

# A method to measure practice change

Proposal to Central Tablelands Local Land Services

Sustainable Farms  
The Australian National University

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## Introduction

### *Background*

Field days and other participatory learning events are a great way to share ideas of natural resource management with farmers. However, monitoring the success of a participatory learning program in driving practice change can be challenging and time consuming.

Central Tablelands Local Land Services (CTLLS) delivers workshops and capacity building events to landholders across a wide range of topics including natural resource management (NRM). However, like many other NRM bodies, CTLLS struggles with lack of an agreed approach to assess whether its learning programs have led to NRM improvements. Whilst reporting obligations are met and progress towards delivering core services are monitored through the MERIT platform, this does not provide clarity as to whether participants' practices change after attending a learning event. In the case of learning events, monitoring and evaluation is conducted sporadically as time, resource and capacity constraints prevent a consistent approach.

### *Purpose*

The project reported on here grew out of a strategic alignment between Central Tablelands Local Land Services and The Australian National University's [Sustainable Farms](#) initiative.

This report documents the advice provided to CTLLS by *Sustainable Farms* for developing a method to monitor and evaluate training courses, workshops and field days delivered to facilitate and support improved natural resource management.

### *Sustainable Farms*

Degradation of agricultural land has been identified as an issue of national concern in repeated State of Environment Reporting (see for example, Jackson et al. 2016). This is, in part, because past agricultural practices have contributed to biodiversity losses and degraded environmental values on private land (Williams & Price, 2010). *Sustainable Farms* is a trans-disciplinary initiative at the ANU, with a vision to empower farmers to adopt sustainable farming practices that will directly benefit biodiversity conservation, improve farm profitability, and assist in improving farmers' wellbeing.

Co-funded by the ANU, philanthropy and industry, *Sustainable Farms* has been created to accelerate on-ground change in farm practices. *Sustainable Farms* is founded on 20 years of ecological research undertaken on hundreds of farms in Australia's southeastern wheat and sheep belt. The initiative aims to support the change in management practices needed to better conserve farmland biodiversity and to enhance environmental condition. Measurement and evaluation are important components of the *Sustainable Farms* project management approach. The goal is to support the development of the outreach and extension activities and measure their impact with a robust evaluation strategy.

*Sustainable Farms* also recognises the value of community engagement in the planning, monitoring and evaluation phases of any project. Programs that specifically aim to involve individuals and communities in this way have been shown to deliver cost effective and long-lasting change (Robinson, 2011). Interactive online tools now provide opportunities to build a broad-based longitudinal and mixed methods design that provides for shared learning between landholders and extension providers.

For this purpose *Sustainable Farms* has collaborated with CTLLS to make recommendations for the adoption of a robust, reliable tool for measuring practice change. Our objective in this report is to outline a method that could be used by both NRM agencies, Landcare groups and Sustainable Farms, to capture longitudinal data at low cost. A shared toolkit of this type would enable the sector to describe the breadth of the outreach activities being undertaken with landholders on natural resource management and the impact on attitudes and management practices taking place.

This report is informed by both the grey literature that describes the knowledge and learnings that Local Land Services (LLS) and Catchment Management Authorities (CMA) and some of the broader extension literature. It does not provide a comprehensive literature review. For anyone interested in this literature we recommend the recently published thesis by Lauren Howard (2018).

### *Overview of the Report*

This report presents a toolkit that includes:

- A program logic model that sets out the assumed relationship between the set of activities, i.e. the field days and workshops and the intended outcomes.
- An Indicator Bank, with supporting metrics, to create a tool to support the measurement of the intermediate outcomes, outlined in the program logic model.
- A review of digital survey software for collecting structured data against the proposed metrics
- A review of sampling considerations.
- An overview of how qualitative interviews can be employed to interpret evidence from monitoring. Explaining the utility of this data collection tool for establishing a link between the project's outreach and extension and subsequent change made by program participants.

The approach we have proposed here relies on farmers who participate in these events reporting on their own progress against selected indicators through digital survey forms, and where possible elaborating on this with qualitative information collected through interviews with a subset of participants. The information is captured at different points in time to support the increased understanding of the processes of change and the associated outcomes.

CTLLS is also provided with the opportunity to use the survey forms developed by *Sustainable Farms* for its own use (see Appendices A, B, C & D). However, it is beyond the scope of this report to design survey instruments or develop methods for measuring impact on the long-term outcomes targeted, such as biodiversity, community connectedness and productivity. These outcomes, indicators and metrics would form part of a broader evaluation framework.

In the process of preparing this report CTLLS has been consulted about the program logic and the indicator bank and we understand that these tools fit the requirements. To roll out the toolkit, all that is required now is for CTLLS to select the approach (digital or manual) for data collection. If a digital platform is nominated as the preferred option, a decision will be needed on which platform is the most suitable. This decision will be informed by whether CTLLS adopts this platform independently or in conjunction with other Local Land Services in NSW.

There are good reasons for CTLLS to consult with the other LLS to identify a shared platform for this data collection, as this will make the approach affordable and will also enable the creation of a consistent method that will inform practice change across the state.

## The Program Logic Model

### Articulating our assumptions about how change will occur and why

A program logic sketches out the resources and activities involved in a program of work and the changes presumed to result from these inputs. Introducing a program logic has a number of benefits for program planning implementation and evaluation (Centre for Epidemiology and Evidence, 2017). This includes illustrating the change processes underlying the program of work, building a shared understanding with key stakeholders of how the program works, and identifying the areas where evaluation will be important.

Local Land Services have been delivering field days and workshops with regional communities for many years. Introducing a program logic provides an opportunity to consider whether the outputs and impacts identified through the program logic match with the program of activities currently being delivered. The program logic presented in Figure 3. below describes the anticipated cause-and-effect relationship between field days and other learning events and resultant practice change.

There is an extensive body of literature reporting and exploring what is required to change farmer practices. Our assumption is that any effective outreach and extension program will be informed by these theories of change. Accordingly, to measure practice change, we need to ensure that we used these theories of change to inform our program logic. For this purpose we have briefly outlined below some of the key theories of change that have been developed or referenced in the extension literature.

