

The social drivers of natural resource management: Wimmera

**Final report to the
Wimmera Catchment Management Authority**

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with
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The views expressed in this report are solely the authors', and do not necessarily reflect the views of Charles Sturt University, the Wimmera Catchment Management Authority or the people consulted during the research project.

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List of acronyms

ABS – Australian Bureau of Statistics
CMA – Catchment Management Authority
CRP – Current Recommended Practices
CSU – Charles Sturt University
GIS – Geographic Information System
LGA – Local Government Area
NRM – Natural Resource Management
RCS – Regional Catchment Strategy
SBS – Social Benchmarking Survey
VFF – Victorian Farmers' Federation
Wimmera CMA – Wimmera Catchment Management Authority

EXECUTIVE SUMMARY

Purpose and approach

This research was commissioned by the Wimmera Catchment Management Authority (Wimmera CMA) to assist the Authority evaluate the extent of practice change amongst rural landholders and community capacity building achieved through the delivery of Natural Resource Management (NRM) projects. Information gathered will also enhance the capacity of the Authority to effectively engage with rural landholders.

The Social Benchmarking Survey (SBS) follows surveys undertaken in 2002, 2007 and 2011 and assists to identify priority issues, track trends in social and farming structure (e.g. absentee ownership, property size, occupational identity, enterprise mix). The 2016 SBS also forms part of a larger examination of Wimmera CMA's implementation of the Australian Government's National Landcare Programme.

In early 2016, surveys were addressed to a random sample of 1620 of the approximately 14,000 owners of rural properties larger than 10 hectares in the Wimmera CMA region. Eight Councils provided access to their ratepayer lists. A response rate of 52% was achieved (691 completed surveys returned from an adjusted sample of 1,337). Tests for non-respondent bias, based on comparisons with Australian Bureau of Statistics (ABS) data, suggest the survey respondents are representative of the wider cohort of rural landholders in the region.

The focus of this report is on providing a summary of the 2016 SBS data. Additional analysis of SBS data, including across the different surveys will be undertaken as part of the examination of outcomes of Wimmera CMA's implementation of the National Landcare Programme. Those analyses will include the use of Geographic Information Systems (GIS) to compare respondents across different geographies (i.e. inside and outside areas subject to incentive projects). The findings of these analyses will be the subject of a separate report.

