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# Final Report

## Farming for Sustainable Soils Project

Prepared for  
North Central Catchment Management Authority



**NORTH CENTRAL**  
Catchment Management Authority  
*Connecting Rivers, Landscapes, People*



Australian Government

**National  
Landcare**  
Program



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## Document details

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## Acronyms

CfoC	Caring for our Country
FPC	First Person Consulting
FSS Project or the Project	Farming for Sustainable Soils Project
MERI	monitoring, evaluation, reporting and improvement
North Central CMA or the CMA	North Central Catchment Management Authority
NLP	National Landcare Program

**Front cover photo credits:** Patrick Gilmour, Adam Twigg, Rebecca Denniss, Adam Twigg (from left to right).

## 1 Executive summary

**The Farming for Sustainable Soils (FSS) Project is a community-based initiative that supports sustainable soil management.** The North Central Catchment Management Authority (CMA) has delivered the FSS Project throughout the region since 2009, and Phase 2 of the Project ends in June 2018 after five years of Australian Government funding. **Prepared in collaboration between the CMA and First Person Consulting, this is a summary of the Final Report on Phase 2 of the FSS Project.**

### Conclusions

**The FSS Project has been a successful investment in improving sustainable land management practices in north central Victoria.** The Project demonstrates the effectiveness of community-based approaches to programs in the natural resource management sector. The FSS model is an effective model for soil health initiatives going forward, with the three key components of testing and assessments, knowledge sharing and capacity building, and field trials and demonstrations.

Through the FSS Project, local communities have been empowered to improve the health of their soil assets, with a range of outcomes achieved in relation to knowledge, skills and confidence, improved sustainable soil management practices, agricultural productivity, soil health and community resilience. Many of the longer-term impacts of the Project are yet to be realised, and the FSS Project will have ongoing value in years to come.

### Recommendations

1. There is a clear need and opportunity for additional work in supporting farmers to improve their soil health going forward. **Soil health should continue to be a priority for land managers in the north central catchment, supported by government, non-government and private sector stakeholders.**
2. The FSS Project is a successful model for sustainable soil management practice change. **The North Central CMA should continue to use this community-based approach in delivering sustainable agriculture programs and services, as well as promoting use of the model more widely.**
3. **The outcomes of the community-based approach should continue to be monitored over time, to evaluate the longer-term strengths of this model compared to other approaches to sustainable agriculture programs.** In particular, this should focus on measuring any landscape scale changes occurring as a result of the FSS Project.
4. **Collection and analysis of biophysical data should be prioritised in future soil health projects to more effectively monitor and evaluate outcomes, appropriateness and cost-effectiveness.**

### Future activities for soil health assets in the catchment

**The CMA is currently developing a Soil Health Action Plan and finalising FSS Project delivery. Building on the achievements of the FSS Project, the CMA should:** continue to maintain the strong relationships developed with local communities through the Project; offer ongoing support to farmers in the catchment to ensure that potential longer-term benefits of the Project are achieved; continue applying for external funding to provide sustainable land management support; apply the

lessons from the FSS Project to the design and delivery of other programs and services; and improve the consistency of monitoring and evaluation to better understand the extent of achievements, outcomes, lessons learned, and wider impacts of investments in farming communities.

## 2 Introduction

### 2.1 Overview

The North Central Catchment Management Authority (the CMA or North Central CMA) has delivered the Farming for Sustainable Soils Project (FSS Project or the Project) since 2009, supported by the Australian Government. Phase 2 of the FSS Project ends in June 2018 after five years of funding through the National Landcare Program (NLP) and the former Caring for our Country (CfoC) Program.

**The FSS Project is a community-based initiative that supports sustainable soil management.** The North Central CMA works with community leaders and groups of local landholders across the catchment to encourage the adoption of sustainable farming practices that protect and enhance soil health—with additional benefits of improved agricultural productivity and strengthened social connectedness of farming communities. Through supporting soil testing and assessments, knowledge sharing and capacity building, and field trials and demonstrations, the FSS Project’s vision is that:

*“North Central Victoria has secured the health and productivity of soils, improved ecosystem services that flow from healthy soils, and built resilience to climate change through increased soil health.”*

**Prepared in collaboration between the CMA and First Person Consulting (FPC), this is the final report on Phase 2 of the FSS Project**—involving an evaluation of FSS Project delivery, demonstration of outcomes achieved and ongoing value of this investment in farming communities.

### 2.2 Scope and approach

The scope of this evaluation and reporting consultancy was for FPC to work closely with the North Central CMA and key Project stakeholders to:

- respond to evaluation questions, and internal and external reporting requirements with a strong evidence base
- demonstrate the value of the FSS Project—for farmers, the natural resource base and the community
- capture key findings, lessons learned and recommendations for improving delivery of similar programs and services in future.

This approach involved the following key components:

- developing a series of 13 case studies to demonstrate the outcomes and achievements of the Project
- presenting a conference session and providing support at the FSS Conference in March 2018
- collecting and synthesising a range of data to report on the FSS Project within CMA guidelines and consistent with NLP MERIT reporting processes.

This involved analysing existing monitoring and evaluation data, previous reports and Project management documentation. FPC liaised with North Central CMA staff, Community Facilitators, key stakeholders, participating landholders and community members, other consultants and experts involved in Project delivery, and conducted additional interviews and surveys to contribute to the

final report. A review workshop was also held in June 2018, at which the findings, conclusions and recommendations in this final report were discussed with core Project delivery staff and stakeholders.

Table 1 provides a summary of each data collection method and participants. Table 2 provides a summary of respondents to the survey conducted through this evaluation, as well as the annual survey data that was provided by the CMA.

Table 1. Summary of data collection components.

Data collection method	Participants
Discussions with FSS Project stakeholders (including expert presenters and consultants)	4
Semi-structured phone interviews with FSS Community Facilitators	2
Face-to-face interviews with FSS Community Facilitators	4
Face-to-face interviews with FSS Project participants	5
Semi-structured phone interviews with North Central CMA staff	2
Semi-structured phone interviews with FSS Project participants	8
Final evaluation survey conducted over the phone with FSS Project participants	57
FSS Conference data collection	50
FSS Project review workshop	16

Table 2. Survey data summary.

FSS Group	Annual survey respondents (2013-2017)	Final evaluation survey respondents (2018)
<b>Charlton</b>	12	5
<b>Lockington</b>	50	5
<b>Paradise</b>	8	6
<b>Pyramid Hill</b>	31	12
<b>Smeaton</b>	0	6
<b>Timor West</b>	11	7
<b>Glenloth East</b>	43	16
<b>Wycheproof</b>		
<b>Total</b>	<b>155</b>	<b>57</b>

A detailed description of the methodology is included in Appendix 1, including data collection and stakeholder engagement methods, as well as limitations and assumptions.

## 3 Farming for Sustainable Soils Project

### 3.1 Overview

This section outlines the context of the FSS Project and its core components (Section 3.2). It presents the key inputs, activities and outputs delivered through Phase 2 of the Project, and an assessment of the extent to which these have been achieved throughout the funding period.

### 3.2 Project background

The FSS Project's focus on soil health recognises the vital importance of soils for agricultural production, environmental health, and the communities that depend upon them. The FSS Project is one of two projects with a focus on soil health delivered by the North Central CMA. The FSS Project is delivered in collaboration with local farming communities and industry stakeholders across the catchment, and complements the services provided by the Regional Landcare Facilitator. Improving the health and productivity of the soil—as a key natural asset—is a core priority for the region and the CMA is currently in the process of developing a Regional Soil Health Action Plan to deliver soil health goals over the next two decades.

The current Phase 2 of the FSS Project builds on the success of Phase 1—engaging with more farming communities across the catchment to continue building knowledge, skills and capacity in relation to soil health and increasing the adoption of locally appropriate sustainable farming practices. The model involves developing local FSS Groups, which are led by Community Facilitators and supported by the CMA.

The establishment of an FSS Group involves the following five-step process:

- **Public meeting to establish the concept**—The relevant community within a priority area is invited to a meeting to discuss the opportunity to participate as an FSS Group. The Project is described in detail and farmers are invited to consider their participation. Where there is 100% agreement to participate, the planning process proceeds.
- **Local part-time FSS Facilitator**—A local FSS Facilitator is appointed to support the Group, to assist with the development of a Local Area Soil Protection Plan, and to work in partnership with the North Central CMA to deliver the Project.
- **Public meeting to begin building the Local Area Soil Protection Plan**—A public meeting is held to gather information from farmers to contribute to developing a Local Area Soil Protection Plan. Farmers speak about their enterprise and the influences that have shaped the way they farm over the past decade, identifying their most challenging soils and soil management issues.
- **Building the Plan**—The Local Area Soil Protection Plan is developed as a blueprint for community involvement in the FSS Project over the following three years, and a further public meeting is convened to gain community feedback.
- **Annual Activity Schedule**—An Annual Activity Schedule is developed by each FSS Group. This outlines each of the activities the Group will engage in over the coming year (inclusive of growing season) consistent with a budget allocated by the North Central CMA. Funds are then allocated to the group subject to governance considerations by the North Central Standing Grants Committee.

The delivery of a Local Area Soil Protection Plan involves the following core activities:

- **Soil assessments**—Farmers sample the soils of their local area and submit them for chemical analyses. Soil pits are excavated and an assessment of local soil health is made by a soil scientist. This allows farmers to understand both soil chemistry and soil structure, identifying the constraints and opportunities that varying soil types present for improving agricultural production and soil health.
- **Capacity building and knowledge sharing**—This involves bringing FSS participants together with a range of soil experts to learn new skills and approaches to soil health that they can use on their own properties, allowing them to share and discuss soil management practices and experiences with others in the farming community.
- **Field trials and demonstrations**—This gives landholders the opportunity to trial new soil management techniques on their properties with the support of their FSS Group, allowing outcomes and lessons learned to be monitored and shared with others in the community.

The logic model for the FSS Project clearly outlines the inputs, activities and outputs of the Project and how these are linked to intermediate outcomes, end of Project outcomes and longer-term outcomes that will continue beyond the funding period (see Figure 1 on the following page).

A more detailed description of the FSS Project philosophy and delivery model is provided in the Midterm Review undertaken by RMCG.<sup>1</sup> Examples of Local Area Soil Protection Plans and Annual Activity Schedules are also available on the North Central CMA website.<sup>2</sup>

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<sup>1</sup> RMCG (2017), 'Midterm Review—Farming for Sustainable Soils Project', <http://www.nccma.vic.gov.au/resources/publications/fss-mid-term-review-march-2017>

<sup>2</sup> North Central CMA (2018), 'Farming for Sustainable Soils Resources', <http://www.nccma.vic.gov.au/projects/agriculture#node-116>

*North central Victoria has secured the health and productivity of soils, improved ecosystem services that flow from healthy soils, and built resilience to climate change through increased soil health*

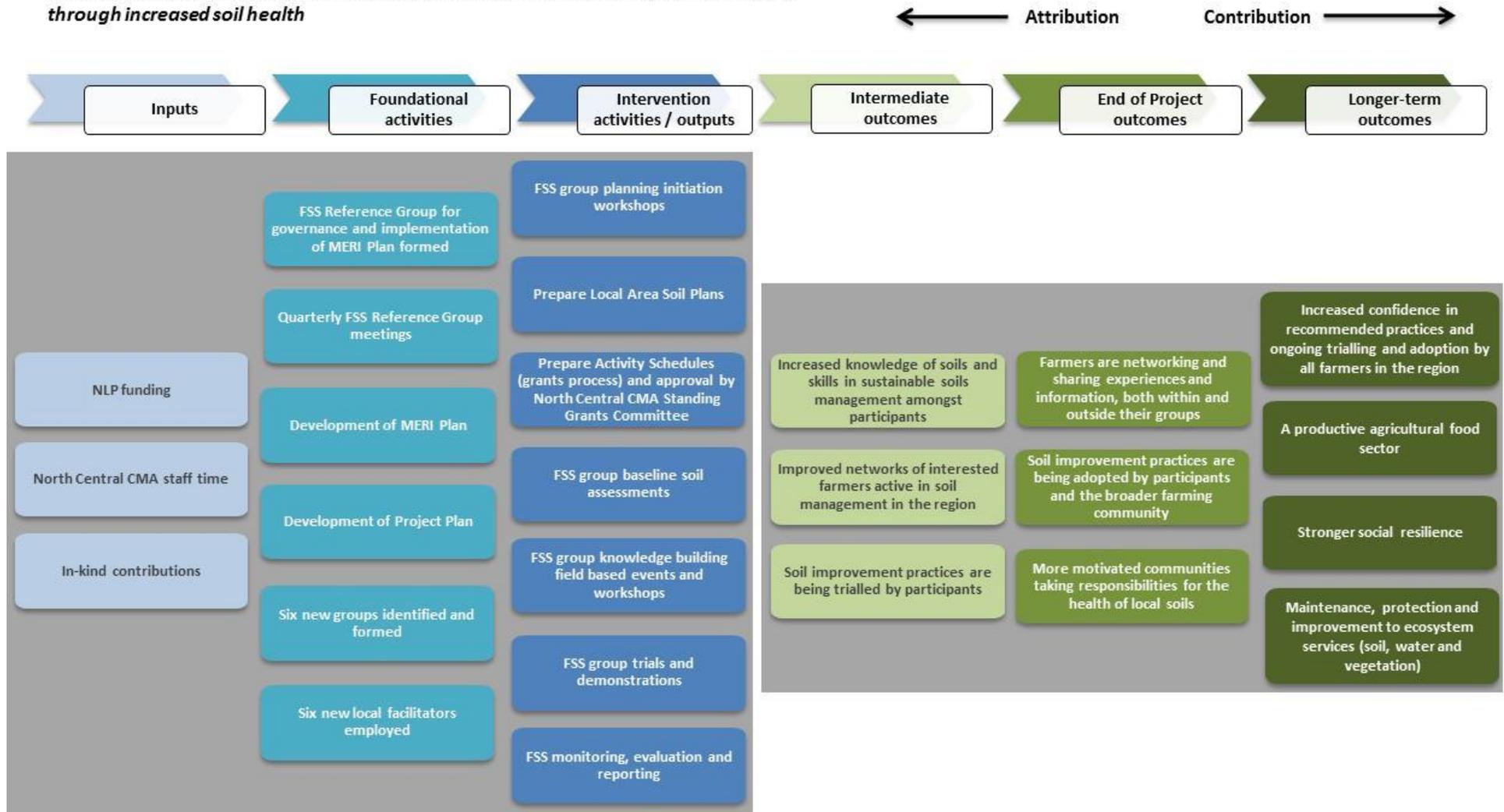


Figure 1. FSS Project logic model (adapted based on the logic model presented in the FSS Project Midterm Review).

