up-to date, non digital maps.

Natural resource change

Land holders were asked to rate natural resource change due to changes implemented from the property planning process (see Figure 9). Change was rated using a scale of 1-10 with 1 being a negative impact, 5 being no change, and 10 being greatly improved natural resource. Figure 10 shows that none of the landholders rated change as being negative (below 5), however three of the 22 land holders answered 5 "no change" in natural resource condition. The remaining 19 land holders had an even spread with four giving ratings of 5 and 8, and five landholders rating changes as 7 and 9. The remaining landholder rated change to natural resource condition as 10 or "greatly improved" due to changes implemented as a result of property planning process.

Figure 9. Landholder ratings (1-10) for natural resource condition change as a result of property planning processes.



When asked why they had noticed changes in their natural resource condition, nine of the 22 participants (41%) said that it was difficult to assess if the changes were due to property planning or because of

external factors such as drought, management and practice change (see Table 9). However six participants said that there was a positive impact encouraging the development of strategic management practices such as planning for fire and mapping tree lines, fence lines, erosion and infiltration, paddock areas and paddock utilisation.

Table 9. Reasons for natural resource condition change due to the property planning process.

Category	No. of Landholders
Difficult to assess if the changes in natural resource are due to property planning or other factors such as drought, management and practice change.	9
Time hasn't allowed the opportunity	2
Positive impact encouraging the development of strategic management practices such as planning for fire and mapping tree lines, fence lines, erosion and infiltration, paddock areas and paddock utilisation.	6
Changes would have happened regardless of property planning	2
Changes seen but planning of projects not electronic or digital	2
Unspecified	1
Total	22

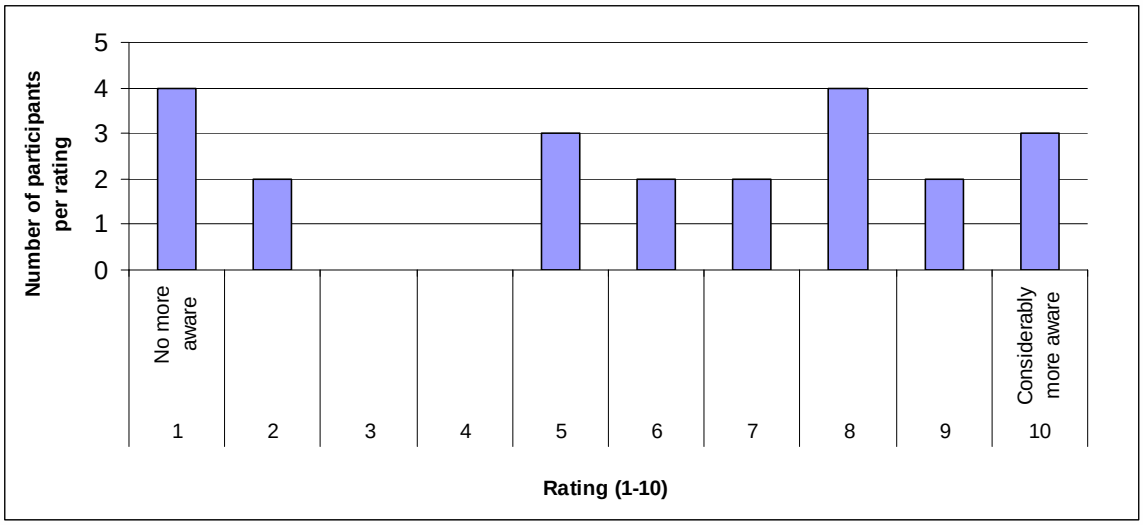
Quotes:

- *"With the drought we changed practices and cut down stock numbers (score 5)."*
- *"Although it's hard because the time is a limiting factor and also we have already done lots of things to help the condition too (score 9 and continuing to progress to a 10)."*
- *"Hard to say with the seasons as we have been selling and rotating more (score 7)"*
- *"Score 7 and increasing because we've been able to select areas that are grazed more heavily and are now able to manage accordingly."*
- *"A change of management practices started approximately 15 years ago, the property planning comes as part of that (score 6)."*
- *"A lot of things would have happened anyway but a lot more time and effort would have been required without the software. Helped to do things right the first time (score 9)."*

Awareness change of cattle movements, property layout and other key business practices and indicators

Participants were asked how much more aware they were of factors such as cattle movement and property layout on a scale of 1-10, 1 being no more aware and 10 being considerably more aware (see Figure 10).