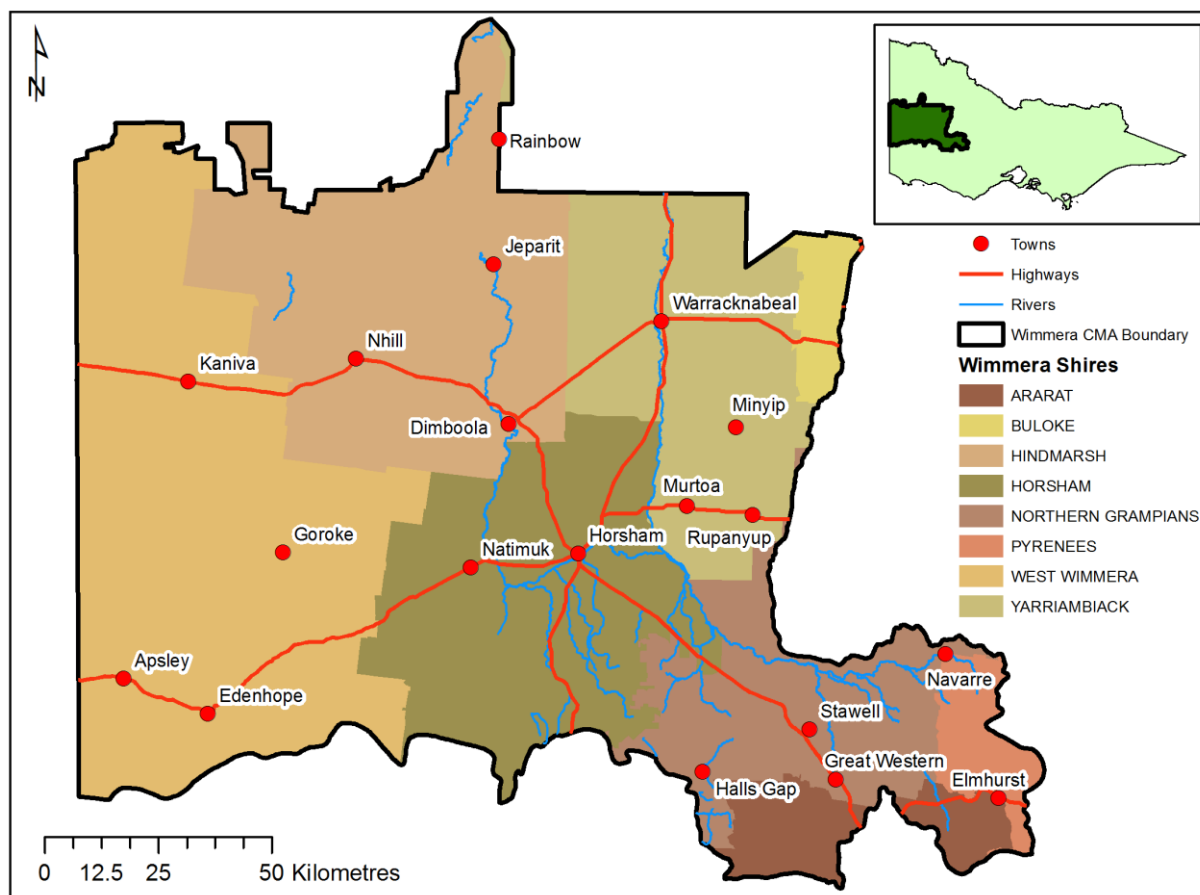


Figure 1 Wimmera Catchment Management Authority Region: Local Government Areas

Table 1 Wimmera 2016 Social Benchmarking Survey items: Regional profile

Median property size	765 ha	Residence not in Wimmera region	14%
Median length of residence	50 yrs	Own more than one property	39%
Median age	57 yrs	Landcare membership	33%
Occupational identity	<ul style="list-style-type: none"> ▪ Full-time farmer: 59% ▪ Part-time farmer: 19% ▪ Hobby-farmer: 8% ▪ Non-farmer: 14% 	Completed a short course in the past five years	40%
On-property income (median)	57% (\$40-50,000)	Off-property income (median)	69% (\$40-50,000)
On-property work (hrs/week)	48 hrs	Off-property work (days/year)	130 days
Commodity group membership	28%	Involved in property management planning	28%
Proportion with government funded work on property (past 5 years)	22% (22% community grant, 88% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 65% ▪ Friends, neighbours, relatives: 52% ▪ Field days: 50%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Organisations or people to contact for advice about Aboriginal heritage in Wimmera: 14% ▪ Using online crop simulation tools to respond to changes in seasonal or market conditions: 13% ▪ Location of the four nationally significant ecological communities on private land in Wimmera region: 10% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 60% ▪ The use of stock containment areas to manage stock in drier seasons: 47% ▪ The benefits of retaining native vegetation on properties: 46%
Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> ▪ Impact of drought and/or changing rainfall patterns on property viability: 79% ▪ The impact of weeds and pest animals (including native species) on profitability: 66% ▪ Impact of poor management of pest plants and animals on public land: 61% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> ▪ Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 63% ▪ Reduced opportunities for recreation as lakes dry out: 61% ▪ Decline in soil health (e.g. declining fertility or structure): 59%

Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> ▪ <i>Being able to pass the property on to others in better condition: 87%</i> ▪ <i>Sense of accomplishment from building/maintaining a viable business: 82%</i> ▪ <i>An attractive place to live: 79%</i> 	5 most common land uses	<ul style="list-style-type: none"> ▪ Broadacre cropping: 72% ▪ Sheep for meat: 62% ▪ Dryland pasture: 61% ▪ Wool: 54% ▪ Beef: 12%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ <i>It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 51%</i> ▪ <i>Landholders should manage their properties in expectation of a highly variable climate: 85%</i> 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ <i>Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands): 77%</i> ▪ <i>The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 45%</i> ▪ <i>The benefits of stubble retention outweigh problems arising): 63%</i>
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> ▪ <i>Maximum area of crop sown in any year using minimum tillage techniques: 45%</i> ▪ <i>Sowed pastures to take advantage of available soil moisture: 43%</i> ▪ <i>Established stock containment areas to manage stock: 34%</i> 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> ▪ <i>Area of trees and shrubs planted (including direct seeding) (full period of management): 41%</i> ▪ <i>Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 31%</i> ▪ <i>Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 29%</i>
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> ▪ <i>Ownership of the property will stay within the family: 69%</i> ▪ <i>Additional land will be purchased, leased or share farmed: 37%</i> ▪ <i>All or most of the property will be leased: 26%</i> 	Carbon Ready Items	<ul style="list-style-type: none"> ▪ <i>Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 79%</i> ▪ <i>Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 85%</i> ▪ <i>Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 26%</i> ▪ <i>Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 26%</i> ▪ <i>Land use: Carbon farming (percent yes): 2%</i>