### 3.3 Project inputs, activities and outputs

Phase 2 of the FSS Project is funded by \$2.77 million Australian Government grant funding provided to the North Central CMA between 2013/2014 and 2017/2018. This includes both NLP funding (2014/2015 to 2017/2018) and funding through the former CfoC Program (2013/2014 and in part 2014/2015). Table 3 outlines total FSS Project funding expenditure against the planned budget for each financial year. All grant funds were fully expended by 30 June 2018 as per the funding agreement between the CMA and the Australian Government. The FSS Project has leveraged a total of \$401,790 in additional value through community contributions, as reported by the CMA. Various industry and community organisations have partnered with the CMA through the FSS Project and contributed resources in supporting the delivery of Local Area Soil Plans. Table 4 shows a detailed expenditure breakdown for the FSS Project between 2013/2014 and 2017/2018.

Table 3. FSS Project budget and expenditure overview: Australian Government funding and community contributions.

Financial year	Program funding source	Total Australian Government budget <sup>3</sup>	Expenditure	Carry forward	Estimated community contribution
2013/2014	CfoC	\$581,445	\$552,365	\$29,080	\$100,100
2014/2015	CfoC	\$348,600	\$189,859	\$158,741	\$83,150
	NLP	\$232,606	\$391,347	\$4,572	
2015/2016	NLP	\$531,205	\$517,665	\$13,510	\$107,200
2016/2017	NLP	\$525,000	\$477,037	\$47,963	\$67,980
2017/2018	NLP	\$559,000	\$649,583*	\$0*	\$43,360
<b>Total</b>		<b>\$2,777,856</b>	<b>\$2,777,856*</b>		<b>\$401,790</b>

\* Projected expenditure based on budget.

Table 4. FSS Project expenditure breakdown.

Year	Program funding source	Total Budget	CMA wages	General expenses	Community grants	Facilitator payments	Levies etc. <sup>4</sup>
2013/2014	CfoC	\$581,445	\$186,117	\$61,648	\$197,000	\$38,000	\$69,600
2014/2015	CfoC	\$348,600	\$109,367	\$14,726	\$0	\$31,666	\$34,100
	NLP	\$232,606	\$101,764	\$48,950	\$190,000	\$15,833	\$34,800
2015/2016	NLP	\$531,205	\$204,351	\$32,094	\$170,000	\$47,500	\$63,720
2016/2017	NLP	\$525,000	\$235,820	\$13,092	\$135,000	\$38,000	\$55,125
2017/2018	NLP	\$559,000	\$345,933*	\$138,412*	\$90,000	\$31,500	\$43,738*
<b>Total</b>		<b>\$2,777,856</b>	<b>\$1,183,352</b>	<b>\$308,922</b>	<b>\$782,000</b>	<b>\$202,499</b>	<b>\$301,083</b>
<b>Percentage</b>		100%	43%	11%	28%	7%	11%

\* Projected expenditure based on budget.

<sup>3</sup> Includes combined NLP and CfoC funding.

<sup>4</sup> Includes CMA levies, contributions to communications, Indigenous support and GIS.

The focus of Phase 2 was to complete activities planned by two existing FSS Groups (Charlton and Lockington) and to establish six new Groups (Wycheproof, Paradise, Smeaton, Pyramid Hill, Timor West and Glenloth East). Groups participated in adaptive learning programs on the adoption of sustainable land management practices relevant to their local area—with a particular focus on soil structure, hydrologic performance, ground cover and soil organic carbon. Table 5 shows the FSS Groups supported in Phase 2.

Table 5. Years of FSS Group operation in Phase 2.

FSS Group	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Lockington (from Phase 1)					
Charlton (from Phase 1)					
Wycheproof					
Paradise					
Smeaton					
Pyramid Hill					
Timor West					
Glenloth East					

Across Phase 1 and Phase 2, the FSS Project supported a total of fourteen rural communities in the north central region of Victoria, extending from the northern plains southwards into the mid slopes region and as far as the headwaters of the Great Dividing Range.

As shown in FSS Project logic model, the activities and outputs listed below have been designed to lead to the immediate outcomes of increased knowledge and skills, improved networks, and the trialling of soil improvement practices. It was expected that by the end of the Project there would be broader networking and sharing information and experiences, adoption of soil improvement practices, and sustained motivation for communities to take responsibility for the health of their local soils.

**All FSS Project inputs, activities and outputs have been delivered and completed, and a range of key outputs and activity targets have been exceeded.** Table 6 on the following page presents planned FSS Project inputs and activities, with evidence of achievement. Table 7 then presents planned FSS Project outputs, with evidence of achievement against key targets.

Table 6. Evidence of achievement of FSS Project planned inputs and activities.<sup>5</sup>

Project components	Planned	Final FSS Project achievements
<b>Inputs</b>	Australian Government funding (NLP and CfoC)	\$2,777,856 between 2013/2014 and 2017/2018.
	Community contributions	Estimated \$401,790 from a range of industry and community partners.
<b>Foundational activities</b>	FSS Reference Group for governance and implementation of MERI Plan formed	FSS Reference Group established, comprising two members of the North Central CMA Board and two members of the North Central Catchment Consultative Committee.
	Quarterly FSS Reference Group meetings	Best practice governance has been implemented. Meetings held on a needs basis, usually two or three times per year.
	Development of MERI Plan	Completed.
	Development of Project Plan	Completed.
	Six new Groups identified and formed	Six new FSS Groups formed, in addition to the two existing Groups. Each FSS Group had around 30 active participants, with an estimated total of 240 participants.
	Six new local Community Facilitators employed	New Community Facilitators employed across six regions (Wycheproof, Paradise, Smeaton, Pyramid Hill, Timor West and Glenloth East).
<b>Intervention activities</b>	FSS Group planning initiation workshops	12 workshops held (two per Group for initiation and planning). A third workshop was also held with each Group after Local Area Soils Plans had been drafted.
	Prepare Local Area Soil Plans	Six Local Area Soils Plans submitted (one per Group).
	Prepare Activity Schedules (grants process) and approval by North Central CMA Standing Grants Committee	All Annual Activity Schedules submitted by each Group.
	FSS Group baseline soil assessments	347 samples collected, laboratory tested and interpreted <sup>6</sup>
	FSS Group knowledge building field based events and workshops	57 knowledge sharing, and capacity building events held.
	FSS Group trials and demonstrations	47 group trials and demonstrations conducted.
	FSS Monitoring, evaluation and reporting	MERI Plan implemented. Midterm Review completed by RMCG in 2017 and Final Evaluation completed by FPC (this report).

<sup>5</sup> Inputs and activities data provided by the North Central CMA and sourced from FSS Project dashboard through MERIT.

<sup>6</sup> As at March 2017, as reported in the FSS Project Midterm Review.

Table 7. Extent of achievement of FSS Project outputs.<sup>7</sup>

Output type	Output description	Output target description	Target	Achievement
<b>Participants</b>	By 30 June 2018, 225 land managers will engage in activities or be provided information to develop their skills in sustainable farming practices.	Number of volunteers participating in project activities	225	240 <sup>8</sup>
		Number of Indigenous participants at project events	0	0
		Total number of new participants (attending project events or activities for the first time)	0	1,212
<b>Events</b>	By 30 June 2018, 225 members of farming communities will have participated in FSS Group activities that will build their skills, knowledge, experience and capacity in terms of achieving soil health and sustainable land management in their local area.	Total number of community participation and engagement events run	41	57
<b>Training</b>	By 30 June 2018, 225 land managers will engage in activities or be provide information to develop their skills in sustainable farming practices.	Total number of people completing formal training courses	225	643 <sup>9</sup>
<b>Management practice change</b>	By June 2018 the four FSS current FSS groups will have established 12 trials/demonstrations as an intermediate step in the adoption of sustainable management practices.	Total number of farming entities adopting sustainable practice change	12	153
		Area of land (hectares) changed to sustainable practices	120	336 <sup>10</sup>
		Area of land (hectares) on which improved management practices have been implemented	500	1,924 <sup>11</sup>

<sup>7</sup> Targets and achievement data sourced from FSS Project dashboard through MERIT. Achievement data is accurate at time of writing and does not include any additional data from Stage 7 of Project delivery.

<sup>8</sup> Data provided by the North Central CMA reports a total of 240 unique participating landholders in local FSS Groups between 2013 and 2018. A figure of 2,990 is reported in MERIT, however this includes duplicate participants across multiple years of the Project.

<sup>9</sup> This refers to the total number of land managers who attended FSS capacity building events who may or may not have been active FSS Group participants. FSS supported events were regularly attended by farmers, landholders and community members who were not formal members of FSS Groups.

<sup>10</sup> This refers to the total hectares of the 47 trial sites supported by the FSS Project.

<sup>11</sup> This refers to the total hectares of paddocks or farms on which trials were conducted.

## 4 Findings and evidence

### 4.1 Overview

This section presents the findings of this evaluation and the evidence base to support these findings under five criteria:

- Effectiveness (Section 4.2)
- Appropriateness (Section 4.3)
- Efficiency (Section 4.4)
- Impact (Section 4.5)
- Future (Section 4.6)

#### 4.1.1 Evidence base

A description of the scope and approach for this evaluation is presented in Section 2.2 above, and the full methodology is outlined in Appendix 1. In addition to the key components of the evidence base for this evaluation, the following should also be considered:

- **Case studies—A series of 13 case studies were developed to demonstrate the value and outcomes of various components of the FSS Project and to provide farming communities with accessible information about sustainable soil management practices.** These case studies, as well as three previously commissioned case studies, should be considered additional evidence in support of the evaluation findings and are available on the North Central CMA website.<sup>12</sup>
- **Trials of potential sustainable practices—RMCG worked with the North Central CMA to collate and analyse results on the outcomes of 47 field trials funded and conducted through the FSS Project between 2013 and 2018.** This report (referred to extensively in Section 4.3) covers the activities of seven FSS Groups in Phase 1, assessing the efficacy of soil management trials, identifying key learnings and areas for further exploration. It concludes that trials and demonstrations “were a practical vehicle for farmers testing ideas and trying new practices [...] designed to allow farmers to gain experience with new farming systems, crops and technologies, to begin to validate proposed options that could improve soil condition and build community confidence in their application”.<sup>13</sup>
- **External research—An independent study commissioned by the CMA in 2016 provides further insight on the effectiveness of the FSS model, largely drawing on data from farming communities in Phase 1 of the Project.** A survey of 800 landholders shows that participants in the FSS Project rate their knowledge of soil health higher than non-participants, and that participants are more likely to implement management practices linked to improved soil health outcomes.<sup>14</sup> While this is not directly relevant to Phase 2 of the Project, it should be considered complementary evidence of the model’s efficacy.

<sup>12</sup> FSS Project case studies are available at <http://www.nccma.vic.gov.au/projects/agriculture#node-116>

<sup>13</sup> RMCG (2018) 'Farming for Sustainable Soils— On-farm Trials Report' (not publicly available), p. 28.

<sup>14</sup> Curtis, A & Mendham, E (2016) 'Participation in Soil Health Groups: Does it make a difference? A final report to the North Central Catchment Management Authority',

A range of additional reports and Project resources should be read in association with this Final Report. These are presented through MERIT reporting and are also available on the North Central CMA website:<sup>15</sup>

- Midterm Review—Farming for Sustainable Soils (RMCG, March 2017)
- Local Area Soil Protection Plan for Timor West
- Local Area Soil Protection Plan for Glenloth East / Wycheproof
- Annual Activity Schedule for Timor West
- Annual Activity Schedule for Glenloth East / Wycheproof
- Review of the Timor West FSS Group
- Review of the Glenloth East / Wycheproof FSS Group

## 4.2 Effectiveness

### 4.2.1 Outputs and outcomes

As demonstrated in Section 3.3 above, **all planned outputs and activities have been delivered. The FSS Project has achieved its intermediate and end of Project outcomes, as well as contributing to achievement of longer-term outcomes:**

- **Intermediate outcomes (achieved)**
  - increased knowledge of soils and skills in sustainable soils management amongst participants
  - improved networks of interested farmers active in soil management in the region
  - soil improvement practices are being trialled by participants.
- **End of Project outcomes (achieved)**
  - farmers are networking and sharing experiences and information, both within and outside their groups
  - soil improvement practices are being adopted by participants and the broader farming community
  - more motivated communities taking responsibility for the health of local soils.
- **Longer-term outcomes (contributed to achievement)**
  - increased confidence in recommended practices and ongoing trialling and adoption by all farmers in the region
  - a productive agricultural food sector
  - stronger social resilience
  - maintenance, protection and / or improvement to ecosystem services (soil, water and vegetation components).

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[https://www.csu.edu.au/\\_data/assets/pdf\\_file/0007/2730193/Report\\_96\\_Soils\\_Report.pdf](https://www.csu.edu.au/_data/assets/pdf_file/0007/2730193/Report_96_Soils_Report.pdf)

<sup>15</sup> North Central CMA (2018), 'Farming for Sustainable Soils Resources',  
<http://www.nccma.vic.gov.au/projects/agriculture#node-116>

**All four key target outcomes for the FSS Project have either been achieved or exceeded.** Table 8 provides findings the extent of achievement of each target outcome, and more detailed evidence is presented below in relation to each target outcome.

Table 8. FSS Project target outcome achievement.<sup>16</sup>

Target outcome		Achievement and evidence
<b>Knowledge, skills and practice change in sustainable land management</b>	By 2018, to have at least 225 land managers involved in a schedule of FSS activities that will increase their skills and knowledge of sustainable land management.	<b>Exceeded.</b> Up to June 2018, a total of 240 farmers, landholders and community members have been involved as active participants in local FSS Groups, and a total of 643 farmers, landholders and community members have attended FSS events or workshops.
<b>Partnerships</b>	By 30 June 2018 FSS groups will form six new partnerships for additional resources from industry and other organisations and help in supporting the delivery of Local Area Soil Protection Plans.	<b>Exceeded.</b> Through the Project, it is estimated that FSS Groups across the catchment have formed a total of 35 new partnerships with industry and other organisations to support the delivery of Local Area Soil Protection Plans, far exceeding the target of six. <sup>17</sup>
<b>Community leaders</b>	By 30 June 2018 FSS will increase the knowledge of seven community FSS members sufficiently for them to act as FSS advocates in supporting other farming communities.	<b>Achieved.</b> Seven FSS Community Facilitators have been recruited, trained and supported by the North Central CMA to engage their local farming communities and deliver the FSS Project ‘from the ground up’ (including existing Community Facilitators from Charlton and Lockington).
<b>Wider reach</b>	By June 2018, 675 farmers outside the FSS groups will have an increased awareness of the sustainable practices adopted by the groups.	<b>Achieved.</b> It is estimated that 720 farmers, landholders, stakeholders and community members outside the FSS Groups structure have been made aware of the FSS Project and messages about soil health and sustainable land management. <sup>18</sup>

### Knowledge, skills and practice change in sustainable land management

**There is clear evidence demonstrating that farming communities are increasing their knowledge, skills and awareness of sustainable soil and land management through their participation in the FSS Project.**

It is estimated that between 2013 and 2018, a total of 347 soil health assessments, 57 capacity building workshops or activities, and 47 soil management field trails have been delivered by farming communities across the catchment through the FSS Project.