Figure 10. Landholder awareness of cattle movements, property layout etc, since purchasing software, GPS and property planning technologies.



The results show that the majority of landholders gave a rating of 5 or above, indicating they believe they are considerably more aware of cattle movements, property layout etc since purchasing the software, GPS and other property planning technologies.

Other ways landholders feel FBA could fund / encourage property planning

When participants were asked what other ways they thought FBA could fund / encourage property planning, they suggested either practical or extension solutions. Landholders offered 26 ideas, with some landholders giving more than one response.

Suggestions of practical ways in which FBA could fund and/or encourage property planning were:

- Encourage whole of creek system management across different catchments
- Flexible approach depending on landholder needs e.g., help with scalded country
- Surveys on best software – information on best software (two respondents)
- Link FBA with drought subsidies;
    - Water improvements
    - Prevention and drought proofing
- Link between all departments
- More imagery
- More follow up/technical support

Quotes:

- *"Encourage whole creek systems across catchments as they have weed problems being brought down through the creeks."*
- *"Everyone wants different things. We want help with scalded country."*
- *"FBA should be linked with drought subsidies and have a role to play in funding water improvements etc. during drought or as drought proofing, instead of the current drought subsidy system. Prevention rather than handouts when it is too late."*

- *"By conducting surveys and finding out which software really works. FBA being able to provide advice on which software is the best/most suitable and running workshops with an increasing level of competency. Providing opportunities for social forums and networking to gather information this way."*

Table 10 shows the extension solutions which landholders believe FBA could utilise to encourage property planning.

Table 10. Extension Solutions

Solution	Number
Software workshops	5
Mapping workshops	4
GPS workshops	2
Increased funding	2
Awareness	2
On farm help/consultation	2
Brochures	1
One on one mapping advice	1
Funding for topographic maps and software packages	1

Quotes:

- *"Maybe brochures outlining different practices."*
- *"Workshops get a lot of people in who are then challenged with their peers present."*
- *"Workshops where people can interact. Take workshops out to the people – more local."*
- *"Funding towards on-ground projects allows people to progress/implement their property plans quicker."*
- *"More workshops looking at ways of maximising the use of software that people have already got. Not enough GPS technical support provided after workshops."*
- *"If outcome is better natural resource management, try and educate people more in the production benefits of looking after their natural resources."*

Other comments and ideas of the landholders surveyed

When participants were asked if they had any other comments to add, five people said that FBA had been very helpful and useful, particularly in the areas of Spot 5 imagery, support for projects and Envirofund applications. One participant was particularly happy with FBA's association with the Leucaena Network and Fitzroy River and Coastal Catchments Inc. One participant was not happy that the FBA would not fund a further project on his property and believes this will deter other landholders from future workshops run by, or in partnership with, FBA.

Two participants commented that they achieved very little from seeing a consultant and believe it was a waste of money. Some practical suggestions included FBA providing individual landholders with updated property and contour maps, and circulating flyers for events at least a month in advance.

Quotes:

- *"First the consultant was very disappointing, didn't achieve anything. Circulate flyers before the event make sure people are hearing all opportunities at least a month in advance."*
- *"Consultant was waste of another $1000 because the program still wouldn't work."*
- *"All been very helpful – very happy with outcomes and the support received from FBA for the project and Envirofund applications."*
- *"Most people try to do the right thing, assistance is good to help get the things we were already going to do done and quicker, really value the PAM system, bought a new property with strange infrastructure and software made huge difference."*

Discussion

The overall aim of this evaluation was to determine whether FBA should continue to promote and fund the purchase of property mapping and recording software and GPS units to promote improved property planning and ultimately improved land management. To answer this, three key evaluation questions were identified:

1. Are landholders using the software and GPS technologies?
2. What are the important factors in software and GPS being of use to farmers for property planning?
3. Is funding software an effective way to foster improved property planning?