1 INTRODUCTION

1.1 Research context

This research was commissioned by the Wimmera Catchment Management Authority (Wimmera CMA) as part of the examination of outcomes of NRM in the Wimmera region including Wimmera CMA's implementation of the Australian Government's National Landcare Programme. The Charles Sturt University (CSU) research team was engaged to "... develop and implement a conceptual framework that will enable the Authority to evaluate the extent of practice change amongst rural landholders and community capacity building achieved as outcomes for the National Landcare Programme."

This report only includes data gathered through the SBS process. The SBS involves a mail survey of rural landholders. The SBS process is a widely accepted approach for catchment-scale social benchmarking (see Curtis, Byron, & MacKay, 2005). A key strength of this approach is that information is gathered from a large, random sample of rural landholders. The survey data are spatially-referenced (i.e. tied to each property location) and it is therefore possible, while protecting the identity of individuals, to combine data according to different geographies.

The methodology has been developed and refined through a series of studies across Australia (Victoria, New South Wales and Queensland) including in the Goulburn Broken Dryland region (Curtis et al., 2000), the Glenelg Hopkins region (Byron, Curtis, & MacKay, 2004), the Corangamite region (Curtis, Cooke, McDonald, & Mendham, 2006), the North Central region (Curtis & Mendham, 2015) and in the Wimmera region (Curtis & Byron, 2002; Curtis, McDonald, Mendham, & Sample, 2008; Curtis & Mendham, 2012).

In early 2016, surveys were addressed to a random sample of 1,620, of the approximately 14,000 owners of rural properties larger than 10 hectares in the Wimmera CMA region. Eight Councils provided access to their ratepayer lists. A response rate of 52% was achieved (691 completed surveys returned from an adjusted sample of 1,337). Comparisons between survey respondents and Australian Bureau of Statistics (ABS) data using gender, age and Landcare participation suggest the survey respondents are representative of the wider cohort of rural landholders in the region.

The 2016 SBS follows surveys undertaken in 2002, 2007 and 2011. The SBS identifies priority issues, trends in social and farming structure (e.g. absentee ownership, property size, occupational identity, enterprise mix) and techniques to effectively engage rural landholders. With surveys across 15 years and with some items repeated across the different surveys, there is the opportunity to identify trends over time. The four surveys occurred under very different seasonal conditions (normal rainfall in 2002, drought in 2007, floods in 2011 and low rainfall in 2016). Different seasonal conditions will affect

farm incomes, workloads (e.g. need to feed and water stock during drought), the appropriateness of some farming practices (e.g. minimum tillage under very wet conditions) and interest in and ability to implement conservation work such as fencing of wetlands or revegetation.

1.2 Report structure

The next section outlines the conceptual framework for this research. The subsequent methodology section explains the research approach, including the survey mail out process and data analysis undertaken. The remaining sections of the report present summaries of research findings, including:

- the results for each of the survey topics at the regional scale; and
- Wimmera CMA local government area (LGA) profiles.

2 The research approach

2.1 Why survey rural landholders

The analysis of data collected through the Australian Government's farm and household censuses can provide useful information for NRM managers. For example, Rawluk and Curtis (2016) drew on those data to demonstrate that the Ovens Valley in north east Victoria has been transformed by an influx of new residents with different values. However, those data are unlikely to satisfy catchment managers who need to monitor outcomes from investments they make in NRM, understand landholder adoption of practices expected to lead to improved environmental outcomes, and make judgements about the choice of available policy instruments (Curtis, Lockwood, & MacKay, 2001; Shultz & Daenz, 1998). In part, that is because these national data collections don't address these topics, but it is also because data is aggregated (e.g. 200 households combined for census data).

A draft survey instrument was developed over a period of months with the Wimmera CMA project steering committee. In the next section we explain the key social research concepts underpinning this research. We begin with a lay definition of the concepts that we use throughout this report. We then provide more detailed introductions to the key theoretical concepts employed and explain how they were operationalised as items included in the 2016 survey (Appendix 1).