<sup>16</sup> Target outcomes as listed in the FSS Project’s MERIT Portal through the NLP.

<sup>17</sup> This is based on an estimate that each of the seven FSS Groups partnered with five organisations.

<sup>18</sup> This is based on an estimate that for each of the 240 active participants in FSS Groups an additional three people were made aware of the FSS Project and messages about soil health and sustainable land management.

The collection of chemical and physical information was essential in the assessment of soil health and soil condition by each of the FSS Groups. This information afforded a 'benchmark' that supported the development of a community knowledge base allowing for the formulation of informed approaches to overcoming soil constraints. Throughout the Project, each of the FSS Groups collected soil samples for laboratory analyses, and further established their understanding of local soils through the excavation of soil pits—supported and overseen by soil scientists from the region.

After assembling soil data FSS Groups conducted workshops in which experts soil scientists and agronomists provided an interpretation of their meaning. Laboratory assessments included parameters such as organic carbon, salinity, acidity, cation exchange, and nutrient status. Physical assessments included observations of soil structure, root development, subsoil constraints and responses to changes in paddock management (for example, subsoil manure injection).

Independent of the NLP, the North Central CMA constructed a generic corporate library for its datasets, and specifically tailored it to accommodate the FSS soils data. While the database has not yet been populated, this data is held within the North Central CMA document management system, and by each of the FSS Groups. FSS data will be entered into the corporate library, as part of a project identified through the Soil Health Action Plan for North Central Victoria. This project aims to ensure soils information is well managed, shared and easily accessible for the appropriate need.

The outcomes and experiences of FSS Groups undertaking soil assessments through the Project are explored in more detail in the following case studies developed by FPC:

- **Finding out what's going on underground: the value of soil pits**—"Soil testing and assessments undertaken through the Farming for Sustainable Soils Project"<sup>19</sup>
- **Discovering soil health opportunities and limitations: calling in the experts**—"Independent expertise tailored to the needs of farming communities in the Farming for Sustainable Soils Project"<sup>20</sup>
- **The value of soil care: changing approaches to soil management**—"Insights from Farming for Sustainable Soils Project participants in the Wycheproof, Glenloth East and Charlton areas of north central Victoria"<sup>21</sup>

Through a survey undertaken during the concluding stages of the Project FPC found the following:

- 89% (51) of participating farmers stated that their confidence has increased in their capacity or ability to adopt new soil management practices since being involved in the FSS Project
- 96% (54) stated that their knowledge and skills in relation to soil health have improved since participating in the FSS Project
- around a third of respondents reported considerable improvements in both of these areas (see Figure 2 on the following page).

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<sup>19</sup> <http://www.nccma.vic.gov.au/resources/publications/finding-out-whats-going-underground>

<sup>20</sup> <http://www.nccma.vic.gov.au/resources/publications/discovering-soil-health-opportunities-and-limitations>

<sup>21</sup> <http://www.nccma.vic.gov.au/resources/publications/value-soil-care>

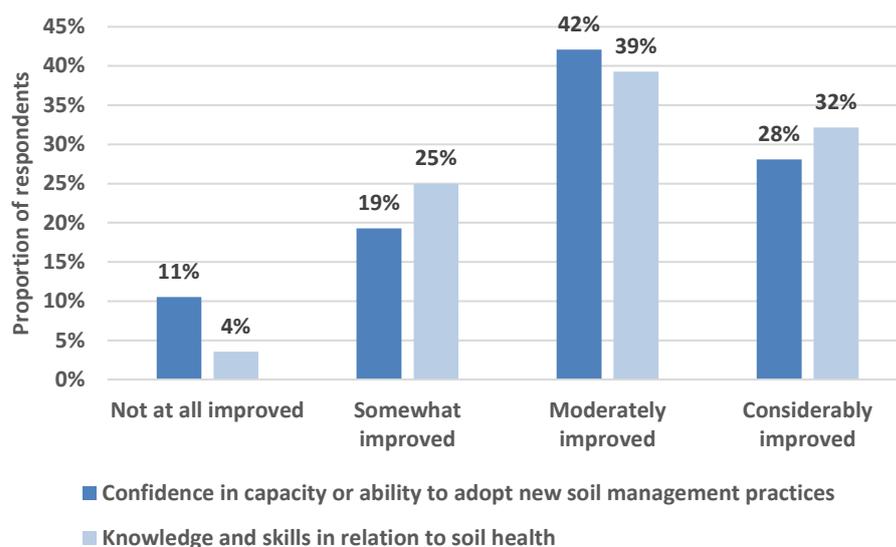


Figure 2. Final evaluation survey: extent of improvement in confidence (n=57) and knowledge and skills (n=56) resulting from the FSS Project.

**There is also clear evidence that farmers are adopting new sustainable land management practices as a consequence of participating in the FSS Project.**

**Just over three-quarters of surveyed farmers (77%, 44) reported that they have made changes on their property resulting from their involvement in the FSS Project.** Among these respondents, 46% (19) said they would not have been able to make these practice changes without the Project. Forty-four per cent (18) stated that they were going to make these changes anyway but that the Project encouraged them to do it sooner. One limitation of the surveys was that they were restricted to interviews with participating farmers. Regional on-ground survey was not conducted to assess actual practice change.

Annual survey responses between 2013 and 2017 show that **for the vast majority of participants, the FSS Project has increased their understanding of soil health beyond their own farm (98%, 119), and motivated them to undertake more trials, implement new approaches and learn more about soil health (98%, 133)** (see Figure 3 on the following page).

An example of the knowledge and skills gained by landholders, the range of soil management approaches trialled, and the positive outcomes experienced is evident in the following quote from a participating farmer:

*“Regular soil testing, just generally more knowledge on chemicals and weather [...] The subsoil manuring trial is still working up there. That was five or six years ago, and the chicken manure is still working. We put in ten different products [...] gypsum, cow manure and then some commercial fertilisers and some liquid ones as well. We dug soil pits to see what the roots had done, and then after about three years we did another one to see what had happened. [It was] unbelievable how much better the soil was [after the FSS trial]. Brassicas were growing up to my knees!” (participating farmer)*

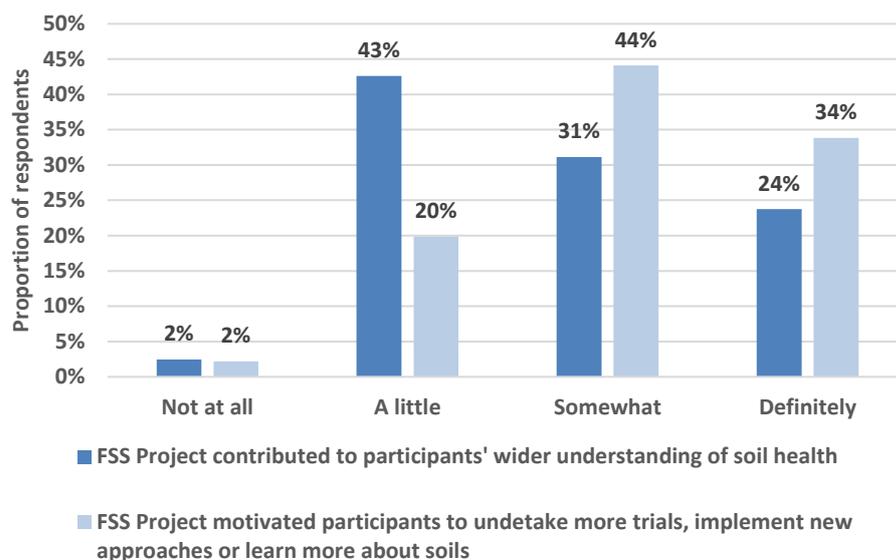


Figure 3. Annual survey 2013-2017: extent of contribution to understanding of soil health (n=122) and extent of motivation to undertake additional actions (n=136).

The majority of respondents noted that they had used their soil assessments in some way. Annual surveys throughout the FSS Project show that after undertaking soil assessments on their properties, 50% (73) of participants went on to seek additional expert assistance in analysing the results of their soil tests. Further, 50% (67) of participants reported that they used their soil test results and changed their soil management practices as a result, 37% (49) used their results but did not need to change their soil management practices. Only 13% (17) did not use their results.

In addition, directly following on from their involvement in the FSS Project, 67% (38) of the participants surveyed through this evaluation have further soil management practice changes either planned or in progress. These changes include both continuing the practices that farmers trialled through FSS Project, as well as implementing additional soil management practices they learned about through the Project—for example, ongoing soil monitoring, changing additive and fertiliser practices, changing cropping rotations, introducing direct drilling and deep ripping, and various other methods of increasing organic matter and improving soil structure.

*“We’re running a controlled traffic system now. [We] did work with soil scientists on deep ripping and changing the way we’re sowing [...] also now using soil moisture probes.”*  
(participating farmer)

*“[We] fenced off some trees on the property and we have gone all direct drilling now. [...] We also don’t burn stubble anymore. [We’re] also trying to keep the chemicals out of the soil as much as possible.”* (participating farmer)

## Partnerships

It is estimated that 35 partnerships with industry and other organisations were developed through the FSS Project, which contributed to the delivery of Local Area Soil Plans. Key partnerships have provided additional value through in-kind contributions as well as knowledge sharing, capacity building and practice change among farming communities in the catchment.

All of the FSS Groups partnered with a range of organisations in the delivery of the FSS Project, often resulting in the establishment of ongoing partnerships. Table 9 presents a snapshot of key partnerships developed throughout the FSS Project between 2013 and 2018.

Table 9. Snapshot of FSS Project partnerships.

Organisation	Entity type	Involvement and support provided through partnership	FSS Group partners
<b>Birchip Cropping Group</b>	Primary industry group	Support for cropping trials.	Pyramid Hill
<b>Southeast Soil and Water (Christian Bannan, soil scientist)</b>	Commercial entity	Assistance with soil sampling and soil field days.	Wycheproof Glenloth East Pyramid Hill Timor West
<b>Australian Grain and Forage Seeds</b>	Commercial entity	Support for cropping trials.	Timor West
<b>Dellavedova Fertilisers</b>	Commercial entity	Support for cropping trials.	Timor West
<b>Agriculture Victoria (Department of Economic Development, Jobs, Transport and Resources)</b>	State Government	Supports the provision of specific technical advice on soils and agronomy to the FSS Groups, and runs a complementary Soil Health Program	All
<b>Elders (Rural Services)</b>	Commercial entity	Support for remote monitoring and reporting of soil moisture. Support for trials.	Paradise Timor West Glenloth East
<b>Perennial Pasture Systems</b>	Commercial entity	Support for perennial pasture trials.	Paradise
<b>Landmark St Arnaud</b>	Commercial entity	Support for remote monitoring and reporting of soil moisture.	Paradise
<b>Land-Mate (Ararat Prison)</b>	State Government	Support in establishing fences and trees.	Paradise
<b>Donald High School</b>	School	Support for tree establishment.	Paradise
<b>Millers Agricultural Supplies Pyramid Hill</b>	Commercial entity	Assistance with formation of the Pyramid Hill FSS and the establishment of remote soil moisture monitoring	Pyramid Hill
<b>RMCG Consulting</b>	Commercial entity	Assistance with Local Area Soil Protection Plans and growing season Annual Activity Schedules. Various consulting services and expert advice on soil management.	All
<b>Landmark Wycheproof</b>	Commercial entity	Support for remote monitoring and reporting of soil moisture.	Wycheproof
<b>Fait Fertilisers</b>	Commercial entity	Support with trial sites.	Wycheproof
<b>Agrivision (Tom Lord, agronomy consultant)</b>	Commercial entity	Agronomic support and advice.	Wycheproof

## Community leaders

**Community Facilitators have been a crucial part of the community-based schedule of activities delivered through the FSS Project between 2013 and 2018.** In the areas of Charlton, Lockington, Paradise, Smeaton, Timor West, Glenloth East, Wycheproof and Pyramid Hill, seven Community Facilitators have acted as expert peer mentors since 2013. Throughout the Project they have been given the skills, knowledge and capacity to influence landholders, farmers and community members across the catchment to improve soil health and sustainable land management practices.

Community Facilitators were the interface between the North Central CMA and their local farming communities in delivering the Project. Community Facilitators and the CMA Project Team worked together in establishing FSS Groups and engaging landholders in their local area, preparing Local Area Soil Protection Plans and Annual Activity Schedules, co-ordinating soil assessments and testing, capacity building workshops, expert presenters and demonstrations, and designing field trials, as well as Project administration, monitoring and reporting, and advocating for the FSS Project more widely.

Community Facilitators were essential in the community-based approach of the FSS Project and have been described as critical to the success (or otherwise) of their Groups. In most cases they are landowners or farmers in their local communities with firsthand knowledge and experience of the soil health challenges faced by their FSS Group members. Having local Community Facilitators was seen to build trust within the FSS process and encouraged a journey of peer-to-peer learning among Group members.

There were also additional positive outcomes for community connectedness fostered by the FSS Groups, led by the Community Facilitators. This is discussed in more detail throughout following sections of this report. Case studies developed as part of this evaluation also provide insight on the value of Community Facilitators in the FSS Project.<sup>22</sup>

## Wider reach

**The FSS Project has exposed the wider community to messages about soil health and stories of improved sustainable land management practices. This has been enabled through FSS Group participants, Community Facilitators, North Central CMA staff, formal FSS Project partners and other key stakeholders.**

The FSS Project Team estimates that around 720 additional farmers, landholders and community members have been exposed to messages about soil health and sustainable land management practices. This estimate is based on a range of factors:

- Through annual survey data between 2013 and 2017, 55% (72) of participating farmers reported that they have shared information, knowledge or skills learned from the FSS Project with other farmers not involved in the Project.
- North Central CMA staff and FSS Community Facilitators have actively promoted the FSS Project and sustainable soil management through Landcare groups and networks, including

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<sup>22</sup> 'Facilitating change in soil health: The experience of being a Community Facilitator in the Farming for Sustainable Soils Project', North Central CMA  
[http://www.nccma.vic.gov.au/sites/default/files/publications/case\\_study\\_02\\_facilitators.pdf](http://www.nccma.vic.gov.au/sites/default/files/publications/case_study_02_facilitators.pdf)

the Loddon Plains Landcare Network, Sutton Grange Landcare, Mid-Loddon Landcare Network, Northern United Forestry Group and the North Central Catchment Management Regional Roundtable Community Consultation. In the most recent six-monthly NLP reporting period alone, the FSS Project reached a total of 115 non-FSS participants through these groups and their events.