There are several approaches that are frequently used to predict behaviour change in different contexts. These are briefly outline below and include, Rogers' Diffusion of Innovations Theory, the Stages of Change (Prochaska, DiClemente & Norcross, 1992), the Theory of Planned Behaviour (Ajzen, 2002), Social Network Analysis (Groce et al., 2018), Community of Practice (Cross and Ampt, 2017), the Value Belief Norms Theory (Stern et al., 1999), and the CSIRO's Adoption and Diffusion Outcome Prediction Tool (Kuehne et al. 2017). Each of these theories have been developed to understand and conceptualise the likelihood of adoption, and so provide key reference points for the program logic presented in the next section.

### *Diffusion of Innovations Theory*

Rogers' Diffusion of Innovations Theory describes the adoption of innovation as a pattern of uptake by different groups. It divides the population into five groups: the Innovators (2.5%), the Early Adopters (13.5%), the Early Majority (34%), the Late Majority (34%) and the Laggards (16%). The theory maps the adoption of an innovation over time cross these groups. The adoption rate is very slow at first, then grows exponentially as the Early Majority bring the innovation into the mainstream, and the Late Majority follow. Adoption rate will then slow or even plateau as the Laggards adopt the innovation. The theory is useful for program logic as it enables extension officers to consider likely rate of adoption, as well as who, when, and in what order, groups within the population will adopt NRM practices. It is also useful for considering whether to diversify marketing and/or outreach models to target particular groups (Ministry for Primary Industries, 2015).

### *The Stages of Change*

The Stages of Change model considers the stages an individual goes through to achieving lasting practice change. It posits the six stages of change that individuals move through.

1. Precontemplation, where individuals have not given practice change any thought and are usually unaware that existing behaviours are problematic or in need of change.
2. Contemplation, where individuals have become aware of the practice change, and are considering the advantages and disadvantages of changing their behaviour.
3. Preparation, where individuals recognise a change needs to take place, and they ready themselves to make that change.
4. Action, where practice change has begun, but where change can be hampered by insufficient preparation. In this stage individuals can often revert back to previous behaviour.
5. Maintenance, where the individual is sustaining the practice change and they intend to continue with the new behaviour.
6. Termination, where the individual has adopted the practice change to such an extent that it is no longer considered a change, but is the new, normal behaviour.

Stages of change models assist program designers to understand the process of behaviour change, and develop activities that support participants through, and manage critical junctures in, the change process (Ministry for Primary Industries, 2015).

### *Theory of Planned Behaviour*

Ajzen's Theory of Planned Behaviour attempts to predict behaviour based on rational decision making (Price & Leviston, 2014, p.67). The theory posits that when faced with a choice to adopt a new behaviour an individual will consider three aspects: firstly, will that behaviour have a positive or negative impact on their life; secondly, is that behaviour in line with the norms of the individual's social circles; and thirdly, does the individual believe they have the skills to adopt the new behaviour. In most cases, all three of these conditions need to be met for an individual to adopt the new behaviour (Price & Leviston, 2014, p.67). The theory is useful for NRM program design because it enables extension officers to consider how the program will address all three aspects of decision making to achieve practice change.

### *Social Network Analysis and Communities of Practice*

The value of social circles is the subject of a growing body of literature examines the role of social networks in knowledge acquisition and the influence farmers have on one another (Carolan, 2005). Social Network Analysis (Groce et al., 2018) and Community of Practice (Cross and Ampt, 2017) theories are two examples of frameworks used to consider how knowledge is transferred between networks of participants, and the broader community. Social Network Analysis examines how individuals are connected, and the extent that ideas, information, influence and behaviours move throughout the network (Groce et al., 2018, p.54). Recent studies of Social Network Analysis within NRM have improved understanding of the important role farmers play in transmitting ideas and information through their networks and the influence this can have on the decisions and actions of others (Groce et al., 2018, p.64). Similarly, Community of Practice theory presents a framework for understanding how individuals innovate through communities of learning (Cross and Ampt, 2017). The approach has enabled researchers to understand how groups of people with different levels of experience, but common problems, will collaborate to develop new knowledge and practice.

### *Value Belief Norms Theory*

Stern's Value Belief Norm Theory was designed specifically to explore normative factors that promote environmental attitudes and behaviours (Lind et al., 2015). The theory posits that a series of variables, such as an individual's values regarding the environment, and their beliefs about consequences of certain actions, and the individual's ability and responsibility to prevent negative consequences, will all work to establish norms for their behaviour (Lind et al., 2015, p.119-20). Value Belief Norm theory postulates that while the other variables can be addressed by NRM agencies, values are relatively consistent, and so they are not easily changed (Price & Leviston, 2014). However, Price and Leviston (2014) argue that while values influence behaviours, so too can behaviours influence values, and so by engaging participants in the desired NRM behaviour, extension officers can mould participants' attitudes and values toward the desired behaviour (Price & Leviston, 2014, p.76). This theory is useful for conceptualising the intrinsic values, beliefs and abilities of participants to determine the likelihood of them adopting NRM practice change, and for determining the methods of communication and types of activities within a program that could address the underlying variables that will influence participant behaviour.

### *Adoption and Diffusion Outcome Prediction Tool ADOPT*

The ADOPT approach estimates the contribution of various factors to adoption, and the speed and peak level of adoption likely to be achieved. It provides a conceptual framework for the planning and designing of extension activities that articulates the impact pathways. The framework encourages "both definition and characterization of both practice and the target population" (Kuehne et al., 2017, p.123). ADOPT encourages practitioners to work with a range of different evidence and models, from ecology, social psychology and economics. Sustainable Farms is utilising the ADOPT tool and we recommend that extension and outreach activities that have ongoing and or significant resourcing apply ADOPT. Using this tool supports strategic investment on the basis of understanding the potential impact that these programs can achieve.

### *Creating the Program Logic*

The literature described above unpacks practice change through prominent theoretical models, but how then do we move beyond theory to a practical logic model to plan, monitor and evaluate an extension program? For this task we are employing two frameworks to transition our review from theoretical to practical – Bennett's Hierarchy and the Field Day Success Loop.