2.2 Lay definitions of key concepts

- Values: guiding principles/what is important to people.
- Beliefs: what we think is true.
- Norms: how we/others think we ought to behave. These can be personal norms or social norms.
- Attitudes: what we think should happen in relation to a specific social issue.

- Knowledge: grasp of facts, understanding of process.
- Skills: ability to implement or perform a task.
- Trust: willingness of those who are vulnerable to rely on others, which in part depends on the trustworthiness of those seeking to be trusted. Trustworthiness is based on assessments by others of our ability, benevolence and integrity.
- Institutions: “rules of the game” (i.e. not the same as organisations).

2.3 Values-Belief-Norm (VBN) Theory

Researchers typically distinguish between ‘assigned values’ and ‘held values’. Assigned values are those that individuals attach to specific physical goods, activities or services (Lockwood, 1999). ‘Held’ values are ideas or principles that people hold as important to them (Lockwood, 1999) and are generally highly abstract, generic and conceptual, but guide personal action (McIntyre, Moore, & Yuan, 2008). Value orientations are the position a person takes when a particular set of held values are more important to them than other held values (Axelrod, 1994).

A number of theoretical approaches have been developed and applied to explain the relationship between values and behaviour. Values-Belief-Norm Theory (VBN) explains an individual’s motivation for environmental behaviour. It is an important theory that underpins much contemporary social research, including the research we have drawn upon in this project. VBN theory suggests that behaviour is derived from core elements of personality and belief structures. These inform people’s specific beliefs about human-environmental interactions, consequences and an individual’s responsibility for taking action. VBN theory hypothesises that environmental behaviour is more likely if the individual believes that there may be adverse consequences for something that they value highly (Stern, Dietz, & Kalof, 1993). VBN theory proposes a chain of elements, with one component influencing the next. The elements of VBN theory include values, beliefs (awareness of consequences or does the condition of the asset affect yourself, others or the environment; ascribed responsibility beliefs; and general environmental concern), personal norms and behaviour (Stern, 2000). The development of VBN theory focused on values and beliefs about environmental consequences based on three broad value orientations: biospheric (concerns about the biosphere), altruistic (concern for others) and egoistic (concern for self).

To explore the influence of held values (guiding principles), the survey employed the 12 item scale developed by de Groot and Steg (2007) adapted from Schwartz’s value typology that distinguishes between biospheric, egoistic and altruistic values (Schwartz, 1992, 1994) [Table 2]. Assigned values relating to respondents’ properties were assessed using items previously developed by the research team (Seymour, Curtis, Pannell, Allan, & Roberts, 2010) [Table 3]. A number of items exploring respondents’ beliefs and attitudes were also included [Table 4].

Table 2 Wimmera 2016 Social Benchmarking Survey items: held values

Held values	Item
'Traditional'	Looking after my family and their needs
Altruistic	Working for the welfare of others Fostering equal opportunities for all community members Caring for the weak and correcting social injustice
Egoistic	Being influential and having an impact on other people and events Being able to lead others Creating wealth and striving for a financially profitable business
Biospheric	Protecting the environment and preserving nature Preventing pollution and protecting natural resources Respecting the earth and living in harmony with other species

Table 3 Wimmera 2016 Social Benchmarking Survey items: assigned values

Assigned values	Item
'Universal' value	Being able to pass the property on to others in better condition
Environmental	The environment on my farm sustains life for many different plants and animals Floodplain land and wetlands provide important places for native birds to live
Social	Opportunity to learn new things Work on the property is a welcome break from my normal occupation A great place to raise a family An attractive place to live A place for recreation
Economic	An important source of household income Sense of accomplishment from building/maintaining a viable business