- Records from engagement events and capacity building activities supported by the FSS Project show consistent attendance by landholders and community members who are not registered members of an FSS Group. For example, more than half of the attendees at the FSS Conference in March 2018 were non-FSS Project participants.
- A range of resources (including case studies, soil health information guides, maps, videos, etc.) are publicly available on the North Central CMA website and have been routinely accessed by the wider community.
- Evidence from Community Facilitators, participating farmers and North Central staff interviewed through this evaluation suggests that the FSS Project has had a wider impact within farming communities, with anecdotal reports of increasing interest in sustainable soil management throughout the catchment.

*“Everything we did was open to the wider public and through some of the agronomy firms and the North Central CMA and the Landcare Network, we have been able to spread the message about the things we’ve been doing with the Project to a wider audience.” (FSS Community Facilitator)*

*“The Groups keep picking up new members, even at this late stage of the funding. Particularly young farmers [...] one young guy comes and then the next time he brings another one—they might not officially join but they come along to things and get themselves on email lists.” (CMA staff member)*

### 4.3 Appropriateness

**Overall, activities were appropriate for achieving the intended FSS Project outcomes.** As discussed in detail in Section 4.2 above on effectiveness, **for the majority of participants, improvements in soil health skills, knowledge and experience gained through participating in the FSS Project led to an increased adoption of sustainable land management practices.**

**Overall, the community-based model of the FSS Project is seen to meet the needs of farmers.**

Feedback from participating farmers, Community Facilitators, CMA staff and other Project stakeholders was generally very positive, suggesting that the community-based approach was a key factor of success for the Project. Overall, the model is seen to be effective in engaging farming communities and tailoring sustainable soil management activities to the needs of participating landholders, with additional outcomes for community connectedness.

*“[Our] confidence has increased by being part of the whole Project. Some of the stuff we already know, some is [new]. The networking side of it with other people is really useful, both with local community and with experts.” (participating farmer)*

*“It is quite rare in my professional experience to get programs that actually ask the landholders what they want to do [...] 90% of the success of the FSS Project has been because of that community-driven approach.” (CMA staff member)*

**The vast majority of participating farmers, landholders and community members were satisfied with their involvement in FSS Project activities and reported that activities helped them improve their approach to soil health.**

- From annual survey results between 2013 and 2017, 99% of participating farmers reported that the FSS Project assisted them to achieve their sustainable soil management goals, with 26% (38) reporting a significant amount, 53% (78) reporting a moderate amount, and 20% (29) reporting a little. And 90% of participating farmers reported that they were either moderately or very satisfied with the FSS Project overall.
- Of farmers surveyed through this evaluation, 87% (46) agreed that activities in the FSS Project were either moderately or considerably helpful in influencing their approach to soil management. The majority (85%) of participants also reported that they were either moderately or very satisfied with the FSS Project overall (see Figure 4).

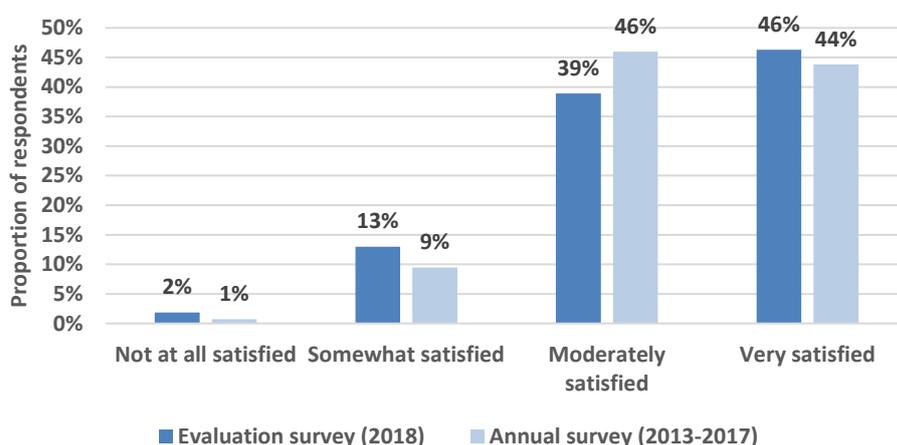


Figure 4. Overall participant satisfaction with the FSS Project from final evaluation survey (n=54) and annual survey (n=137).

**Activities in the FSS Project have contributed to improved soil quality and agricultural productivity in north central Victoria.** Through the survey undertaken through this evaluation, 67% (33) of participating landholders have seen some improvement in their soil health as a result of the FSS Project, and further 29% (14) have stated that it is too early to tell (see Figure 5 on the following page). In addition, 54% (26) have seen some improvement in the productivity of their farming business resulting from the FSS Project, and 38% (18) stated that it's too early to tell (see Figure 5).

*“With soil structure and trying to build organic matter in our soil, deep ripping made a big difference. I'm a bit more aware of soil health issues with the soil pits too. We had a much better yield from crops where we had done the deep ripping trials.” (participating farmer)*

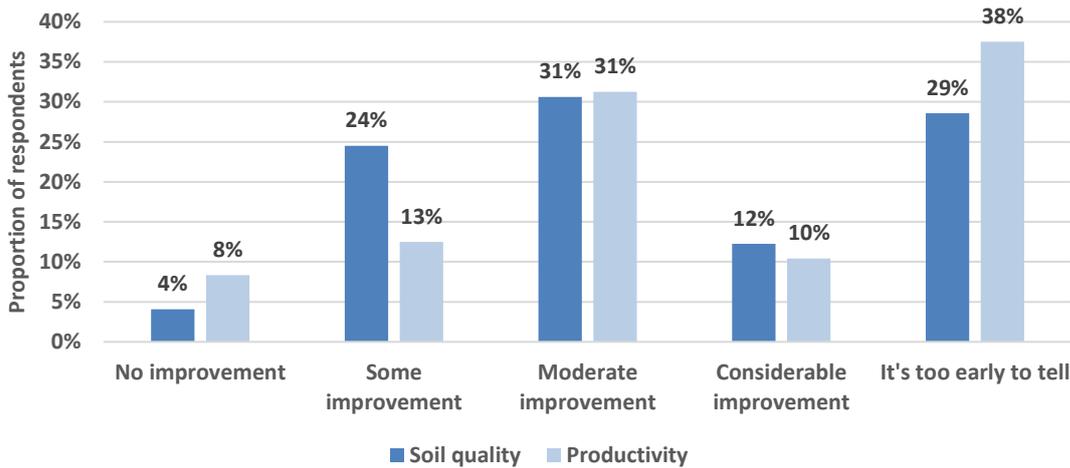


Figure 5. Final evaluation survey: extent of improvements in soil quality and productivity resulting from FSS Project (n=49).

Funded field trials and demonstrations were a core component of the FSS model that were found to both provide value through their outcomes and results, but also provided value to farmers as a learning activity and engagement tool. Relevant to the appropriateness of the FSS Project, RMCG states: **“This type of on-farm demonstration helps bring clarity to some of the uncertainties farmers have about the effectiveness of practices in improving soil condition and their adoptability, including cost”**.<sup>23</sup>

Results from FSS field trials collated and analysed by RMCG show that discernible differences were observed between the treatments in around half of the trials (see Figure 6 on the following page). While there is limited quantifiable evidence to support this, visual differences were observed, and this provided value to farmers in discussing key learnings and likely outcomes if trials were upscaled on their properties. Figure 6 also shows that the majority of trials confirmed good practice, with 14% leading to new knowledge. Around one third of trials had low success or were affected by poor growing seasons in 2014/2015.<sup>24</sup>

Participating farmers reported that just as much benefit can come out of the learnings of failed trials than successful ones:

*“The best thing about some of these trials was that we could see if things would work. [...] It’s probably more what I didn’t do, not so much as what I did do. There were things I was going to do then everyone did it and it didn’t work, so I decided not to waste my time and money on doing them.” (participating farmer)*

<sup>23</sup> RMCG (2018) 'Farming for Sustainable Soils—On-farm Trials Report' (not publicly available), p. 19.

<sup>24</sup> RMCG (2018) 'Farming for Sustainable Soils—On-farm Trials Report' (not publicly available), p. 19.

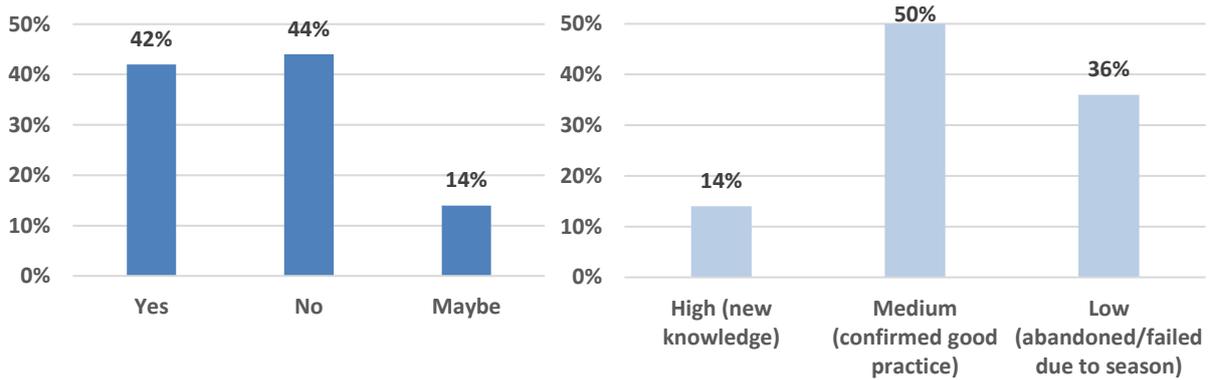


Figure 6. RMCg: discernible differences between treatments used in field trials (yes, no, maybe) (n=45) and success of field trails (high, medium, low) (n=44).

RMCg’s On-farm Trials Report covers the activities of seven FSS Groups in the region, extending from the northern plains southwards into the mid slopes region as far as the Great Dividing Range at the top of the Avon Richardson catchment in the south west (see Figure 7).

Information was collected from the 47 trials. Almost half were focused on amelioration of soil compaction and hardpans to improve soil condition and reduce sub soil-constraints on production. All Groups conducted trials looking at direct physical methods of improving soil structure and most also conducted cropland management trials, including demonstrating alternative plants to increase soil organic carbon, tillage and seeding techniques and the efficacy of different fertilisers. Several Groups looked at pastures and different soil measurement and monitoring techniques to improve decision making.

Soil structure was the biggest issue that farmers addressed through the trials. There is a growing understanding among farmers that getting their system right and growing plants that will increase soil organic carbon will be the key to improving soil condition.

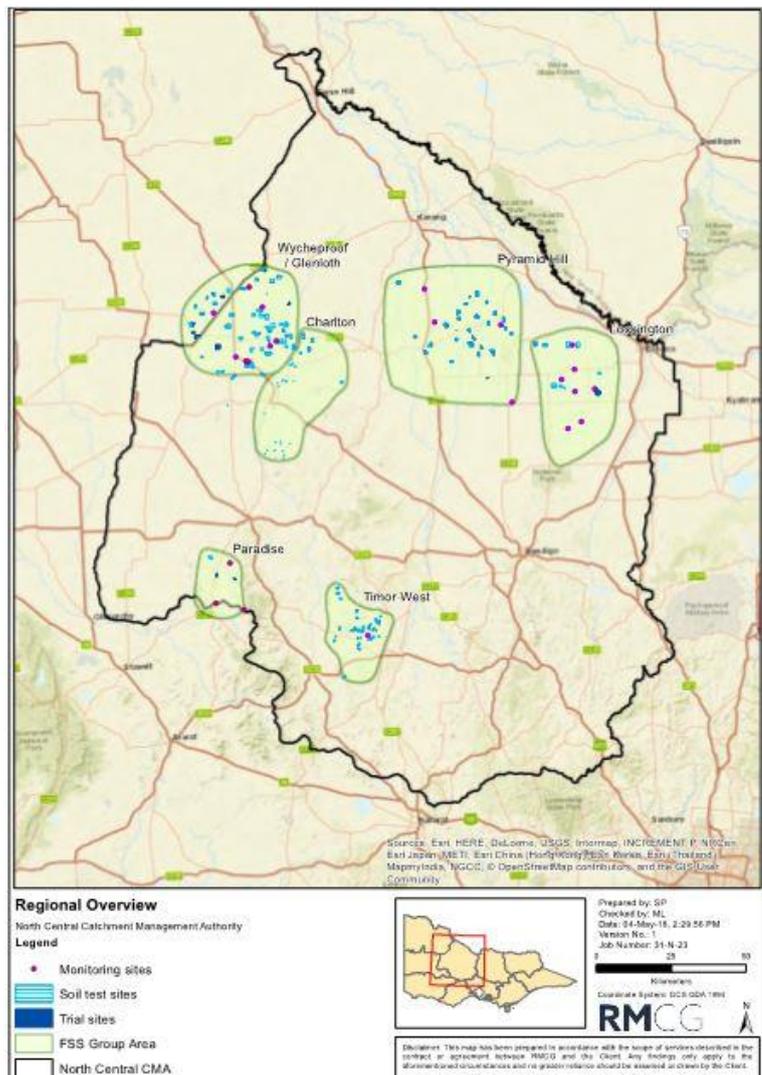


Figure 7. Distribution of soil trials conducted by FSS Groups (RMCg 2018).

Most of the direct physical techniques trials were found to be unaffordable for current dryland farming systems in the north central region. The trials and demonstrations were in the main, not replicated scientific trials but were a practical vehicle for farmers testing ideas and trying new practices in the paddock. They were designed to allow them to gain experience with new practices, crops and technologies, to begin to validate proposed options that could improve soil condition and to build community confidence in their application.

In many instances the approach saw failures because of inherent difficulties with extreme climatic variance (droughts and floods), however, farmers accepted this as part of otherwise normal seasonal variability. Cropping trials at Wycheproof, for example, were subject to poor yields because they were conducted in drought, while subsoil manuring and trash incorporation worked well at Timor West following the wet spring of 2016. The experience with climate variability underlined issues with assessment of organic carbon content and balance of regional soils—reinforcing observations from historical measurements that suggest substantive changes only occur where practice change occurs over longer timeframes.