### *Bennett's Program Logic Hierarchy*

Bennett's Hierarchy model (Bennet, 1975) was originally designed as an evaluation tool, and outlines a causal chain of events from program inputs, to participant adoption to long term change (GHD, 2013). It is a popular program logic model for influencing practice change (Beever, 2017).



Bennett’s Hierarchy (Figure 1) links seven categories of planning and evaluating programs in a series. It is often displayed visually as a linear staircase, building upwards from inputs, activities, participation, reaction, KASA (knowledge, attitude, skills and aspirations) change, practice change and impact. With this model, as a program scales toward the top of the staircase, the program’s value is strengthened, providing more evidence that the activities are achieving the goals (Beever, 2017).



Figure 1. Bennett’s Hierarchy

Bennett’s Hierarchy is particularly accessible to extension practitioners because it incorporates the extensive literature on practice change succinctly within the steps of the model, and provides a practical framework for applying theory, while planning and implementing a program of activities.

*Field Day Success Loop*

From the literature, we know that social interactions play a key part in influencing practice change, and so in addition to Bennett’s Hierarchy, the proposed program logic also incorporates the Field Day Success Loop developed by Iowa Learning Farms (Comito, Case Haub & Stevenson, 2017), shown in Figure 2.



Figure 2. Field Day Success Loop (adapted from Comito, Case Haub & Stevenson, 2017).

The Field Day Success Loop provides a practical visual of farmer learning. It is centred on a circular framework to emphasise the importance of social networking. As described in Social Network Analysis above, it is widely known that farmers want to learn from other farmers through networking experiences (Groce et al., 2018, McKenzie, 2013). Farmers particularly want to see local examples (D’Emden, Llewellyn & Burton, 2006) and access experts to whom they can relate. Pannell et al. (2006) identifies trust as a key element of the peer-to-peer model, noting that farmers are more likely to understand the goals of other farmers, and this gives them credibility, in many cases making them more influential on learning and practice change than a scientist or facilitator.

The insights regarding social interactions gained from Social Network Analysis and Community of Practice theories, as well as the depth of literature on the significance of peer-to-peer learning are reflected in the cyclical form of the Field Day Success Loop. Looping the model enables participants at different stages of implementing practice change to enhance and influence the learning experience and adoption rates of others.



### Program Logic

The Program Logic proposed is illustrated in Figure 3. It incorporates the Field Day Success Loop and Bennett's Hierarchy to not only emphasise the importance of both social networking and repeat attendance, but also inputs and outcomes of the program. The assumption, based on review of the literature, is that farmers who attend field days become advocates and influence other farmers and colleagues to adopt NRM practice change. These networks also build social norms whereby people tend to adopt the behaviours of others in an attempt to reflect 'correct behaviour' in a given situation. These factors provide an amplifier effect which is critical to the success of the learning program and significantly increases return on investment.

The circular motion of the model articulates that farmers often attend many field days across the sector to incrementally build confidence in their knowledge and skills before changing their behaviour and implementing a NRM practice change, supporting several of the theories of behaviour change outlined above. The circular motion also demonstrates the practice of repeated field day attendance by farmers who over time make incremental changes in the management of their natural assets (D'Emden, Llewellyn & Burton, 2006). This crucial element further affirms that a standardised methodology that could be utilised across the sector would have high impact in understanding practice change within the NRM space.

The program logic outlines the key stages of the project that will be the focus of monitoring and evaluation. By describing all the components of the model, it enables the identification of indicators to track all of the critical elements that will lead to the program's projected impacts and outcomes. (Funnell & Rogers, 2011).

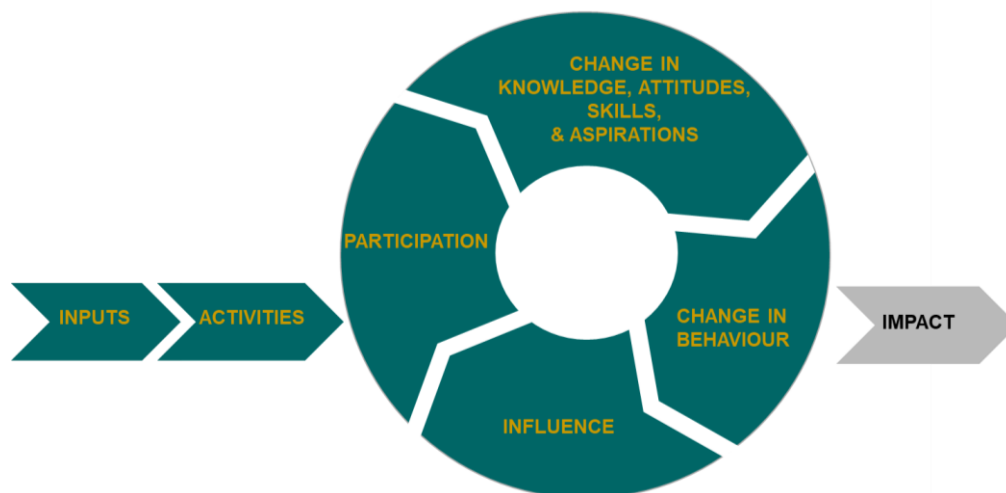


Figure 3. Proposed Program Logic

## Indicator Bank

This section focuses on how to measure the implementation and effectiveness of the field day or learning event through the monitoring of indicators, metrics and targets. Indicators are essential for monitoring efforts aimed at bringing about practice change. Conceptualising, developing and monitoring an agreed set of indicators supports a shared understanding of the goals and values of any outreach initiative.

An indicator is a variable being measured, such as investment or practice change rate. Collecting data on each indicator helps a program manager to identify what is or isn't happening and begin to make appropriate changes. It is critical to use clear measures that have a shared and common meaning.