Table 4 Wimmera 2016 Social Benchmarking Survey items: views

Views	Item
Attitudes	Landholders should have the right to harvest water that falls on their property, even if that action impacts on others
	The public should have the right to access rivers/streams/wetlands on private land
	Landholders should manage their properties in expectation of a highly variable climate
	Landholders should be paid for providing environmental services that benefit the wider community (e.g. managing habitat for native plants & animals)
	Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals
	Governments should give a high priority to the allocation of water to support recreation on lakes during dry periods
	Landholders should be supported to conserve Aboriginal heritage on private land
	Landholders receiving grants from Governments for environmental work should maintain those areas after the grant has expired in ways consistent with the purpose of the grant
	The environment should have a specific allocation of river water
	Carbon farming/biofuels should be confined to less productive farmland
	New owners should abide by agreements entered into by previous owners where public funds have paid for land protection or conservation work
Belief in duty of care	It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment
Beliefs	There will be opportunities for carbon farming on my property in the future
	Clearing native vegetation since European settlement has substantially reduced the number and variety of native plants and animals in this district
	Reduced grazing of native vegetation leads to substantially increased fire hazard
	Funding for Wimmera landholders for environmental work is best delivered through regional bodies rather than centralised state or federal bodies
Confidence in current recommended practices	The benefits of stubble retention on cropping land outweigh problems arising
	The time and expense involved in watering stock off-river/stream/wetland is justified by improvements in bank stability, water quality or stock condition
	Fencing to manage stock access is an essential part of the work required to protect and conserve waterways and wetlands

2.4 Occupational identity

Rural areas in south eastern Australia, including parts of the Wimmera, are increasingly shaped by a mix of production, consumption and conservation values (Abrams & Bliss, 2012; Holmes, 2006). Agriculture is typically the principal land use, but other values are influencing land use and management. For example, non-farmers are often more interested in the recreation and conservation values of their properties and adopt different enterprises to full-time farmers (Mendham, Curtis, & Millar, 2012). As the non-farmer cohort of rural landholders increases, it is expected that occupational identity will be an increasingly important factor affecting NRM (Gosnell, Haggerty, & Byorth, 2007; Mendham et al., 2012).

Using data from the 2011 Wimmera SBS, Groth et al. (2014) determined that self-declared occupational identity, established by asking rural landholders to nominate their occupation, is a valid and cost-effective way to explore occupational identity. However, collective identity is a complex topic and psychologists have developed measures that embrace the range of elements of collective identity to measure occupational identity. As part of her doctoral studies, Theresa Groth used data from the 2014 North Central CMA SBS (Groth, Curtis, Mendham, & Toman, 2015) to develop a valid, reliable and efficient measure of occupational identity amongst rural landholders.

As part of that research, Dr Groth identified a useful typology of rural landholders (i.e. full-time farmers, part-time farmers, hobby farmers and non-farmers) (Groth, Curtis, Mendham, & Toman, 2016). For example, Dr Groth was able to establish that full-time farmers and part-time farmers were similar in that both were focused on farming as a business. This finding challenged existing views suggesting that part-time farmers were similar to other “hobby farmers” who are typically more interested in recreational and conservation values of their properties.

Dr Groth’s 12 item F-COIC scale (the Farmer, Collective Occupational Identity Concept) has been used in this survey (one item was deleted from the scale utilised in the North Central CMA SBS) [Table 5]. Survey respondents were also asked to indicate if they identified as a full-time, part-time, hobby-farmer or non-farmer.

Table 5 Wimmera 2016 Social Benchmarking Survey items: F-COIC scale measuring extent of a farmer occupational identity

Dimension	Element	Survey statements measuring F-COIC
Self-categorisation	Placing self in social category	I very much identify with agricultural producers in my district
	Perceived certainty of self-identification	My agricultural production activities distinguish me from those who are not agricultural producers
	Goodness of fit / Perceived similarity /	I consider myself to be a typical agricultural producer in this area
Behavioural involvement		What is the total area of rural land owned/managed by you or your immediate family or company in the Wimmera region? Estimate the average number of hours per week that you worked on farming/property related activities over the past 12 months
Evaluation	Private regard	In general, I'm glad that I'm an agricultural producer
Importance	Explicit importance	Being a part of the larger group of agricultural producers is an important reflection of who I am
Social embeddedness		My regular social contacts and relationships are with other agricultural producers
Attachment & sense of interdependence	Interdependence / Mutual fate	What happens to agricultural producers as a whole will have an effect on what happens in my life
	Attachment/ Affective commitment	I have a strong sense of belonging or attachment to other agricultural producers
	Interconnection of self & others	When someone criticises agricultural producers, it feels like a personal insult

2.5 Trust and trustworthiness: waterways and wetlands management

Trust is a key element of social capital that reduces transaction costs for individuals and organisations (Sharp & Curtis, 2014). Trust can be considered a unique form of a relationship where the parties are dependent on the other to fulfil its interests and can be defined as the willingness of one party to rely on the other (Earle, Siegrist, & Gutscher, 2007).