Informing future soil health initiatives, key messages and further research questions have been identified for each of the main trial types and sub-types in RMCG's On-farm Trials Report.<sup>25</sup>

On-farm trials are explored in more detail in the following case studies developed by FPC:

- **Inspiring practice change: the value of conducting soil health trials**—"Trialling new soil management techniques through the Farming for Sustainable Soils Project"<sup>26</sup>
- **Regenerating soil through additives and ameliorants**—"Trialling inputs to improve soil health through the Farming for Sustainable Soils Project"<sup>27</sup>
- **The value of soil care: changing approaches to soil management**—"Insights from Farming for Sustainable Soils Project participants in the Wycheproof, Glenloth East and Charlton areas of north central Victoria"<sup>28</sup>

**Monitoring and reporting of field trials has been identified as an area for improvement** (see Section 4.6.2 on strengths and limitations). However, there are inherent challenges with soil management— particularly in measuring soil health improvements within short timeframes.

**While the activities in the FSS Project were seen to be adequate and effective in delivering soil health outcomes, the Project was limited by time and resource constraints and the long-term nature of soil management.** Through interviews and surveys conducted through this evaluation, participating farmers, Community Facilitators, CMA staff and other Project stakeholders reflected on the challenges of achieving soil health outcomes within a short period of time—considering additional factors like seasonal conditions and financial pressures. Many farmers described the practice changes they have made and the ongoing improvements they will continue to see as a

<sup>25</sup> RMCG (2018) 'Farming for Sustainable Soils—On-farm Trials Report' (not publicly available).

<sup>26</sup> <http://www.nccma.vic.gov.au/resources/publications/inspiring-practice-change>

<sup>27</sup> <http://www.nccma.vic.gov.au/resources/publications/regenerating-soil-through-additives-and-ameliorants>

<sup>28</sup> <http://www.nccma.vic.gov.au/resources/publications/value-soil-care>

result of the FSS Project, and others described how the knowledge they have learned through the FSS Project will inform future management decisions:

*“Improvements are slow and take time, they depend on seasonal conditions, and that. It's too early to say but if it was raining more regularly we'd see a considerable improvement, but there just hasn't been much rain.” (participating farmer)*

This will also be discussed in Section 4.5 on the overall impact of the Project.

There are some other key challenges in meeting the needs of farmers through devolved grants programs such as the FSS Project. Through surveys and interviews, stakeholders raised some insights on appropriateness of activities, for example:

- It is difficult to pitch all activities at the right level when there is diversity in the needs and experience of farmers—some participants were relatively advanced in their knowledge and practice of sustainable land management, and others felt they need to “get into the basics”.
- Farmers consistently reflected that, while the Project provided overall benefit to them, there were some instances where activities were not relevant or provided little value. The soil management context of north central Victoria varies greatly, as does the context of local areas within the catchment, farming properties and even individual paddocks—ensuring the relevance of sustainable land management capacity building and practice change activities is particularly challenging in relation to soil health. However, a key strength of the FSS Project reported by participating farmers is the ability for local communities to pursue soil health topics most relevant to them.

The strengths and limitations of the FSS Project model, lessons learned and suggestions for improvement are discussed in more detail in Section 4.6 on future implications.

#### 4.4 Efficiency

**The FSS Project was delivered within its scope, budget and expected timeframes.** As reported in Section 3.3, all Project inputs, activities and outputs have been delivered and completed, and a range of key outputs and activity targets have been exceeded. All grant funds were fully expended by 30 June 2018 as per the funding agreement between the CMA and the Australian Government, and the Project has leveraged a total of \$401,790 in additional value through community contributions. Delivery of the FSS Project was supported by:

- FSS Project Team—including the Project Manager and various support staff within the CMA
- risk management structures—evidenced through the NLP MERIT Portal
- financial management protocols—in accordance with NLP requirements and CMA guidelines
- governance structures—including the FSS Project Reference Group and the North Central CMA Standing Grants Committee
- MERI—including internal CMA review processes and reflection sessions with key Project delivery staff, an evaluation plan developed through MERIT, an external Mid-term Review (RMCG) and external Final Evaluation (FPC)
- external consultancies where necessary—for example, independent advice on the development of Local Area Soils Plans.

**The Project appears to have been well-managed by the FSS Project Team and the CMA.** Few concerns were raised throughout this evaluation, and stakeholders and delivery staff report that any issues arising throughout the Project were most often appropriately managed. For example, some problems were encountered with the Smeaton FSS Group, including: some division in the community between conventional farmers and those embracing more sustainable farming practices, capacity issues with the Smeaton FSS Community Facilitator, some field trials failing to produce useful outcomes, and lack of ongoing engagement by local landholders in the Group. These issues were managed by the FSS Project Manager in consultation with CMA senior management and the Standing Grants Committee, with funding for a potential fourth year of the Smeaton FSS Group reallocated within the Project budget.

**It appears that the FSS Project was a cost-effective investment in engaging local farming communities to improve the health of their soils and agricultural productivity—particularly considering the depth of engagement of participants in the Project across multiple years. However, it is not possible to directly compare the cost-effectiveness of the FSS Project to other similar programs or approaches due to lack of publicly available data allowing for an accurate comparison.** Table 10 shows three cost-effectiveness estimates for the FSS Project, including: the estimated cost per total hectares with direct practice change funded by the FSS Project (\$1,444), cost per total FSS capacity building event attendee (\$4,320), and cost per total active FSS Group participant (\$11,574). **It should be recognised that these cost-effectiveness measures are limited, and do not comprehensively reflect the value (financial and non-financial value) of investment in the FSS Project.**

Table 10. Cost-effectiveness estimates.

Cost-effectiveness measure	Calculation	Cost-effectiveness estimate
<b>Cost per total hectares with direct practice change funded by the FSS Project</b>	\$2,777,856 / 1,924 hectares	<b>\$1,444 per hectare</b>
<b>Cost per total FSS capacity building event attendee<sup>29</sup></b>	\$2,777,856 / 643 attendees	<b>\$4,320 per event attendee</b>
<b>Cost per total active FSS Group participant</b>	\$2,777,856 / 240 participants	<b>\$11,574 per FSS Group participant</b>

**Recognising the limitations of this approach, some additional cost-effectiveness measures have been calculated as a comparison.** The average size of properties managed by landholders participating in FSS Groups is 1,436 hectares—with properties ranging from 24 to 6,500 hectares, as reported through annual surveys conducted by the CMA. The total number of active participants in FSS Groups throughout the Project is 240 and the total amount of Australian Government grant funding is \$2,777,856, as reported above. Based on this data, and changes reported through the survey undertaken through this evaluation, additional cost-effectiveness estimates were calculated (see Table 11 on the following page).

<sup>29</sup> This refers to the total number of land managers who attended FSS capacity building events who may or may not have been active FSS Group participants. FSS supported events were regularly attended by farmers, landholders and community members who were not formal members of FSS Groups.

Table 11. Additional cost-effectiveness estimates.

Reported change as a result of participating in the FSS Project <sup>30</sup>	Proportion of FSS Group participants (240 total) <sup>31</sup>	Estimated hectares managed by proportion of participants (344,640) <sup>32</sup>	Calculation	Estimated cost per hectare managed
<b>Changes in soil management practices</b>	185 (77%)	\$265,443 (77%)	\$2,777,856 / \$265,443	\$10.46
<b>Increased confidence in soil management</b>	214 (89%)	\$306,811 (89%)	\$2,777,856 / \$306,811	\$9.05
<b>Improved knowledge and skills in relation to soil management</b>	230 (96%)	\$330,942 (96%)	\$2,777,856 / \$330,942	\$8.39
			<b>Average</b>	<b>\$9.30</b>

**The community-based approach used in the FSS Project is an effective model for achieving intended outcomes.** This is supported by the range of evidence presented through this evaluation—for example, the high levels of participation and ongoing engagement in the FSS Project (with two out of four outcomes targets exceeded, see Section 4.2), positive support from participating farmers, Community Facilitators, CMA staff and other Project stakeholders, and only one key suggestion for improving the efficiency of Project delivery.

Over the past five years, through the FSS Project, 240 farmers from eight farming communities have sought to understand the condition of their soils, build their knowledge base through workshops with expert scientists and trial promising land management practices that build soil health and soil condition. Their activities have extended through experimentation with cover crops, deep ripping and gypsum application, injection of animal manures, adoption of pulse crops, sustaining ground cover, break-of-slope tree planting to intercept groundwater in salinity control, shifting to liquid fertilisers, and many more. Each farming community participates in a process that transitions through soil assessment, knowledge building through access to expert scientists and trialling alternative approaches on local properties.

**The FSS Project structure with three core components and an underpinning in community ownership is likely to be an effective model for future soil health and other agricultural extension programs.** From the 1990s, NRM and agricultural extension in Australia moved from a one-on-one focus to community-based approaches—but community-based NRM approaches are not always effective, particularly when narrowly scoped, under-resourced and not tailored to local contexts.<sup>33</sup> Evidence presented throughout this evaluation has demonstrated positive outcomes of the FSS Project's community-based model. Importantly, the FSS model includes a strong focus on peer-to-

<sup>30</sup> Based on results of the survey undertaken through this evaluation.

<sup>31</sup> Total of 240 active participants in FSS Groups between 2013 and 2018, as reported by the CMA.

<sup>32</sup> Total hectares of land managed by participating farmers based on average property size of 1,436 hectares reported through annual surveys between 2013 and 2017.

<sup>33</sup> Curtis, A, Ross, H, Marshall, GR, Baldwin, C, Cavaye, J, Freeman, C, Carr, A & Syme, GJ (2014) 'The great experiment with devolved NRM governance: lessons from community engagement in Australia and New Zealand since the 1980s', *Australasian Journal of Environmental Management*, Vol. 21, No. 2, pp. 175-199.

peer learning and is supported by grant funding to local communities—two aspects identified as factors that strengthen the effectiveness of community-based NRM program.<sup>34</sup>

“Participation as a member of a group and / or network is the basic building block of community-based NRM” and maintaining engagement and increasing new membership in community-based NRM has been strongly linked to the achievement of increased on-ground outcomes.<sup>35</sup> Feedback from participating farmers, Community Facilitators, CMA staff and other Project stakeholders suggest that the community-based approach was a key factor that has led to the successful achievement of intended outcomes:

*“The key lesson for me is the consolidation of that community-based approach. I can’t see any other way that we can achieve the kind of changes we’re looking for without having that kind of approach.” (CMA staff member)*

Community-based natural resource management (NRM) is seen as “a cost-effective platform for rural development that extends beyond NRM to provide an important part of the social capital in rural areas”.<sup>36</sup> This is evident through outcomes of the FSS Project. For example, farmers in the Glenloch East and Wycheproof FSS Groups experienced hardship due to drought, and the opportunity for them to connect through the FSS Project has improved community resilience:

*“You’ve got a social benefit—the first two years we ran we had two terrible droughts and getting farmers together to talk was a huge thing. I found I had more members turning up in those dry years and I think a lot of it came back to the social side, knowing that they’re not the only ones involved and going through hard times.” (FSS Community Facilitator)*

The community-based model of the FSS Project is explored in more detail in the following case studies developed by FPC:

- **Enriching soils, enriching communities: the value of a community-led approach—** “Collectively working to improve soil health”<sup>37</sup>
- **Facilitating change in soil health—** “The experience of being a Community Facilitator in the Farming for Sustainable Soils Project”<sup>38</sup>

**While, overall, resources were used efficiently, an opportunity to improve the impact of financial investment through the FSS Project was identified by Project delivery staff.**

Community grants provided to FSS Groups were spread over three or four years, with funding distributed relatively evenly across years, but generally a higher amount was provided in the first year (see Table 12 on the following page). **From a Project management perspective, this funding**

<sup>34</sup> Curtis et al (2014).

<sup>35</sup> Curtis, A & Sample, R (2010), ‘CBNRM in Victoria: Contributing to dialogue, learning and action’, Institute for Land, Water and Society, Charles Sturt University  
[http://athene.riv.csu.edu.au/~acurtis/reports/CBNRM\\_Victoria\\_Final\\_Report\\_July.pdf](http://athene.riv.csu.edu.au/~acurtis/reports/CBNRM_Victoria_Final_Report_July.pdf)

<sup>36</sup> Curtis et al (2014).

<sup>37</sup> <http://www.nccma.vic.gov.au/resources/publications/enriching-soils-enriching-communities-value-community-led-approach>

<sup>38</sup> <http://www.nccma.vic.gov.au/resources/publications/facilitating-change-soil-health>

**structure allowed for substantial investment in the establishment of each FSS Group in the first year**—including funding for developing Local Area Soils Plans to be delivered in subsequent years, starting with soil assessments and establishing field trials, supported by capacity building.

While this approach was appropriate for grant management and acquittal of funds invested in farming communities, **key Project delivery staff reported that this funding structure presented some challenges.** In interviews undertaken through this evaluation, various stakeholders suggested that the first year of funding could have been dedicated to building community Groups and undertaking extensive testing and planning (gathering base line data for use in developing the appropriate trials and potential practices to include in Local Area Soil Plans, with smaller amounts of funding), which in turn could have informed the planning of more tailored activities in later years (with more substantial funding). It was suggested by some stakeholders that this alternative funding structure could allow more time to understand the appropriate financial scale of soil health interventions in the early stages (such as, through soil pits and soil testing), leading to more targeted and larger investment in on-ground works (such as, field trials and demonstrations, based on the results of soil assessments).

Table 12. Distribution of grant funding to FSS Groups.

FSS Group	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	Total
Lockington	\$35,000					\$35,000
Charlton	\$35,000					\$35,000
Wycheproof	\$50,000	\$35,000	\$35,000			\$120,000
Paradise	\$50,000	\$35,000	\$30,000			\$115,000
Smeaton		\$50,000	\$30,000	\$30,000		\$110,000
Pyramid Hill		\$50,000	\$35,000	\$35,000	\$25,000	\$145,000
Timor West		\$40,000	\$40,000	\$35,000	\$30,000	\$145,000
Glenloth East				\$35,000	\$35,000	\$70,000
<b>Total</b>	<b>\$170,000</b>	<b>\$210,000</b>	<b>\$170,000</b>	<b>\$135,000</b>	<b>\$90,000</b>	<b>\$775,000</b>

The level of ongoing funding required to support the continuation of community groups like those established through the FSS Project is often raised as an issue in relation to the overall effectiveness of community-based NRM programs.<sup>39</sup> **There is evidence to suggest that the FSS Project will continue delivering value and outcomes beyond the life of the funding period due in part to the depth of engagement and formation of local networks**—as discussed in detail in Section 4.5 below on overall impact. While it is unclear what level of investment would be required to continue supporting farming communities engaged through the FSS Project, **there is evidence to suggest that there would be value in continuing to support ongoing improvement of sustainable soil management knowledge, skills and practices in some way.**

Section 4.6 presents the future needs and opportunities identified for farming communities to continue improving the health of their soils beyond the FSS Project, and Section 5 includes a series of

<sup>39</sup> Curtis et al (2014).

recommendations for how best the CMA can continue supporting farming communities in the catchment and build on the outcomes achieved through the FSS Project in future.