### A Composite Framework to support indicator development

Based on previous theoretical and empirical work in the extension literature, we present a conceptual framework in Table 1. Composite Framework. This framework provides the basis for the indicator bank proposed below in Table 2. Proposed Indicator Bank, and any future indicator development. The Composite Framework reflects the journey from field days and workshops to post-workshop activities and on-ground implementation of better natural asset management. There are six domains identified in the Composite Framework; these are listed below and described in Table 1. Within each domain there will be a range of variables that need to be measured to provide a complete picture of that domain.







- Inputs – Resources involved in delivering the Activities
- Activities – Events themselves (field days, workshops, training days)
- Participation – Number of participants, is the workshop delivery set up appropriately for participants needs, satisfaction
- Changes in Knowledge, Attitudes, Skills and Aspirations
- Changes in Natural Asset Management practices
- Social influence – networking & information exchange

Coverage of these domains tends to be quite uneven in the monitoring and evaluation of extension. For example, participation, particularly the satisfaction of participants, tends to be tracked more closely than other domains.

It is more difficult to measure Natural Asset Management practice across time, and to assess the relative contribution of any given event to changes in this variable. This means that additional contextual information may need to be gathered, through follow up face to face or telephone interviews.

Social influence represents a more complex issue, because the process of interaction between individuals has usually been overlooked in favour of the knowledge transfer.

Table 1. Composite framework

	<p><b>Inputs:</b> what resources are used to achieve the field days and other activities, e.g. staff time, costs, in kind or volunteering time. What incentives are being offered, e.g. soil testing kits, funding through grants.</p>
	<p><b>Activities:</b> what activities are being conducted (field days, workshops, training days) and how many activities are being run. (MERI Framework, Australian Government, 2009).</p>
	<p><b>Participation:</b> what is the reach, who is attending the activity, how often are they attending. Once an attendee participates in a field day or event, they will have a 'reaction' to the event. Often 'reaction' is separated out in other models as a short term outcome (W.K. Kellogg Foundation, 2004) describing what the participants' experiences were and how they rated the activity. In the <i>Sustainable Farms</i> model these have been combined for simplicity.</p>
	<p><b>Change in knowledge, attitude, skills and aspirations (KASA):</b> what attendees now know about the natural resource management topic, i.e. how do those who attended the activity now feel about natural resource management since attending, what skills have they acquired from the activity, do they now intend to practice change on their farm. Within the MERI Framework, KASA forms an intermediate outcome and as with Bennett's Hierarchy and the <i>Sustainable Farms</i> Success Loop, there is the understanding that to achieve practice change participants should achieve a positive change in KASA.</p>
	<p><b>Practice change:</b> what is the effect on behaviour - this is the ultimate goal of the participatory learning activity. A farmer should come away from the field day and apply what they have learnt. This is a true test of the learning program.</p>
	<p><b>Influence:</b> this highlights the importance of social networking. 'Influence' is best explained as 'did attendees network NRM ideas with other farmers and if so how many?'</p>

## Measurement and Data Collection Points

In Table 1, we provided a framework for the types of information required to monitor practice change, in Figure 4, we illustrate how information could be collected over time to capture information under that framework.

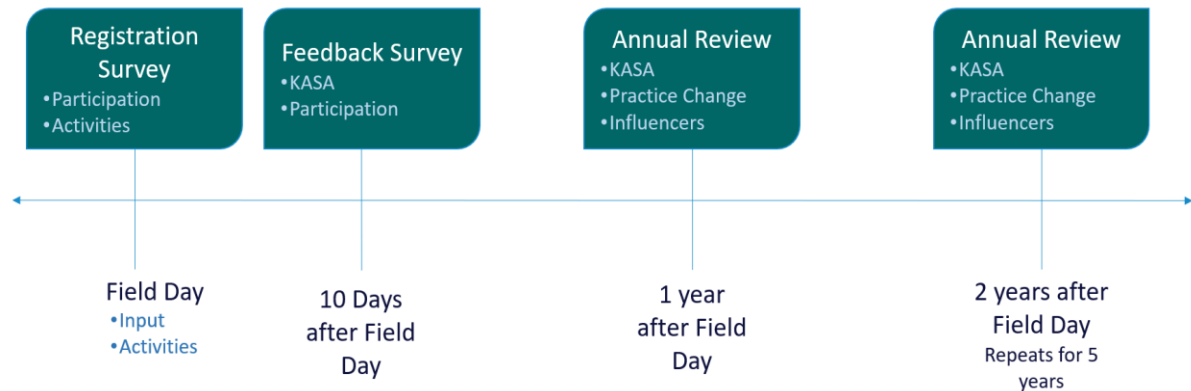


Figure 4. Data Collection Points timeline, including type of indicator

The proposed indicator bank in Table 2 (below) lists the indicators and associated metrics involved in this data collection.

The indicators presented in Table 2, have been selected to align with principles of cost, simplicity, consistency and practicality (Australian Government 2009). They are linked to metrics, and the next step in the development of this framework is to attach performance targets with tolerance levels to each of these metrics. These targets should be developed by CTLLS in accordance with its current goals for the delivery of individual projects. Progress should be reviewed regularly to ensure that the indicators continue to be relevant and appropriate, and also inform an adaptive management approach (Australian Government, 2009).

Table 2. Proposed Indicator Bank

	Indicator	Metric	Data source
INPUT	Investment/ funding and incentives	\$ amount of funding and investment. \$ amount of incentives across # of landholders.	Internal records.
	Staff hours	# of staff hours.	Internal records.
	In-kind/ volunteers	# volunteer hours, # people, time, \$ amount.	Internal records.
ACTIVITIES	Initiatives	# of field days, workshops and other activities # of sites (e.g. farm sites, baiting activities, etc).	Internal records. Internal records.
	Material	# of pamphlets and brochures developed and distributed.	Internal records.
	Media	# of participants that hear about the event through word of mouth, LLS staff, Landcare groups, radio, Facebook, Twitter or Email.	Registration form survey.
	Partnerships/networks	# of events run in collaboration with other NRM bodies.	Internal records.
PARTICIPATION	Reach	% of farmers in the CTLLS area participating in field days, workshops and other events. % of farmers in the CTLLS area who receive face to face or phone advice. % of women attending compared to male participants.	Registration form survey. Internal records. Registration form survey.
	Returns	# of participants who have attended one, two, three, or four plus NRM field days or workshops in the last 12 months.	Annual follow up survey.
	Satisfaction	Satisfaction of participants (%) at field days, workshops and/or other event. % of organisers that indicated the event was well run and audiences were engaged.	Post training/workshop evaluation survey. Event evaluation survey (organisers).
	Recommendation	Net Promoter Score. % of participants that are “promoters”, “passives” or “detractors” of the field day or workshop.	Post training/workshop evaluation survey.