The results of the evaluation show that landholder used and continue to use property planning software and GPS' purchased with the assistance of FBA funds. A number of problems in the use of the tools were identified, however strategies to overcome these were also identified by landholders. The tools proved an effective way to foster and facilitate improved property planning, including improving the management of natural resources. Promotion of these property planning tools was a cost effective investment in improving natural resource management resulting in additional on-farm projects being planned and implemented.

1. Are landholders using the software and GPS technologies?

The survey found that prior to funding from the FBA, only 23% of the participants had used property mapping and/or planning software, GPS units and imagery. The results indicate that landholders have gained a lot of use from the software, GPS and imagery with only two landholders not using the software due to incompatibility problems or not yet receiving the software.
The survey showed that 61% of landholders still using the software were using it "weekly", "fortnightly" and "every few months as needed". An extra six landholders were using the software on an as-needed basis, with answers ranging from "quite often" to "not so much lately". Therefore, 94% of landholders who are still using the software are using it on an as-needed basis.

A total of 51 family members used the software within the business with the main users being the male or female owner/manager, ranging in age from 30 - 60+ years. This indicates that age was not a barrier to the software and property planning tools being used.

2. What are the important factors in software being of use to farmers for property planning?

The ability of landholders to use the software for property layout work and management decisions was the main reason the software was of use. Technical issues such as incompatibility of maps with software and poor imagery were the main factors preventing the software from being of use to the landholders. These findings are consistent with a recent study completed by Fitzpatrick and Neale, 2008, who suggest there

is an opportunity to help owner operators in making better decisions in choosing and using farm mapping software to ensure greater success with its use.

Of the 22 survey participants, 91% of the participants said their property map had led to planning projects or on-ground improvements on-farm. A total of 33 project plans or on-ground improvements have been undertaken by participants using both up-to-date digital maps and not up-to date, non digital maps. Maps are therefore very important and commonly used for planning projects and on-ground improvements in paddock layout and infrastructure, developing Property Maps of Assessable Vegetation (PMAV) and Envirofund applications, and calculating costs of proposed infrastructure.

Although 41% of landholders said they found the software / GPS hard to use, 68% of software users and 75% of GPS users reported that they used these products “often” after purchase. A further 82% of landholders were currently still using the property mapping and / or planning software, GPS units and imagery, with 61% of these using it on a weekly to monthly as-needed basis. This indicates that the complexity of software or mapping products is not a major impediment to their ongoing usefulness.

3. Is funding software an effective way to foster property planning?

Funding the purchase of property mapping and/or planning software, GPS units and imagery for landholders has led to increased property planning and on-ground improvements. Of the 22 survey participants, 91% said their property map had led to planning projects or on-ground improvements on farm. A total of 33 project plans or on-ground improvements were undertaken by participants using both up-to-date digital maps and not up-to date, non digital maps. Maps are therefore very important and commonly used for planning projects and on-ground improvements of paddock layout and infrastructure, developing Property Maps of Assessable Vegetation (PMAV) and Envirofund applications, and calculating costs of proposed infrastructure.

Property planning software is a useful tool for planning, with 21 project plans or on-ground improvements planned using property management software - 18 of these being paddock layout and infrastructure plans and improvements.

The majority of landholders indicated that they believe they are considerably more aware of cattle movements, property layout and other property management considerations since purchasing the property planning technologies. Some 86% also believe they have noticed a positive change in their natural resource condition as a result of the property planning process. However only six (27%) said they had noticed a positive impact as a result of the development of strategic management practices such as planning for fire and mapping tree lines, fence lines, erosion and infiltration, paddock areas and paddock utilisation. A further 41% believe it is difficult to assess if the changes in natural resource condition are due to property planning or in fact due to other factors such as drought, management and practice change.