## 4.5 Impact

Based on a synthesis of all evaluation data available, **the overall impact of the FSS Project is the empowerment of farming communities to continue improving sustainable soil management going forward. The FSS Project has demonstrated the effectiveness of the community-based model for delivering ongoing value for soil health, capacity for sustainable soil management, community connectedness and agricultural productivity.**

*“At the end of the day, farming communities are responsible for the health and productivity of their soils and environmental integrity [...] We work with communities and try to empower them through the Project.” (CMA staff member)*

Evidence presented in Section 4.2 (Effectiveness) and Section 4.3 (Appropriateness) above demonstrates that **key changes were directly produced by FSS Project interventions:**

- **Management practices**—the majority of participating farmers have made changes in their soil management practices resulting from their involvement in the FSS Project and for the vast majority of participating farmers, the FSS Project has led to improved confidence, knowledge and skills about sustainable soil management and motivated them to undertake more trials, implement new approaches and learn more about soil.
- **Effectiveness of delivery**—the vast majority of participating farmers, landholders and community members were satisfied with the FSS Project and reported that Project activities helped them improve their approach to sustainable soil management.
- **Changing asset condition**—the majority of participating landholders have seen some improvement in the condition of their soil as a result of the FSS Project, and over half have seen some improvement in the productivity of their farming business.

**There are likely to be ongoing impacts of the FSS Project that are yet to be realised—particularly changes in the condition of soil assets.** With the community-based model of the FSS Project including three key components—soil testing and assessments, knowledge sharing and capacity building, and field trials and demonstrations—the Project empowered farming communities in north central Victoria to deliver outcomes within the funding period, but to also set communities on a path to continue achieving longer-term outcomes.

There is limited evidence to demonstrate landscape scale impacts of the FSS Project on the condition of soil assets in the catchment to date. However, **there is evidence to suggest that if practices adopted through the Project are maintained, soil health in north central Victoria will improve through time, and that FSS participants will continue making sustainable soil management practice changes in future.** For example, the majority of attendees at FSS events (69%, 52) report that they intend to make management practice changes in future—and 67% (38) of participating landholders surveyed through this evaluation have additional changes and new soil management practices either planned (35%, 20) or in progress (32%, 18) as a result of the Project (see Figure 8 on the following page).

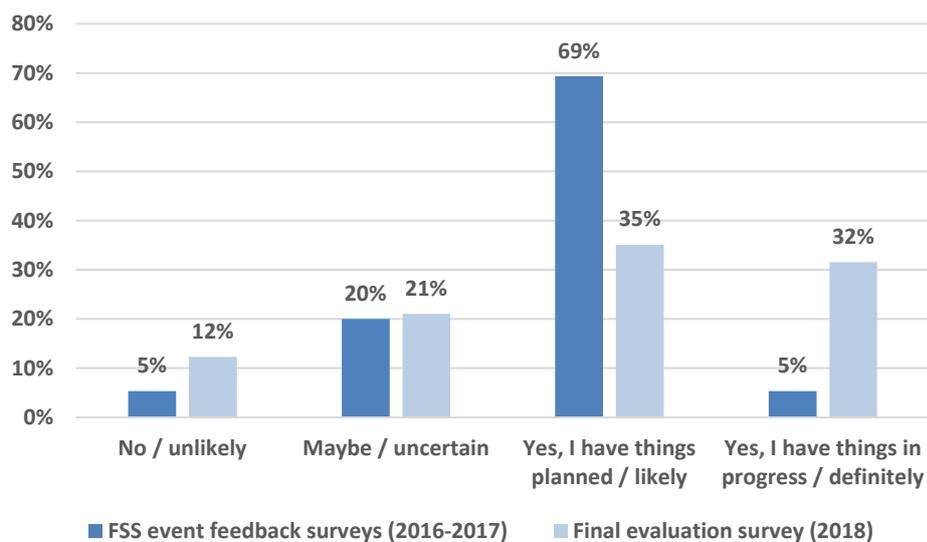


Figure 8. Intent for management practice change after (FSS event feedback surveys, n=75) and reported intention to make additional changes or adopt new soil management practices in future as a result of the FSS Project (final evaluation survey, n=57).

The nature of soil management means that improvements in soil health can often take up to ten years to be fully realised after management changes have been implemented and maintained. In addition, financial constraints, seasonal variability and other challenges faced by farmers mean that management decisions can be delayed, even after farmers have been equipped with the knowledge and skills to implement changes. Participating farmers reflected on this through interviews and surveys:

*“With the weather station, it’s been interesting just to monitor soil temperatures and soil moisture, we’ve only had it for two years [...] We won’t make any management decisions though for a while yet until we look at the data from the station.” (participating farmer)*

*“It’s still a bit early to tell. When you apply gypsum and lime, you need three-to-five years before you see overall effect. But I’ve seen an improvement over the last two years and expect to see more to come. With productivity, some of the yields farmers have seen in the region [after the FSS Project] with limited rain have been far greater than we would expect.” (participating farmer)*

There are also other examples of how the FSS Project has continued to deliver ongoing value in relation to key Project outcomes, such as:

- **The value of partnerships**—the Pyramid Hill FSS Group worked on a cropping trial in partnership with the Birchip Cropping Group, which led to the establishment of a new pulse cropping trial with the Grains Research and Development Corporation providing additional value for farmers in the region.
- **Strengthened community networks**—both the Timor West and Lockington FSS Groups evolved from existing Landcare Networks in their local communities, and after the FSS Project, community involvement in Landcare has increased and strengthened in these areas.

- **Peer-to-peer learning**—after funding for the Wycheproof FSS Group finished in 2016, members of the Wycheproof Group continued their involvement by joining Glenloth East and mentoring less experienced members of the Glenloth East Group.

*“[One of the best things about the FSS Project was] talking to other people and realising that it’s good to take a risk and try different things [...] don’t be scared to do that, no-one is going to bag you if it doesn’t work [...] and if it goes wrong, then other people can learn from that, and if it goes right equally people want to learn from that.” (participating farmer)*

## 4.6 Future

Outcomes, achievements and lessons learned from the FSS Project demonstrate that **there are clear opportunities for the North Central CMA to continue its work empowering farming communities to improve their sustainable land management practices, including for soil health.**

Analysing the strengths and limitations of the FSS Project have also led to a range of lessons learned that can be used to inform future programs and services delivered by the North Central CMA—for soil health programs and more widely.

### 4.6.1 Future opportunities

**There is a clear opportunity for the North Central CMA to continue working with local farming communities to improve sustainable land management practices, particularly in relation to soil health.**

**Overall, landholders recognise that they have made progress in their knowledge and practice of sustainable soil management, but that there is a clear need for continuous improvement to build on the outcomes achieved through the FSS Project.**

At the FSS Conference in March 2018, the CMA received overwhelming feedback from attending farmers, community members, landholders and other stakeholders that soil health is a key priority for the north central catchment going forward.

Annual survey responses collected between 2013 and 2017 show the following insights:

- 90% (97) of survey respondents stated that they would find it useful to have more information or assistance in interpreting soil test results for their properties—suggesting there is an opportunity to continue working with farmers in the catchment to understand and apply soil testing.
- The majority of farmers (86%, 130) reported that they feel they have either a moderate (48%) or significant (38%) amount more to learn about sustainable soil management going forward.
- In relation to farmers’ perception of awareness of sustainable soil management in their districts, the majority of respondents (89%, 138) suggest that either some (37%) or most (52%) farmers in their district are aware of sustainable soils practices (such as reduced cultivation, permanent groundcover, building organic matter, etc.), and the majority of respondents (88%, 136) suggest that some (52%) or most (36%) farmers are striving to implement those sustainable soils practices.

In addition, Table 13 demonstrates that the **majority of landholders rate themselves in the middle of the scale in relation to sustainable soil management practices.**

Table 13. Annual survey 2013-2017: farmer perceptions of progress in sustainable soil management knowledge and practice.

Survey question	Summarised responses				
<b>How sustainable do you feel your current soil management practices are generally? (n=151)</b>	Not at all sustainable 2%	Okay for the next few years 35%	Okay for the next decade 31%	Okay for the next 20 years 17%	Good forever (actively restoring soil) 15%
<b>Where would you rate your knowledge on how to achieve sustainable soil management at the moment? (n=156)</b>	Very poor knowledge 2%	Poor knowledge 10%	Moderate knowledge 72%	Considerable knowledge 15%	Exceptional knowledge 1%
<b>How far are you along the road to achieving sustainable soils on your farm? (n=159)</b>	Just starting 13%	Getting somewhere 20%	Okay, but more work to do 59%	Pretty good, nearly there 8%	I'm there nothing more to do 1%
<b>How often are you likely to go against your understanding of sustainable practices? (n=147)</b>	Every crop or season 2%	Most crops or seasons 9%	Once every few crops or seasons 50%	Rarely 37%	Never 1%

#### 4.6.2 Strengths and limitations

**The community-based approach—providing flexibility for community groups to tailor the soil health activities to their local needs within the boundaries of the NLP and CMA guidelines—was consistently identified as the key strength of the FSS Project** by participating farmers, landholders and community members, CMA staff, Community Facilitators and other Project stakeholders.

*“They let farmers be farmers and let farmers do things the way they want to. Flexibility of delivery was the best thing about the Project.” (FSS Community Facilitator)*

**Across all the data reviewed through this final evaluation, feedback on the FSS Project was predominately very positive about the Project’s approach, outcomes and delivery.** However, some critical feedback and limitations of the Project have been identified.

Table 14 on the following page presents the key strengths of the FSS Project identified through this evaluation. Alongside the key strengths, it also presents the limitations of the Project that present opportunities for improvement in future.

The challenges in delivering an initiative like the FSS Project are summarised by a CMA staff member:

*“It’s a compromise between what we have to do with the funding and what we can achieve with the farming community Groups.” (CMA staff member)*

Table 14. Strengths and limitations of the FSS Project.

Key strengths of the FSS Project	Opportunities to strengthen the Project
<p><b>Community-based approach</b></p> <ul style="list-style-type: none"> <li>The community-based approach was consistently cited as a crucial success factor of the FSS Project. It provided FSS Groups with flexibility within the boundaries of NLP and CMA guidelines to achieve soil health, community resilience and agricultural productivity outcomes.</li> <li>The localised approach allowed for tailored activities and maximised farmer participation (particularly among landholders not previously engaged in CMA projects).</li> </ul> <p><b>Practical, applied and localised investment through the Project</b></p> <ul style="list-style-type: none"> <li>Groups had the opportunity to choose expert presenters, activities and topics of interest. The Project provided Groups with expert advice and on-ground demonstrations that would not have been possible for individual farmers due to the investment required.</li> <li>Investment into local technology was critical (for example, moisture probes and weather stations funded through the Project now provide localised data to inform land management decisions).</li> <li>Supporting practical and applied activities (including field trials and demonstrations) was appropriate for farmers, as a Community Facilitator noted: “farmers learn best by doing”.</li> </ul> <p><b>Opportunity for landholders to understand the condition of their soils and learn from experts</b></p> <ul style="list-style-type: none"> <li>The soil testing and assessment component of the FSS Project allowed farmers to understand the condition of their soils and the challenges and opportunities that their soils present—this was seen to be particularly valuable to participants.</li> <li>Support from experts to further interpret soil testing and assessments led farmers to implement various soil management solutions on their properties and informed</li> </ul>	<p><b>Project structure</b></p> <ul style="list-style-type: none"> <li>Some Project stakeholders suggested that the structure and timing of the funding provided to FSS Groups could be revised—particularly the structure of providing a large portion of funding early in the three- or four-year funding cycle for each Group (as discussed in Section 4.4 above).</li> <li>In some cases, stakeholders reported that Annual Activity Schedules could have been better aligned with growing seasons and funding cycles. It was felt by some that FSS Groups had a limited ability to adapt their planned activities within each year, and that the timing of Project planning and funding cycles may have impacted on farmer participation.</li> </ul> <p><b>Tailoring activities and content to meet the needs of all farmers</b></p> <ul style="list-style-type: none"> <li>It was challenging for Community Facilitators and FSS Groups to meet the varying needs and contexts of all farmers in their local communities. Sometimes activities and content were not pitched at the right level for all participants.</li> <li>While this was a source of frustration for some participants throughout some stages of the Project, overall, participating farmers reported that they were satisfied with the Project and activities helped them achieve their soil health goals.</li> </ul> <p><b>Upscaling trialled soil management techniques</b></p> <ul style="list-style-type: none"> <li>A limitation of the FSS Project involves the challenge of how to move from the trial phase into application of soil health techniques at the whole farm scale. For example, it was reported by some FSS Groups that subsoil manuring is effective but too expensive for most farmers to use consistently across their properties, and the RMCG FSS On-farm Trials Report found that some direct physical methods of improving soil structure are not economical for dryland broadacre application in the</li> </ul>

Key strengths of the FSS Project	Opportunities to strengthen the Project
<p>development of field trials of various techniques.</p> <ul style="list-style-type: none"> <li>Communities would not have had access to soil testing and assessments (like soil pits) from experts and consultants without the FSS Project, and often participants have had ongoing interaction with these experts or engaged additional expert advice following the FSS Project to assist with their soil management.</li> </ul> <p><b>Three complementary components of the Project</b></p> <ul style="list-style-type: none"> <li>Project stakeholders noted that the three FSS components—soil testing and assessments, knowledge sharing and capacity building, and field trials and demonstrations—complemented each other well, contributing to the success of the Project.</li> </ul> <p><b>Peer to peer learning and community connectedness established through the Project</b></p> <ul style="list-style-type: none"> <li>Peer-to-peer learning and knowledge sharing through community FSS Groups is cited as a key strength because it builds confidence in soil management techniques among farmers.</li> <li>The community-based model is also seen to contribute to community wellbeing and stronger community connectedness—working together gives farmers solidarity.</li> </ul> <p><b>Community Facilitators</b></p> <ul style="list-style-type: none"> <li>The approach of employing a local Community Facilitator to go out to farmers and ask what they want to know (rather than being told what to do by the CMA) was seen as a key strength, building trust and credibility in the Project and motivating farmers to continue improving soil health.</li> <li>Individual Community Facilitators have often been identified as crucial to the success of the FSS Project.</li> <li>The opportunity for Facilitators to meet collectively was also a strength of the Project, allowing for sharing and discussion about things that were working well or not</li> </ul>	<p>region.<sup>40</sup> This is a key challenge in the journey to improving soil health that farming communities in the catchment continue to address following on from the FSS Project.</p> <p><b>Limited evidence of landscape scale changes</b></p> <ul style="list-style-type: none"> <li>There is limited evidence to demonstrate landscape scale impacts of the FSS Project on the condition of soil assets in the catchment to date. However, there is evidence to suggest that soil health will continue to improve in future as a result of the Project (as discussed in Section 4.5 on overall impact).</li> </ul> <p><b>Limited reporting on trials and demonstrations</b></p> <ul style="list-style-type: none"> <li>While funded field trials and demonstrations were found to provide value through their outcomes and results, as well as providing value to farmers as a learning activity and engagement tool (see Section 4.3), reporting was limited.</li> <li>Collection of baseline data and ongoing monitoring of results by FSS Groups throughout trials and demonstrations could have been more consistent across the Project.</li> </ul> <p><b>Governance structures</b></p> <ul style="list-style-type: none"> <li>There is an opportunity for internal governance processes (and associated planning, approvals and reporting structures) to be improved by the CMA in the management of devolved grants programs—ensuring that these processes do not constrain on-ground delivery. For example, the timing and frequency of Standing Grants Committee meetings could be revised to better meet the needs of community-based program management.</li> <li>There are inherent challenges working to achieve long-term soil management outcomes within short-term organisational structured and external funding cycles. Some Project stakeholders suggested that local community-based soil management</li> </ul>

<sup>40</sup> RMCG (2018) 'Farming for Sustainable Soils—On-farm Trials Report' (not publicly available).