Research suggests that trust is based on positive expectations that the other party will fulfil its obligations in the relationship (i.e. trust is based on perceptions of trustworthiness) (Rousseau, Sitkin, Burt, & Camerer, 1998). Therefore, trustworthiness is a quality of the person being trusted (i.e. the trustee). In contrast, trusting is something

that the person doing the trusting (i.e. the trustor) does. Mayer et al. (1995) state that trustworthiness is comprised of three characteristics, including:

- Ability: trustor perceptions of the trustee's knowledge, skills and competencies.
- Benevolence: the extent to which a trustor believes that a trustee will act in the best interest of the trustor.
- Integrity: the extent to which the trustor perceives the trustee as acting in accord with a set of values and norms shared with or acceptable to the trustor, or acts consistently with the values the trustee espouses.

Distinguishing between trust and trustworthiness provides a better understanding of both the intentions of community members to rely on NRM agencies, as well as the characteristics of the agencies and their staff which contribute to trusting relationships in NRM (Sharp, Thwaites, Curtis, & Millar, 2013). In this survey we measured agency trustworthiness (ability, benevolence and integrity). Intention to trust was measured using two items which captured respondents' willingness to rely on the Wimmera CMA (Sharp & Curtis, 2012).

Waterways and wetlands management was the Wimmera CMA's issue of focus for this topic. The five survey items measuring trust and trustworthiness for waterways and wetlands management are provided in Table 6.

Individuals' dispositional trust, or their general tendency to trust or distrust others, is a relatively stable personality characteristic that might affect the extent of trust placed in a NRM agency (Smith, Leahy, Anderson, & Davenport, 2013). We included measures of respondents' predisposition to trust (Smith et al., 2013) in the survey [Table 7].

Table 6 Wimmera 2016 Social Benchmarking Survey items: Trust and trustworthiness

Trust and trustworthiness	Item
Intention to trust	I can rely on the Wimmera CMA to provide useful advice about river/stream/wetland management
	I can rely on the Wimmera CMA to provide appropriate financial assistance for river/stream/wetland management
Trustworthiness: Benevolence	The Wimmera CMA keeps landholders' interests in mind when making decisions about river/stream/wetland management
Trustworthiness: Integrity	Sound principles guide Wimmera CMA decisions about river/stream/wetland management
Trustworthiness: Ability	The Wimmera CMA is very knowledgeable about river/stream/wetland management

Table 7 Wimmera 2016 Social Benchmarking Survey items: Measures of dispositional trust

Measures of dispositional trust
You can't be too careful when dealing with people
People are almost always interested only in their own welfare
One has to be alert or someone is likely to take advantage of you

2.6 Risk interpretation: waterways and wetlands management

Risk interpretation influences the social acceptability of and compliance with rules and regulations. Understanding how stakeholders and the broader community perceive risk can therefore assist policy makers more effectively engage stakeholders (Trettin & Musham, 2000). It can also assist in the establishment of more socially acceptable policies and programs (Shindler, Brunson, & Stankey, 2002).

‘Lay’ and ‘expert’ interpretations of risk often differ. For example, the public is generally more averse to very unlikely but highly catastrophic or irreversible events than they are to more likely, everyday events. In that way, lay assessments of risk can be seen to deviate from what a technical risk assessment might consider as being rational. Important influences on public perception of risk include: having personal control over the risk; familiarity with the hazard; perception of equitable sharing of risks and benefits; the opportunity to blame a person/institution for the creation of the risk; and beliefs and attitudes about the nature, consequences, history and justifiability of the risk (Slovic, 2000; Zinn & Taylor-Gooby, 2006).

Differences between the way people perceive and respond to risks are critical to understanding how best to manage and communicate about risk (Slovic, 1999). Older forms of risk communication tended to define the public as naïve. Risk communication was perceived as a one-way process conducted in order to increase the public’s knowledge with the aim of counteracting irrational opinions (Gutteling & Kuttischreuter, 2002; Rowan, 1994). The end result of such approaches was often to reinforce public suspicion of the organisation or agency (Slovic, 1999). Newer models of risk communication emphasise the socially constructed nature of risk, the value of different forms of knowledge, and the need for greater levels of meaningful public participation in decision making (Slovic, 1999).

Items exploring three dimensions of risk interpretation were developed for the waterways and wetlands management topic, including: the reversibility of the risk, distribution of benefits, and observability (McDaniels, Axelrod, Cavanagh, & Slovic, 1997) [Table 8].