	Indicator	Metric	Data source
KASA	Knowledge change & Skills change	% of respondents that indicate an improvement in knowledge and skills on the covered NRM topic as a result of attending the field day.	Post training/workshop evaluation survey.
	Attitude change	% of those not initially 'buying into NRM' who go on to indicate intention to adopt a natural asset management practice promoted by the CTLLS intervention. % of those not initially 'buying into NRM' who report implementing an NRM practice.	Registration form survey (segmentation), Post training/workshop evaluation survey. Registration form survey (segmentation), Annual follow up survey.
	Change in aspirations	% of respondents who indicate intention to adopt a natural asset management practice promoted by the CTLLS intervention.	Post training/workshop evaluation survey.
	Information seeking	% of those participants seeking advice.	Registration form survey.
PRACTICE CHANGE	Behavioural change	% of respondents that have implemented NRM practices.	Annual follow up survey.
INFLUENCERS	Influencers/ networks	% of respondents that have discussed ideas about investing in natural assets on farms with other farmers.	Annual follow up survey.
		% of participants that indicate discussing ideas with one, two or more.	Annual follow up survey.

## Digital survey tools

There is a range of digital platforms for collecting social survey data. While most of these can be employed for evaluation purposes, we only identified one platform that provided a bespoke approach for evaluation, that is, Socialsuite. However, this sophisticated platform comes with a price tag that is likely to exceed modest budgets, so we developed a list of criteria to identify reasonable alternatives at a more affordable price.

### *Survey Tool Assessment Criteria*

- Ability to survey: the platform needs to have a method of collecting information from participants through surveys.
- Application for devices: the platform must offer a mobile app to enable survey collection in an event setting, such as at a registration table.
- Offline survey collection: to allow registration to be collected without connection to the internet.
- Data management and evaluation reporting tools: the ability to transfer survey information into spreadsheet form for export to enable reporting and, ideally, the presence of a reporting capability within the platform itself.
- Technical support: the quality of technical support and/or access to resources to enable users to customise their experience and troubleshoot issues.
- Cost: determined by the number of users per annum
- Data storage location: to determine the legal framework in place to store, manage and protect participant information. Ideally, data would be stored in Australia, to ensure data protection was compliant with Australian standard. The European Union, Canada and the US offer similarly robust data protection laws.

Five platforms were considered against the above criteria: Socialsuite; Qualtrics; Survey Monkey; and two popular spreadsheet platforms, Google Sheets and Smartsheet. Below is a brief description of each, followed by a comparative chart.

### *Socialsuite*

Socialsuite is an impact management technology that enables automatic measurement and monitoring against program outcomes. The platform collects data via spreadsheet import or surveys and automatically synthesises information into tailored, interactive visuals. The platform can be used online and offline, with apps for a range of devices making it suitable for field day registration. The platform also has the capacity to allow for data collection planning so that survey mailing can be automated, and results compiled into visuals against selected indicators. For Australian clients, data is stored within Australia. Technical support includes initial consultation to build a bespoke platform for the client, and general support once the platform is in operation. User training is also provided, depending on the license package.

The automation of this advanced platform significantly reduces time and resources required to manage data collection, collation and reporting, making Socialsuite an impressive, custom platform for program evaluation. However, this platform comes at a cost. To run a program evaluation as described in this report, the platform is estimated to cost \$28,000 in the first year, and \$16,000 per year thereafter.



### *Qualtrics*

Qualtrics is a customer experience platform that specialises in survey tools to prioritise customer experience, user experience, and market research. As a survey platform, Qualtrics is easy to use and provides advanced survey options that enable users to create professional, dynamic surveys for field day evaluation. The platform has an offline app that enables easy survey response collection when internet connection is not available. With the addition of the add-on, IQ Directory, Qualtrics offers automated distribution of surveys that link one participant through a series of surveys over time. The platform also provides standardised reporting and dashboards that require some technical competence by the user to set-up but, once established, these can ease reporting burden through use of saved templates. Qualtrics provides multiple channels of technical support, including an extensive library of how-to guides, and an instant chat support function. Depending on a client's licence, it may also provide a consultant who can provide support over the phone. Of note, Qualtrics is not designed to be a tool for long-term evaluation, and so the extensive how-to videos and forums tend to be focused on advanced customer experience surveys rather than long-term evaluation as described in this report. That said, the platform is agile enough to allow a knowledgeable user to problem solve and develop work-arounds to most issues. Qualtrics user data is stored in Australia. User licences that would suit the prescribed program of evaluation, including the IQ directory add-on, range from \$10,000 to \$15,000 per year.

### *Survey Monkey*

Like Qualtrics, Survey Monkey is a survey platform specialising in market research and customer experience. Survey Monkey offers less reporting analytics, and no automation between surveys, meaning increased manual survey scheduling and data management for users. The system has limited capacity to link data across surveys, meaning long-term evaluation reporting would need to be managed in another program. That said, data can be exported easily and is compatible with SPSS. Technical support is dependent on subscription level, and ranges from email support through to 24/7 phone support, and all users have access to a resource library of tutorials and how-to guides. Survey Monkey also has an app for devices that which allows for collection of data at field days, and this app can be used offline. Survey Monkey user data is stored in Canada, the US and Ireland. Subscriptions start at \$828 per year.