The ability to use the software for property layout work and management decisions were the main reasons the software was of use to landholders. Landholders suggested 26 possible solutions to the FBA for alternate ways in which property planning can be encouraged, with 16 ideas to support the use of software, maps, GPS's and imagery.

Conclusion and Recommendations

Funding the purchase of property mapping and/or planning software, GPS units and imagery for landholders has led to increased property planning and on-ground improvements.

Landholders are continuing to use the software, GPS and imagery with an overwhelming percentage continuing to use it on an as-needed basis. This is in stark contrast to the 23% of landholders who had previously used property mapping and/or planning software, GPS units and imagery prior to funding from FBA.

Property maps have been the most important tool for landholders and the main instigator of project planning and/or on-ground improvements in paddock layout and infrastructure. Continued funding of up-to-date property maps and SPOT 5 satellite imagery would ensure further property planning and on-ground improvements in the Fitzroy Basin.

The capacity for landholders to use the software for property layout work and management decision-making has enabled them to continue to use these tools after purchase on an as-needed basis. Technical issues such as incompatibility of maps with software and poor imagery were the only reasons landholders did not still use their software.
Increased technical support and follow-up services in the use of these technologies is necessary after purchase and would improve landholder capabilities and possibly increase the number of on-ground improvements even further. Support in the form of workshops particularly for mapping and software would be supported by the landholders. Information sheets outlining the details of software available and the prospective pros and cons of these products would also help minimise technical problems. Content for these information sheets could be accessed via a recent study examining primary producer mapping software needs (Fitzpatrick and Neal, 2008). This study provides a detailed summary of 12 software programs, which has been developed into a decision matrix for primary producers to address their farm mapping software needs.

Funding for consultancy services has not been very successful and would not be necessary if workshops were available and run at a number of locations throughout the basin regularly, particularly in the more remote areas.

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Appendix 1: Interview questions

Name:
Property:
Project Included:

☐ GPS ☐ Mapping Software ☐ Recording Software ☐ Imagery

First off, could you please tell me if you used property mapping / planning computer software prior to your funded project with FBA?

☐ YES ☐ NO

How much have you used the software / GPS since purchasing it?

☐ Not at all ☐ one – a couple of times ☐ used often

Do you or someone else in the business still use it now?

☐ YES ☐ NO

How Often?

_____

_____

If not, why haven't you used it?

_____

_____

_____

What brand of software did you purchase? And what led you to purchase that brand?

_____

_____

Is it linked to other software you may have/ use?

☐ YES ☐ NO

If yes – what other software?

_____

_____

Which members of the family / business use it? (Ages?)

_____

Did you/they find the software easy to use?

☐ YES ☐ NO

On a scale of 1 – 10, what would you say your/their level of comfort in using the software program would be? With 10 being totally comfortable, 1 being totally uncomfortable.

1 2 3 4 5 6 7 8 9 10

Why do you think this is?

_____

_____

Do you feel the purchase of this software / GPS has led to an increased level of skill in property mapping and planning within the business?

☐ YES ☐ NO

Did you undertake training?

☐ YES ☐ NO

If yes, was this additional to any training outlined in your project with FBA?

☐ YES ☐ NO

What sort of training was this?

Do you have an up to date, digital property map on your computer?

☐ YES ☐ NO

Has this led to planning projects or on ground improvements on farm?

☐ YES ☐ NO

If yes, what has been undertaken?

Have you noticed any change in your natural resource condition due to changes implemented as a result of the property planning process…scale of 1 – 10, 1 being a negative impact on natural resources, 5 being no change, 10 being greatly improved natural resources?

1 2 3 4 5 6 7 8 9 10

Why?

How much more aware are you of cattle movements, property layout etc on a scale of 1 – 10;

1 being no more aware, 10 being considerably more aware?

1 2 3 4 5 6 7 8 9 10

What factors do you believe have led to the software being of use / not of use in the business?

What other ways do you think FBA could fund / encourage property planning?

Do you have any other comments?