Table 8 Wimmera 2016 Social Benchmarking Survey items: Risk interpretation, waterways and wetlands management

Measures of risk interpretation
Negative impacts of cropping/grazing waterways & wetlands can be fixed
Only a few people benefit from cropping/grazing waterways & wetlands
Damage to waterways & wetlands from stock/cropping is already obvious

Risk aversion describes an individual's tendency to take or avoid risks in their decision making (Pannell et al., 2006). Empirical evidence indicates that farmers vary widely in their personal degree of risk aversion and this affects a landholder's tendency to adopt an innovation or practice (Abadi Ghadim & Pannell, 2003). We included three items from a general risk disposition scale to explore respondents' predisposition to risk (Meertens & Lion, 2008) [Table 9].

Table 9 Wimmera 2016 Social Benchmarking Survey items: Predisposition to risk

Measures of predisposition to risk
I prefer to avoid risks
I really dislike not knowing what is going to happen
I usually view risks as a challenge to embrace

2.7 Adoption of sustainable farming practices

Private landholders manage large parts of most Victorian catchments. Effecting behavioural change in private landholders is a complex task. In a widely cited synthesis paper, Pannell et al. (2006) drew on their backgrounds in economics, psychology and sociology, and extensive research experience, to suggest a framework for exploring adoption that identifies four broad sets of factors, including:

- Nature of the practice: trialability, observability, complexity, extent of re-skilling required, extent the practice fits with existing farming systems and lifestyle, cost and time for returns to accrue, and whether it is a substantial improvement on what already exists.
- Personal characteristics of the landholder and their immediate family: occupation, education levels, knowledge, skills, length of experience in the area/as a land manager, extent they are risk takers, whether they are introverts/extroverts, level of income, stage of life, if there is to be farm family succession, and extent of their personal network.
- Wider social context: prevailing norms, information flows through networks, the existence and activities of local organisations, and the level of trust in extension agents.
- Nature of any intervention/learning process: regulation, market-based instrument, grant program, and group processes.

Drawing on this framework and experience in successive surveys across Australian catchments, the CSU team, working with the Wimmera CMA SBS steering committee, selected a number of topics to include in the survey that were likely to explain differences in the level of adoption of sustainable farming practices or Current Recommended Practices (CRP). CRP are those behaviours that landholders have been encouraged to adopt (current best practice) to achieve desired sustainable agriculture and environmental outcomes.

Survey topics, including those identified above (e.g. values, beliefs, personal norms, attitudes, farmer identity, trust and risk interpretation) explore factors from each of the four sets of topics in the Pannell et al. (2006) framework. In collaboration with the Wimmera CMA, we identified the topics listed below for inclusion in the 2016 survey (a copy of the survey instrument is included as Appendix 1):

- long-term plans for the property
- issues of concern at property and district scales
- beliefs and attitudes about roles and responsibilities of different NRM actors
- trust in the Wimmera CMA
- predisposition to risk and trust
- values attached to the property and held values
- knowledge of NRM processes and practices
- confidence in CRP for improvement in resource condition
- sources of information about NRM
- land use and enterprise mix
- implementation of CRP for sustainable agriculture and biodiversity conservation
- involvement in NRM programs
- background social and farming topics (e.g. occupation, place of residence, property size, on and off-property work and income)

2.7.1 Current recommended practices

Twelve items exploring the adoption of CRP were included in the survey. Some items were cropping or grazing specific, while others applied to all or most landholders. Some items referred to the total time of property management while others asked about actions in the past three years of property ownership [Table 10].

Table 10 Wimmera 2016 Social Benchmarking Survey items: Current Recommended Practices for sustainable farming

Activities undertaken	Last 3 years	Full period of management
Established stock containment areas to manage stock	✓	
Sowed pastures to take advantage of available soil moisture	✓	
Length of fencing erected to manage stock access to rivers/streams/wetlands	✓	✓
Area of native bush/grasslands fenced to manage stock access	✓	✓
Area of trees and shrubs planted (including direct seeding)	✓	✓
Area of native vegetation/rivers/streams/wetlands where actively managing rabbits	✓	
Area of native vegetation/rivers/streams/wetlands where actively managing weeds	✓	
Number of off-stream stock watering points established	✓	✓
Area of gully erosion addressed	✓	✓
Maximum area of crop sown in any year using adaptive no-till techniques	✓	
Maximum area of crop sown in any year using minimum tillage techniques	✓	
Used precision farming techniques for cropping	✓	

The Wimmera CMA has decided to move beyond CRP as a key intermediate outcome of their programs and explore the extent farmers are “flexible and adaptive”. That is, they want to know whether farmers are responding to seasonal and market conditions by making changes in their enterprise (i.e. land use and management). The assumption being that farmers who are flexible and adaptive will more effectively respond to the challenges they face, remain profitable and be good environmental stewards (in part because they are profitable). For the 2016 survey, the CSU research team and Wimmera CMA staff focused on ways to measure the extent farmers are flexible and adaptive. The long-term objective is to identify the attributes of those who are more/less flexible and adaptive and to use that, and other knowledge, to support farmers to become more flexible and adaptive managers.