### *Google Sheets and Google Forms, and Smartsheet*

As an alternative to a survey platform, Google and Smartsheet offer collaborative data management platforms that can collect and manage long-term evaluation data, with limitations. Google offers two platforms that work in tandem, Google Sheets and Google Forms. Both providers offer a survey form, which auto-populate spreadsheets to build a database. The survey forms are far less customisable than the survey platforms, but do provide a bare-bones survey option. Of the two, only Smartsheet offers an app for devices, and this app requires the internet. Data analytics and reporting would be possible for each option, depending on the technical capacity of the user to customise the spreadsheets. Smartsheet is more advanced than Google in this regard, and is able to analyse data across different spreadsheets. Neither offer technical support, but as a popular, free platform, Google has an extensive community of user-run support forums. Both platforms store user data offshore, and neither specify the country where this data is kept. Google Sheets and Forms are free to use with a Google account, with subscriptions available for additional functions. A Smartsheet Business subscription is \$1,188 per year.

### Recommendation for CTLLS

Socialsuite's bespoke platform, customised to provide interactive survey, data management and reporting tools for long-term evaluation is the ideal platform for managing a program as described in this report. However, its price might exceed most budgets. It is not the only platform that can adequately collect and manage participant data, and assist with reporting.

Qualtrics offers good value for money, and if adopted at the state level, may suit the LLS budget. Surveys can be tailored to a sophisticated level, allowing for advanced data collection, and user-friendly experience for survey participants. With the right training, users can also develop sophisticated reporting templates.

Of the three lower cost options, Survey Monkey offers the most tailorable platform, and meets most of the criteria described above. Users would need to be competent at data analysis in alternate programs such as SPSS to ensure adequate reporting. Consideration of the legal ramifications of offshore data storage would also be required. These points considered, Survey Monkey offers a workable, budget option for Central Tablelands LLS if it chooses to adopt a platform independently of other LLS organisations.

### Review of sampling considerations

For successful monitoring, the critical issue is that the survey data collected can be generalised to broader groups of landholders participating in the field day programs being evaluated. Designing the sampling methods involves looking at the adjustments that could be made to compensate for unequal selection probabilities, non-coverage and sampling fluctuations.

#### Managing for self-selection bias

Farmers self-select to participate in the field day or event, and therefore their demographic information is needed so participants can be compared to the target demographic, i.e. all landholders in the catchment. If attendance by particular groups such as younger farmers or specific ethnic communities is lower, then this needs to be noted in any interpretation of the findings.

A self-selection bias occurs (a form of nonresponse bias) when participants are asked to respond to the follow up surveys. This means that if checks are not carried out to understand the representativeness of the data, conclusions can only be generalised to survey respondents and not to broader groups. Non-response is, at least in part, related to the perceived burden of taking part in a survey (National Research Council, 2013, p.62). This highlights the need to ensure the survey interface is engaging and there are minimal demands placed on participants. Therefore only core information on the key indicators to track change should be collected. Program managers and evaluators also need to implement strategies to increase response rates, by offering incentives and ensuring that participants understand the benefits of being involved in the survey.

In the proposed method, it is suggested that conclusions be drawn only about the wider group of attendees. However, for these conclusions to be drawn, comparisons must be made between respondents' and non-respondents' demographic and attitudinal information. This demographic and attitudinal information is captured at the point of registration (Appendix A) for all attendees and can be compared to those who respond to the follow up and annual surveys (Appendices B & C).

**Table 3. Survey Tool Comparison**

	SURVEY MONKEY	SOCIALSUITE	QUALTRICS	GOOGLE SHEETS & FORMS	SMARTSHEET
<b>SURVEY TOOL</b>	✓	✓	✓	✓	✓ with some limitations
<b>APP FOR DEVICES</b>	✓	✓	✓	✗	✓ with some limitations
<b>OFFLINE SURVEY TOOL</b>	✓	✓	✓	✗	✗
<b>DATA MANAGEMENT AND EVALUATION REPORTING</b>	✓ With some limitations  <i>Analytics and reporting available on individual survey data, but no feature for linking surveys to conduct long term evaluation</i>	✓ Customised to program  <i>Tailored reporting and data management for individual surveys as well as long term evaluation</i>	✓ With some limitations  <i>Analytics and reporting available on individual survey data, data analytics is available for long term multi-survey reporting but it is limited in some cases</i>	✓ With some limitations  <i>Analytics and reporting available on individual survey data, manual data management required to enable data analytics for multi-survey reporting</i>	✓ More advanced than similar options  <i>Interactive reporting and comparison available for individual surveys as well as multi-survey evaluation</i>
<b>TECH SUPPORT</b>	✓ Depending on subscription level	✓ Includes initial construction of custom platform and tailored reporting template	✓	✗	✗
<b>COST</b>	<b>\$828/year</b>  <i>Subscriptions from \$23 per user, per month with a minimum of 3 users</i>	<b>\$27,390 first year</b> <b>\$16,390 per year</b>  <i>First year includes the construction of custom platform</i>	<b>\$10,000 – \$15,000/year</b>  <i>Licensing starts at \$1500 per year. Qualtrics consultants have indicated an appropriate package would be \$10,000 – 15,000 per year for LLS clients</i>	<b>Free</b>  <i>Free with a google account, with subscription options available for increased usability</i>	<b>\$1,188/year</b>  <i>Business subscription from \$33 per user, per month, with a minimum of 3 users</i>
<b>DATA STORAGE AUSTRALIAN CLIENT</b>	✗ Offshore, in Canada, the US or Ireland	✓ Australia	✓ Australia	✗ Offshore, location not specified	✗ Offshore, location not specified

For the data to be representative of the wider attendee group, weighting may be necessary to compensate for non-response bias. This weighting may, but not always, reduce bias arising from follow up survey non-respondents when the demographic and attitudinal information of the respondents differs from those not responding. While weighting can help, it does compensate when there are segments of the broader group not represented in the sample.

One way of potentially reducing the impact of non-response bias is to ensure that survey response rate is high. Response rate is described as the percentage of people invited to respond to a survey that return a usable survey. Theoretically, the higher the response rate of the survey, the lower the risk of non-response bias.