Key strengths of the FSS Project	Opportunities to strengthen the Project
<p>so well, and to create synergies between Groups in their content, activities and expert presenters.</p> <p><b>Role of the North Central CMA</b></p> <ul style="list-style-type: none"> <li>The role of the North Central CMA in overseeing the FSS Project was a key strength, through providing overarching management of the Project and empowering local communities.</li> <li>While the Project was community-based, the North Central CMA provided extensive support throughout the Project, including: building the capacity of Community Facilitators, managing consultants, communications, financial management, NLP progress reporting, and managing internal relationships with the CMA Standing Grants Committee, the FSS Project Reference Group and CMA executive management.</li> </ul>	<p>programs are more appropriate in four-or five-year cycles rather than three-year cycles.</p> <p><b>Expectations and guidance</b></p> <ul style="list-style-type: none"> <li>In some cases, Community Facilitators may have benefitted from additional guidance or support from the CMA in relation to the planning, reporting and information management components of their roles. For example, more formal training and clearer communication about some of the expectations of Community Facilitators may have assisted them in their roles.</li> </ul> <p><b>Monitoring, evaluation and reporting</b></p> <ul style="list-style-type: none"> <li>In some instances, there was a lack of consistency in monitoring and evaluation throughout the Project—for example, with the tracking of some key outputs and activities.</li> <li>There were limitations in the use of biophysical information in the assessment of practice change, and the impact of practice change. It was beyond the resources of the Project to conduct regional on-ground surveys, and it was generally recognised that meaningful assessments of changes in soil condition could not be made within available timeframes. The North Central CMA has, however, developed a protocol for longer term assessments.</li> <li>Having a clearer framework for establishing baseline data at the Group and individual level may have assisted in more effectively demonstrating the impact of the Project over time.</li> <li>Ongoing reporting requirements for Community Facilitators throughout the Project could have been improved to streamline annual reporting.</li> </ul>

### 4.6.3 Suggested improvements and ongoing challenges

The following key suggestions for improvement have been raised consistently by participating farmers, Community Facilitators, CMA staff and other Project stakeholders engaged through this

evaluation. Some of these suggestions can be applied more generally to other NRM programs and services beyond the FSS Project.

- **Aligning support and service delivery to fit in with seasonal growing cycles.** Continue aiming to schedule events and activities at times and structured in ways that will maximise farmer attendance—for example, scheduling events in January-March and July-October, holding half-day events in the early morning or evening.
- **Continuously improving the ways that results from field trials and demonstrations are made available, explained and interpreted within communities and used by landholders in their local contexts.** Building on the achievements of funded field trials and demonstrations, this may involve additional community meetings (co-ordinated by Community Facilitators) to reflect on the successes and challenges of different soil health interventions. This may feed into community-based decision-making for future investments in soil health and would help to increase landholders' confidence to make practice changes, using the shared learnings to allow them to try things on their own properties.
- **Continue working with farming communities within the constraints faced by landholders.** Farmers face challenges such as lack of time, seasonal conditions, financial pressures and varying capacity for management changes—continuing to adapt to these constraints is important in empowering communities to be responsible for sustainable land management in their local areas.
- **Continue to strengthen embedded structures for ongoing knowledge sharing established within the Project**—between farmers, within Groups, across Groups and Community Facilitators, from past to current or new Groups.

Identified throughout the Project was the **key challenge of how to keep farmers engaged in their local FSS Groups after the initial soil testing and assessment activities in the first year**. Some key factors that contributed to successful and ongoing engagement of farmers throughout the FSS Project include:

- Community Facilitators working closely with their communities to ensure that activities and information continue to be relevant to their Group members
- where possible, using the results from soil testing and field trials to inform the ongoing development of Group activities, based on the availability of results
- involving agronomists within the FSS Group meant that farmers kept engaged... new things emerging, always talking to farmers, keep it relevant
- Setting up trials that have synergy with what farmers are already doing – these ones worked best and kept people most interested
- Identifying the 'movers and shakers'—including consultants, agronomists, producer groups, one or two key farmers.

**Most of the limitations of the Project raised by farmers reflect inherent challenges with delivering sustainable agriculture programs more widely.** There are several ongoing challenges faced by the North Central CMA and other regional NRM organisations raised through feedback from farmers in interviews and surveys, notably:

- **Seasonal conditions**—particularly rainfall variability and longer-term changes associated with climate change impacting on the ability of farmers to make practice changes.
- **Financial pressures** limiting the investment available for farmers to fund infrastructure and inputs associated with practice changes.
- **Variability in soil conditions** within regions, properties and within individual paddocks, limiting the adaptability and scalability of soil health techniques across the landscape. There are 18 different geomorphic settings in the catchment, adding to the challenge of how best to support landholders achieve more sustainable farming practices.
- **Poor soil condition and structure**, resulting from 150 years of cultivation practices that have degraded soil health.
- **Uncertainty in the availability of funding** for community-based grants, and associated challenges with external funding cycles. Continuity in investment in sustainable land management is important to maximise potential economic, social and environmental value—particularly when most soil health interventions take upwards of five years for their outcomes to be realised.
- **Uncertainty in ensuring that management practice changes are maintained** by landholders, and that landholders will continuously use the knowledge and skills gained to further improve management practices.
- **The challenge of how to best support farmers in the FSS Project beyond the funding period**, considering the most effective ways to maintain farmer engagement in sustainable soil management. For example, the Group-to-Group mentoring between the Wycheproof and Glenloth East FSS Groups may be replicable, and some farmers have indicated that additional short-term participation in FSS Groups would be helpful.

*“It seems like [it was] a lot of effort, but I don't know if it has led to change. The reality is that weather impacts so heavily on what people can do.” (participating farmer)*

*“Would have been good if it ran for a little bit longer. Some of these projects take a while to get going, and then you're just getting some good trials in and the project finishes. Another year would have cemented the core findings and what we were doing a bit more.”  
(participating farmer)*

Some of these key challenges—particularly the question of ongoing dependence on external funding for community groups and the challenge of continuing to motivate farmers in self-directed sustainable practice change—are supported by the literature.<sup>41</sup> These have been addressed in the following sections on recommendations and future activities for soil assets in the catchment (Section 5.1.2).

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<sup>41</sup> For example, Curtis et al (2014).

## 5 Conclusion and recommendations

### 5.1 Final evaluation of the Farming for Sustainable Soils Project

This section presents the overarching findings and implications of the Final Evaluation of the FSS Project delivered by the North Central CMA between 2013 and 2018.

#### 5.1.1 Conclusions

**In conclusion, the FSS Project has been a successful investment in improving sustainable land management practices in the north central catchment of Victoria.**

The FSS Project demonstrates the effectiveness of community-based approaches to agricultural extension programs in the NRM sector. The FSS model is an effective model for soil health initiatives going forward, with the three key components of testing and assessments, knowledge sharing and capacity building, and field trials and demonstrations.

Through the FSS Project, local communities have been empowered to improve the health of their soil assets, with a range of key outcomes achieved in relation to knowledge, skills and confidence, improved sustainable soil management practices, agricultural productivity, soil health and community resilience. Many of the longer-term impacts of the Project are yet to be realised, and the FSS Project will have ongoing value in years to come.

Table 15 on the following page outlines the **findings in response to the evaluation questions**.

Table 15. Findings against evaluation questions.

Evaluation question	Sub-questions	Key findings and examples
<b>Effectiveness</b>		
To what extent have intended Project outcomes and outputs been achieved? Were there any unexpected or unintended outcomes?	To what extent have farmers adopted sustainable management practices as a consequence of their involvement in the Project? To what extent is farmer participation in local area soil protection groups improving their knowledge and skills in sustainable agriculture?	<p><b>All planned outputs and activities have been delivered. The FSS Project has achieved its intermediate and end of Project outcomes, as well as contributing to achievement of longer-term outcomes.</b> All four key target outcomes for the FSS Project have either been achieved or exceeded.</p> <p><b>No unintended outcomes were reported throughout the evaluation. However, the Project has resulted in some unexpectedly positive results.</b> For example, several target outcomes being substantially exceeded.</p> <p><b>There is clear evidence demonstrating that farming communities are increasing their knowledge, skills and awareness of sustainable soil and land management through their participation in the FSS Project</b>—with 89% of participating farmers reporting that their confidence has increased in their capacity or ability to adopt new soil management practices since being involved in the FSS Project, and 96% reported improved knowledge and skills in relation to soil health.</p> <p><b>There is also clear evidence that farmers are adopting new sustainable land management practices as a consequence of participating in the FSS Project</b>—with 77% of farmers reporting having made changes on their property resulting from their involvement in the FSS Project, and, for 98% of participants, the FSS Project has motivated them to undertake more trials, implement new approaches and learn more about soil health.</p>
<b>Appropriateness</b>		
To what extent were Project activities appropriate?	To what extent are the practices adopted by participating farmers adequate and effective in delivering soil health? To what extent are improvements in skills, knowledge and experience in the attainment of social health leading to improved adoption of sustainable land management practices by participants in local groups?	<p><b>Overall, activities were appropriate for achieving the intended FSS Project outcomes, and the community-based model of the FSS Project is seen to meet the needs of farmers.</b></p> <p><b>For the majority of participants, improvements in soil health skills, knowledge and experience gained through participating in the FSS Project led to an increased adoption of sustainable land management practices.</b></p> <p><b>The vast majority of participating farmers, landholders and community members were satisfied with their involvement in FSS Project activities and reported that activities helped them improve their approach to soil health</b>—with 99% of participating farmers reporting that the FSS Project assisted them to achieve their sustainable soil management goals, and 90% reporting that they were either moderately or very satisfied with the FSS Project overall.</p> <p><b>The FSS Project has contributed to improved soil quality and agricultural productivity in north central Victoria</b>—with 67% of participating landholders having seen some improvement in their soil health as a result of the FSS Project, and 54% having seen some improvement in the productivity of their farming business.</p>

	Does the community-based model meet the needs of farmers?	<b>While the activities in the FSS Project were seen to be adequate and effective in delivering soil health outcomes, the Project was limited by time and resource constraints and the long-term nature of soil management.</b>
<b>Efficiency</b>		
To what extent was the Project delivered within its scope, budget and expected timeframe?	<p>To what extent is the program cost effective in engaging local farming communities in soil health programs that secure productivity and ecosystem services?</p> <p>How could resources be used more productively and efficiently?</p>	<p><b>The FSS Project was delivered within its scope, budget and expected timeframes.</b> All Project inputs, activities and outputs have been delivered and completed. All grant funds will be fully expended in line with NLP requirements, and the Project leveraged additional value through community contributions.</p> <p><b>It appears that the FSS Project was a cost-effective investment in engaging local farming communities to improve the health of their soils and agricultural productivity—particularly considering the depth of engagement of participants in the Project across multiple years. However, it is not possible to directly compare the cost-effectiveness of the FSS Project to other similar programs or approaches due to lack of publicly available data allowing for an accurate comparison.</b></p> <p><b>There is evidence to suggest that the FSS Project will continue delivering value and outcomes beyond the life of the funding period due in part to the depth of engagement and formation of local networks through the Project.</b></p>
<b>Impact</b>		
What has been the overall impact and ongoing value of the Project?	<p>In what ways and to what extent has the Project contributed to changing asset condition, management practices, and / or effectiveness of delivery?</p> <p>To what extent were the changes directly or indirectly produced by the Project interventions?</p> <p>What are the ongoing impacts of the Project?</p>	<p><b>The overall impact of the FSS Project is the empowerment of farming communities to continue improving sustainable soil management going forward.</b></p> <p><b>The FSS Project has demonstrated the effectiveness of the community-based model for delivering ongoing value for soil health, capacity for sustainable soil management, community connectedness and agricultural productivity.</b> Key changes were directly produced by FSS Project interventions—for example, 77% of farmers surveyed through this evaluation have made sustainable soil management practice changes following their involvement, and 46% of these farmers said they would not have been able to make these changes without the Project.</p> <p><b>There are likely to be ongoing impacts of the FSS Project that are yet to be realised, with communities now set on a path to continue achieving longer-term outcomes.</b> For example, the majority of attendees at FSS events (69%) report that they intend to make management practice changes in future—and 67% of participating landholders surveyed through this evaluation have additional changes and new soil management practices either planned (35%) or in progress (32%) as a result of the FSS Project.</p>

Future		
<p>What lessons learned can be used to inform future programs and services delivered by NCCMA?</p>	<p>What are the strengths and limitations of the Project? How would stakeholders, participants and Project delivery staff do things differently in future?</p>	<p><b>There is a clear opportunity for the North Central CMA to continue working with local farming communities to improve sustainable land management practices, particularly in relation to soil health.</b> Overall, landholders recognise that they have made progress in their knowledge and practice of sustainable soil management, but that there is a need for continuous improvement to build on the outcomes achieved through the FSS Project.</p> <p><b>The community-based approach—providing flexibility for community groups to tailor the soil health activities to their local needs within the boundaries of the NLP and CMA guidelines—was consistently identified as the key strength of the FSS Project by participating farmers, landholders and community members, CMA staff, Community Facilitators and other Project stakeholders.</b></p> <p><b>Across all the data reviewed through this final evaluation, feedback on the FSS Project was predominately very positive about the Project’s approach, outcomes and delivery.</b> Some critical feedback and limitations of the Project have been identified. However, most of the limitations of the Project raised by stakeholders reflect inherent challenges with delivering agricultural extension programs more widely—particularly seasonal conditions, financial pressures, variability in soil characteristics, challenges with external funding cycles and uncertainty in ensuring that management practice changes are actually maintained by landholders, and that landholders will continuously use the knowledge and skills gained to further improve management practices.</p> <p><b>The key priority for the North Central CMA going forward is likely to be the challenge of how best to support farmers in the FSS Project beyond the funding period, considering the most effective ways to maintain farmer engagement in sustainable soil management.</b></p>

### 5.1.2 Recommendations

Four overarching recommendations have emerged from the key findings and evidence synthesised through this evaluation:

1. There is a clear need and opportunity for additional work in supporting farmers to improve their soil health going forward. **Soil health should continue to be a priority for land managers in the north central catchment, supported by government, non-government and private sector stakeholders.**
2. The FSS Project is a successful model for sustainable soil management practice change. **The North Central CMA should continue to use this community-based approach in delivering sustainable agriculture programs and services, as well as promoting use of the model more widely.**
3. **The outcomes of the community-based approach should continue to be monitored over time, to evaluate the longer-term strengths of this model compared to other approaches to sustainable agriculture programs.** In particular, this should focus on measuring any landscape scale changes occurring as a result of the FSS Project.
4. **Collection and analysis of biophysical data should be prioritised in future soil health projects to more effectively monitor and evaluate outcomes, appropriateness and cost-effectiveness.**

### 5.1.3 Future activities for the asset

These overarching recommendations lead into a series of more detailed recommendations for activities to continue improving soil assets throughout the catchment and reach the overarching FSS Project vision and longer-term outcomes.