For a group with high demographic and attitudinal variability a greater sample size will be required compared to a group which is relatively homogenous. However, anecdotally, it is understood that for online surveys a response rate of 20% is considered good – which would not necessarily create a representative sample. Organisations that have achieved slightly higher survey response rates – such as Iowa Learning Farms, on which *Sustainable Farms* has modelled its field days – have noted response rates of 24%. The *Sustainable Farms* summer field day series managed to achieve a response rate of 39%. Nonetheless, it is not feasible to assume that these slightly higher rates produce a more representative sample.

Central Tablelands Local Land Services conducts a number of learning programs in the ‘green’ space, including biodiversity training and Sustainable Agriculture training. CTLLS internal records indicate that 80 participants attended the 6 CTLLS biodiversity training events for the 2018-2019 financial year to date. If we assume an estimated response rate of 30%, CTLLS should expect 24 follow-up survey respondents. This sample would result in a 15% margin of error at a 95% confidence level.

Simply explained, if 75% of respondents report that they will practice change after CTLLS Biodiversity training this would be described as, with 95% certainty, 60% to 90% of CTLLS Biodiversity training attendees practiced change (the range of 15% either side of 75%). By comparison, 307 participants attended the 20 CTLLS Sustainable Agriculture training events, so if we anticipate an estimated response rate of 30%, CTLLS should expect 92 respondents resulting in an 8% margin of error at a 95% confidence level. Yet, if 75% of respondents report that they will practice change after CTLLS Sustainable Agriculture training, this would be described as with 95% confidence, 67% to 83% of CTLLS Sustainable Agriculture training attendees practiced change (the range of 8% either side of 75%).

## Qualitative Interviews

The evidence that can be collected through monitoring will not be sufficient to demonstrate the value of outreach and extension activities. As Davidson (2000) explains, unless we can show there is some thread between the program and landholder actions, all we are doing is documenting coincidences. We need to consider how we will make causal claims between the activities delivered in the outreach program and subsequent changes in landholder knowledge, attitudes and behaviour.

In the first instance we can review the monitoring data for regularity or frequency of association, however that won't give us the strength of evidence to be able to make claims about the value of the project and its impact. Qualitative interviews provide a source of evidence to assess whether it is reasonable to assume the actions of the program have contributed in some fashion to the outcomes that are observed in the monitoring data.

Planning a qualitative data collection process involves working through the following steps:

1. Is there a clearly defined purpose for the data collection, i.e. “what question are we seeking to answer?” Examples of relevant questions would include, what have been the barriers, constraints or supporting factors influencing practice change? Or what have been the outcomes of practice change (Both positive and negative, intended and unintended)?
2. Is there a fit for purpose methodology for collecting this information, that includes sampling and data collection tools, including provisions for informed consent, and safeguards to ensure data can be kept secure and confidentiality requirements met?
3. Providing participants in the research the opportunity to share in the interpretation and use of the data collected.

Outputs from the qualitative interviews can be used in a range of ways:

- To explore the links and mechanisms between the program activities and changes in landholder practices. Understanding the links assists with building a case for attributing changes to the outreach activities.
- To create communication materials - these stories or narratives provide a powerful tool to communicate NRM messages and engage farmers across a diverse range of demographics, by describing the value of investing in natural assets from the landholder perspective and experience. They can be used to create online products and create content to share in workshops with other NRM practitioners to review practices and assumptions and understand what success looks like for these programs.
- Narratives can reveal externalities, constraints or barriers to practice change not captured in quantitative surveys. Understanding the barriers or constraints which landholders are facing in the NRM space can allow for program modification to overcome these.

Qualitative interviews require specialist expertise and are typically costly to collect and analyse. As part of this report, we explored whether there was a digital platform for collecting and working with narrative data that would be suitable for the CTLLS. We found three digital tools for collecting and analysing with stories that are specifically customised for this purpose. These digital platforms were:

- Narrafirma ([narrafirma.com](http://narrafirma.com))
- Sensemaker (<https://cognitive-edge.com/sensemaker/>)
- StoryConnect ([storyconnect.nl](http://storyconnect.nl))

Sustainable Farms reviewed the suite of tools on these platforms and found that they all required specialist expertise and knowledge to manage. For advanced practitioners they have really useful features relating to project and respondent support including support for repeated participation, mobile apps, participant coding, dashboards and continuous real time sensemaking. The model underpinning these tools is to extend the capacity of professional research practitioners rather than offering a platform for program managers to collect narrative data. At present these platforms do not provide the CTLLS with a feasible option for collecting and sharing stories.

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## Appendices

### Appendix A: Registration Survey

---

Please enter your **First Given Name**

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---

Please enter your **Surname**

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---

Please enter your **Mobile Number**

*If you don't have a mobile phone, please enter your landline number.*

---

---

Please enter your **Email Address**

---

---

Select your **Gender**

- Male
- Female
- Other

---

Please enter your **Year of Birth**

*Please note this information is to assist us in our evaluation and to track your responses over time. It will not be shared with other parties.*

---

Would you like to receive information from Sustainable Farms about news and events?  
*These updates will be about 5 times a year - we won't fill up your inbox.*

Yes

No

---

Do you give permission for your photograph to be taken for social media, reports and promotions?

Yes

No

---

How did you hear about this event?

Word of Mouth

LLS Staff

Landcare Group

Radio

Facebook

Twitter

Email

Other \_\_\_\_\_

---

Can we contact you to participate in evaluation of this project?

*This will involve a follow-up survey via email within the next month and then annually for 5 years.*

Yes

No

---

Why are you attending today's event?

\_\_\_\_\_  
\_\_\_\_\_

---

Which describes your situation?

- Farm manager/operator
- Private land owner
- Industry/sector representative
- Government representative
- Other \_\_\_\_\_

---

Organisation or group represented:

\_\_\_\_\_

---

Please enter your Postcode

\_\_\_\_\_

---

Are you the person, or one of the people on the farm who makes land use decisions?

- Yes
- No

---

What area of land do you manage in hectares?

*Management means you are helping make decisions about how the land will be used, often with a spouse or business partner. This includes land you own, share-farm, lease or manage on behalf of others.*

\_\_\_\_\_

Do you currently use any of the following farming systems or practices? (Select all that apply)

- Feedlotting / feed pad / confinement feeding / dry lotting
  - High intensity rotational grazing
  - Holistic farming
  - Regenerative farming
  - Zero or minimum-till cropping
  - Precision cropping
  - Used GMO crops
  - Organic farming
  - Biodynamic farming
  - None of these
-

Please tell us if you have ever completed any of these practices on your property:

	Yes	No	N/A
Establish new shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve existing shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protect paddock trees or remnant vegetation in paddocks eg by fencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in and around farm dams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation around streams/rivers (excluding dams)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in areas other than dams/streams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to dams using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to rivers/streams on your property using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install hardened access points to dams to enable stock access with reduced damage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install watering points away from streams/dams to reduce stock damage to waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the area of deep-rooted perennial grasses on your land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B: Feedback Survey

---

Please enter your **First Given Name**

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Please enter your **Surname**

---

Please enter your **Mobile Number** (if you don't have a mobile phone, please enter your landline number)

---

Please enter your **Year of Birth**

*Please note this information is to assist us in our evaluation and to track your responses overtime. It will not be shared with other parties*

---

How satisfied were you with the quality of the field day?

	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied
The overall quality of the day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effectiveness of the speakers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Farm Tour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

The length of the field day was:

- Too short
- Just right
- Too long

I found the Sustainable Farms website to be:

- Very helpful
- Somewhat helpful
- Slightly helpful
- Not at all helpful
- I have not seen the website

---

Recommendation

	Very Likely 10	9	8	7	6	5	4	3	2	Very Unlikely 1
How likely would you be to recommend a field day like this to a friend or colleague?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---



Please tell us about your futures plans to manage natural resources (only complete rows that are relevant for your property)

	I intend to do this	I do not intend to do this	I'm undecided	Not applicable
Establish new shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve existing shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protect paddock trees or remnant vegetation in paddocks eg by fencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in and around farm dams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation around streams/rivers (excluding dams)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in areas other than dams/streams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to dams using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to rivers/streams on your property using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install hardened access points to dams to enable stock access with reduced damage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install watering points away from streams/dams to reduce stock damage to waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the area of deep rooted perennial grasses on your land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

As a result of participating in the field day:

	Strongly agree	Agree	Disagree	Strongly disagree
I have improved my knowledge and skills in improving natural assets on my property	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more confident in making decisions about improving natural assets on my property	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please enter your **First Given Name**

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Please enter your **Surname**

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Please enter your **mobile number** (if you don't have a mobile phone, please enter your landline number)

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Please enter your **Year of Birth**

*Please note this information is to assist us in our evaluation and to track your responses overtime. It will not be shared with other parties*

---

---

Please enter your Postcode:

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---

Which describes your situation?

- Farm manager/operator
- Private land owner
- Other \_\_\_\_\_

---

How many field days or workshops did you attend in the last 12 months - run by Sustainable Farms or by other groups (eg. Landcare, or the Local Land Services (LLS) or Catchment Management Authority)

---

Please tell us if you have completed any of these practices on your property in the last 12 months:

	Yes	No	N/A
Establish new shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve existing shelterbelts using native species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protect paddock trees or remnant vegetation in paddocks eg by fencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in and around farm dams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation around streams/rivers (excluding dams)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plant/regenerate vegetation in areas other than dams/streams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to dams using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exclude stock access to rivers/streams on your property using fencing or other exclusion methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install hardened access points to dams to enable stock access with reduced damage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install watering points away from streams/dams to reduce stock damage to waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the area of deep-rooted perennial grasses on your land	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Of those activities that you completed in the last 12 months, which organisations influenced your decision to act? (Select all that apply)

	ANU Sustainable Farms	Landcare	Local Land Services (LLS)	Catchment Management Authority	Other Farmers	None of these organisations influenced my actions	I didn't do this activity in the last 12 months
Established trees or shrubs on your property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved ground cover quantity or quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved dam or river areas through restricting stock access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have you discussed your ideas about investing in natural assets on your farm with other farmers?

Yes

No

---

When you discussed your ideas with other farmers, do you think you influenced their thinking on natural assets on farms?

I influenced one other farmer

I influenced two or more farmers

I didn't influence any other farmers

---

Of those activities that you completed in the last 12 months, how did you fund the activity?

	100% Self funded	Funded through incentives or grants	Other
Established trees or shrubs on your property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved ground cover quantity or quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved dam or river areas through restricting stock access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Appendix D: Event Organiser Evaluation*

<b>Checklist</b>	<b>YES</b>	<b>NO</b>
Did the event run to time	<input type="checkbox"/>	<input type="checkbox"/>
Could everyone be heard	<input type="checkbox"/>	<input type="checkbox"/>
Was there a clear and defined focus – supported by one good example	<input type="checkbox"/>	<input type="checkbox"/>
Was the day actively facilitated, resulting in dialogue amongst speakers and participants	<input type="checkbox"/>	<input type="checkbox"/>
Did we learn from participants and hear their concerns	<input type="checkbox"/>	<input type="checkbox"/>
Did the facilitator invite people to participate in the follow up evaluation	<input type="checkbox"/>	<input type="checkbox"/>
Did the facilitator encourage participants to share what they had learnt with others following the day	<input type="checkbox"/>	<input type="checkbox"/>
Were safety issues well managed	<input type="checkbox"/>	<input type="checkbox"/>

**Please tell us more.....**

What worked?

What didn't work?

What should we be doing differently next time?

In addition to ANU which agencies/partners were involved in this event?

**What were the titles of the brochures/pamphlets distributed and how many of each were distributed at the field day?**

**Titles**

**Number**

**Questions for discussion amongst organisers if time permits (*optional*).**

What information were participants seeking?

What actually happened? (Level of group engagement, discussion, quality of presentations etc, participation)

Why were there differences?

What kinds of requests for information or services did we receive?

How did the sharing of responsibilities between partners proceed? (Between the partners were all the key tasks addressed (see list), was there good communication?)

Were there any learnings for future partnerships?