The FSS Project's vision is that: "North Central Victoria has secured the health and productivity of soils, improved ecosystem services that flow from healthy soils, and built resilience to climate change through increased soil health". Longer-term outcomes intended to achieve this vision include: increased confidence in recommended practices and ongoing trialling and adoption by all farmers in the region; a productive agricultural food sector; stronger social resilience; and maintenance, protection and/or improvement of ecosystem services.

The North Central CMA is currently developing a Soil Health Action Plan<sup>42</sup> and finalising delivery of the FSS Project. The RMCG FSS field trails report also provides a clear summary of key learnings from sustainable soil management approaches trialled through the Project and identifies areas for further exploration to continue improving soil health in the catchment.<sup>43</sup> Building on this work and the achievements of the FSS Project, it is suggested that the North Central CMA should:

- **Continue to maintain the strong relationships developed with local communities through the FSS Project**, fostering continued stewardship and community ownership of sustainable soil management. This may include:

<sup>42</sup> North Central CMA (2018) 'Soil Health Action Plan', <http://www.nccma.vic.gov.au/projects/agriculture#node-1780>

<sup>43</sup> RMCG (2018) 'Farming for Sustainable Soils—On-farm Trials Report' (not publicly available).

- continuing to provide support, resources and advice to FSS Groups, allowing them to be self-sustaining beyond the FSS Project funding period
- establishing forums for structured peer-to-peer (or Group-to-Group) knowledge sharing and capacity building among landholders going forward (for example, similar to the mentoring relationship between Wycheproof and Glenloth East FSS Groups).
- **Offer ongoing support to farmers in the catchment to ensure that the potential longer-term benefits of the Project are achieved.** This may include:
  - providing additional advice to farmers on interpreting soil assessment results and understanding associated opportunities, limitations and potential soil management practice changes
  - continuing to work closely with other organisations delivering complementary sustainable soil and land management support to landholders in the catchment (particularly Agriculture Victoria) and align with other CMA programs where possible (including the Regional Landcare Facilitator)
  - continuing to support farmers to conduct their own soil management trials, with the CMA providing assistance on monitoring approaches to measure outcomes
  - focusing on methods and management techniques that can be more easily and viably upscaled to whole paddocks or farms, and/or working with farmers to trial these kinds of techniques themselves
  - sharing trial results, case studies and sustainable soil management resources to maintain interest and involvement among those who have had contact through the Project and promote the benefits of sustainable soil management to those not reached directly through the Project.
- **Continue applying for external funding** (i.e., through the Commonwealth NLP or the Victorian Government) to provide programs and services to farmers, landholders and community members in the catchment to improve sustainable land management practices. This may include continuing to focus on:
  - working with farmers to overcome key barriers for improving their sustainable farming practices (i.e., seasonal variability, historically poor soil structure, financial constraints, ongoing impacts of climate change, etc.)
  - establishing ongoing partnerships between landholders, landholder groups, local industry groups and commercial entities, building on partnerships developed through the FSS Project.
- **Apply the lessons from the FSS Project to its design and delivery of other agricultural extension programs and services**, continuing to work towards the most effective ways of engaging with landholders to inspire practice change.
- **Improve the consistency of monitoring and evaluation** to better understand the extent of achievements, outcomes, lessons learned, and wider impacts of soil health programs and services delivered by the CMA. This may include following up with FSS Group participants in future years to evaluate and capture any longer-term sustainable soil management practice changes or social, economic or environmental outcomes resulting from the FSS Project.

## Appendix 1—Methodology

### Overview

The key components of FPC’s methodology for delivering the final evaluation of the FSS Project include:

- Inception meeting
- Project plan
- Document review
- Case study development
- Conference support
- Interviews and surveys
- Analysis and reporting

Each of these components are described in more detail in the sections below, as well as an overview of key limitations of the consultancy.

### Methodology in detail

#### Inception meeting

An inception meeting was held at the beginning of the project between the FPC team and the North Central CMA team in December 2017. The following items were discussed at this meeting:

- the CMA’s objectives for the project, including what ‘success’ looks like
- risks associated with the project and how they will be managed
- review of FPC’s approach to the consultancy
- reporting, deliverables, timelines and project management processes, including key milestones and payment schedules
- access to information and resources, including relevant data and documentation.

#### Project plan

Following discussion at the inception meeting and building on the approach outlined in the initial proposal, FPC developed a project plan—including an agreed approach to delivering the consultancy by mid-May 2018 and a high-level evaluation framework (see Table 16 on the following page)

Table 16. Evaluation framework (adapted from FSS Project MERI Plan, NLP Monitoring and Reporting Plan and information provided by North Central CMA).

Criteria	Key evaluation question	Sub-questions	Indicators and things to consider	Data sources
<b>Effectiveness</b>	<p><b>To what extent have intended Program outcomes and outputs been achieved?</b></p> <p><b>Were there any unexpected or unintended outcomes?</b></p>	<p>To what extent have farmers adopted sustainable management practices as a consequence of their involvement in the program?</p> <p>To what extent is farmer participation in local area soil protection groups improving their knowledge and skills in sustainable agriculture?</p>	<ul style="list-style-type: none"> <li>Annual survey of extent of practice change among soil groups and the extent of adoption of sustainable practices</li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Interviews</li> <li>Existing Project data</li> <li>Survey</li> </ul>
<b>Appropriateness</b>	<p><b>To what extent were Program activities appropriate?</b></p>	<p>To what extent are the practices adopted by participating farmers adequate and effective in delivering soil health?</p> <p>To what extent are improvements in skills, knowledge and experience in the attainment of social health leading to improved adoption of sustainable land management practices by participants in local groups?</p> <p>Does the community-based model meet the needs of farmers?</p>	<ul style="list-style-type: none"> <li>Document the extent of adoption of sustainable practices among FSS Groups through annual surveys completed early in the growing season Annual survey of group members</li> </ul>	<ul style="list-style-type: none"> <li>Project management documents</li> <li>Existing program data</li> <li>Interviews</li> <li>Case studies</li> </ul>
<b>Efficiency</b>	<p><b>To what extent was the Program delivered within its scope, budget and expected timeframe?</b></p>	<p>To what extent is the program cost effective in engaging local farming communities in soil health programs that secure productivity and ecosystem services?</p> <p>How could resources be used more productively and efficiently?</p>	<ul style="list-style-type: none"> <li>Record the cost of the delivering the Project (including in-kind) relative to the number of farmers engaged and the extent of adoption of sustainable practices over the life of the FSS Project. Assessment to be completed through the annual</li> </ul>	<ul style="list-style-type: none"> <li>Project management documents</li> <li>Existing program data</li> <li>Interviews</li> <li>Survey</li> </ul>

			survey each year mid-growing season.	
<b>Impact</b>	<b>What has been the overall impact and ongoing value of the Program?</b>	<p>In what ways and to what extent has the Program contributed to changing asset condition, management practices, and / or effectiveness of delivery?</p> <p>To what extent were the changes directly or indirectly produced by the Program interventions?</p> <p>What are the ongoing impacts of the Program?</p>	<ul style="list-style-type: none"> <li>• Survey of farmers to ascertain satisfaction gained from involvement in soil protection programs and the extent that they have become motivated to explore and adopt sustainable practices. Annual survey completed mid-year, using template.</li> </ul>	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Case studies</li> <li>• Interviews</li> <li>• Existing Project data</li> </ul>
<b>Future</b>	<b>What lessons learned can be used to inform future programs and services delivered by NCCMA?</b>	<p>What are the strengths and limitations of the Program?</p> <p>How would stakeholders, participants and Program delivery staff do things differently in future?</p>	<ul style="list-style-type: none"> <li>• Identified strengths, weaknesses and improvements</li> <li>• Lessons learned and suggestions for improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Project management documents</li> <li>• Existing Project data</li> <li>• Interviews</li> <li>• Survey</li> </ul>

## Document review

FPC undertook a document review of all existing information and data sources provided in the early stage of the consultancy. This process included:

- reviewing existing documents and information provided by the CMA to help identify appropriate case studies
- initial analysis of relevant Project documentation and existing data sources to determine how the most appropriate evidence could be used to respond to key evaluation questions
- a gap analysis to identify gaps in existing data to be addressed through additional data collection—through case studies, discussions with the parallel consultancy (RMCG), the FSS Conference and additional interviews and surveys
- working closely with North Central CMA staff to ensure transfer of relevant program documentation, data sources (including access to the MERIT Portal), and relevant delivery staff, stakeholders and Project partners.

## Case study development

FPC developed a total of 13 case studies to illustrate the involvement of farming communities in the FSS Project and demonstrate the outcomes and impact of the Project in response to the key evaluation questions. These included eight short case studies and five more in-depth case studies.

Development of case studies involved the following:

- semi-structured interviews with CMA staff, Community Facilitators, participating landholders and other Project stakeholders to collect insights, reflections and information about the FSS Project achievements and outcomes (including both face-to-face interviews at site visits and phone interviews)
- working with a videographer to film face-to-face interviews at site visits, to contribute to complementary video case studies
- photography (a combination of FPC photography at site visits, and images provided by case study participants and Project delivery staff)
- integrating the data collected through interviews with analysis of other existing documents and data sources, synthesising all relevant information into clear, concise and insightful case studies
- a combination of quotes, photos, summarised information and text analysis, presenting stories of change resulting from the FSS Project
- incorporating feedback from the CMA and utilising graphic design expertise to finalised publishable versions of the case studies, which are now available on the North Central CMA website.

FPC worked closely with CMA staff to select the most appropriate case study participants and topics, based on their experience delivering the FSS Project and existing relationships with landholders, stakeholders, community members and delivery partners.

Four of the five more in-depth case studies are complemented by videos, which are also available on the North Central CMA website.

## Conference support

FPC provided support to North Central CMA staff in delivering components of the FSS Project Conference held on 8-9 March 2018 in Bendigo. In consultation with CMA staff, FPC delivered a reflection and evaluation session at the conference. This involved a short presentation about the final evaluation of the FSS Project, a series of guided discussion about feedback on the FSS Conference, and data collection on the outcomes of the Project more widely, as well as key priorities for sustainable soil management going forward.

## Interviews and surveys

FPC also conducted series of phone interviews and surveys to help meet evaluation objectives and requirements. Table 17 provides a summary of each data collection method conducted by FPC through this consultancy and the number of participants.

Table 17. Summary of data collection components.

Data collection method	Participants
Discussions with FSS Project stakeholders (including expert presenters and consultants)	4
Semi-structured phone interviews with FSS Community Facilitators	2
Face-to-face interviews with FSS Community Facilitators	4
Face-to-face interviews with FSS Project participants	5
Semi-structured phone interviews with North Central CMA staff	2
Semi-structured phone interviews with FSS Project participants	8
Final evaluation survey conducted over the phone with FSS Project participants	57
FSS Conference data collection	50
FSS review workshop	16

Interviews (both face-to-face and phone interviews) were semi-structured and included a combination of both open-ended and closed questions. Face-to-face interviews were digitally recorded and transcribed for analysis, and phone interviews were transcribed by the interviewer at the time of the interview.

The survey was conducted over the phone with FSS participants and responses were manually entered into online platform SurveyMonkey.

Interview and survey questions were developed based on the Project Plan and in consultation with the FSS Project Manager.

## Analysis and reporting

After data collection was completed, all existing data was analysed as well as the data collected throughout this consultancy in response to evaluation questions. Data analysis involved both

qualitative and quantitative techniques as appropriate and was aligned with the evaluation framework.

FPC developed an evaluation report (this report), synthesising all evaluation findings emerging from data analysis. This report has been structured based on guidance provided by North Central CMA and NLP reporting requirements and has been informed by review and feedback in consultation with the CMA. A review workshop was also held in June 2018, at which the findings, conclusions and recommendations in this final report were discussed with core Project delivery staff and stakeholders.

### Limitations

The following limitations of this consultancy should be considered:

- As is standard with any similar data collection processes, the landholders who participated in interviews and surveys may have a self-selection bias (for example, they may have been more engaged in the Project than others or may have been more dissatisfied with a particular component). For the survey conducted, this was addressed by actively phoning landholders, rather than relying on passive recruitment through an online survey.
- In a similar way, survey and interview results also rely on self-reported changes in behaviour and understanding by participating landholders. FPC has attempted to triangulate these results using several methods (for example, combining evidence from site visits, reports from previous consultancies and insights from Community Facilitators, CMA staff and experts and consultants who assisted in Project delivery) to ensure that findings are based on evidence from multiple sources.
- Limited biophysical data was available, and any observations of soil condition improvement rely largely on landholders' reported perceptions.