Working with Wimmera CMA staff, the research team identified 10 items to explore the extent farmers (i.e. not hobby farmers or non-farmers) were flexible and adaptive over the previous three years, a period where there has been variation in seasonal and market conditions. Five items focused on cropping and five items were relevant to pastures and therefore, to graziers (and perhaps to croppers who produce hay or silage for sale rather than for grazing their own animals). Respondents were asked to select from five options examining the extent they varied management with regards to time of year of sowing, the mix of crops/pasture sown, the methods of crop or pasture establishment, stock numbers, fertiliser application rates and application of herbicides. The five management options included: no change from one year to the next; some change for small part of the property; some change for a substantial part of the property; substantial change for a small part of the property; and substantial change for a large part of the property.

2.8 The mail survey process

The survey design and mail out procedure employed a modified Dillman (1978) process that has been refined through the experience of successive catchment surveys in Australia. A detailed explanation is provided in Curtis et al. (2005). Dillman’s *Total Design Method* provides specific advice about survey design and involves a series of survey mail outs and reminder cards over a period of three months to achieve response rates above those often accepted by researchers. Surveys were addressed to property owners identified from the Shire ratepayer lists.

Using the Shire ratepayer lists the research team generated a random sample. Subsequent examination of the mailing list identified a number of multiple listings of the same owners and public land which were then removed. A total of 1620 surveys [Table 11] were posted out from a total of the approximately 14,000 properties greater than ten hectares within the Wimmera CMA region. A response rate of 52% was achieved with 691 usable completed surveys returned out of the adjusted response (1337).

Table 11 Wimmera 2016 Social Benchmarking Survey items: Survey sample numbers by LGA

LGA	Sample	Returned	Declined/RTS	Response rate
Ararat	102	43	18	51%
Buloke	30	12	7	52%
Hindmarsh	279	115	62	53%
Horsham	377	167	63	53%
Northern Grampians	224	89	43	49%
Pyrenees	54	18	5	37%
West Wimmera	328	151	50	54%
Yarriambiack	226	96	41	52%
Total	1620	691	289	52%

Social scientists are often asked about the impact of non-responses on the reliability of findings from surveys. In the past the research team has aimed for a 60% response rate for surveys mailed to rural landholders in Australia. Our view is that a 60% response rate represents current “best-practice” and that with 60% of a substantial sample, non-responses are unlikely to significantly change results. Our recent experience, and discussions with international partners (Stedman, 2016) suggests that it is unrealistic to aim much higher than 50% for a response rate for a survey to rural landholders.

Of course, non-respondents may be different to respondents. Our experience where we have compared respondents to social benchmarking surveys to the wider population is that respondents are no different to the wider population of rural landholders in terms of median property size and Landcare participation (Curtis & Mendham, 2012). There are many reasons for non-responses, and non-respondents are unlikely to be a homogenous group and therefore, not that different to respondents.

Researchers can attempt to address the potential issue of non-response bias by comparing respondents with the population their sample was drawn from or by comparing non-respondents with respondents. The former can be accomplished through comparisons based on a limited range of data. The latter can be accomplished by contacting non-respondents, typically by phone, and gathering a limited range of data included in the survey. Both approaches have their limitations in that population and household census data are for the entire population (rural and urban) and researchers need to focus on rural balance (i.e. only those living in rural areas) and on age cohorts that are comparable with the profile of rural landholders (i.e. not youth). Another complication is that many non-respondents will not respond to telephone calls.

For this study, we have been able to compare survey respondents with the respondents to the Australian Bureau of Statistics Rural Environment and Agricultural Commodities Survey 2014-2015 for age and gender from within the Wimmera CMA region [Table 12]. Comparisons of the two groups indicated there were no significant differences.

Table 12 Comparison of 2016 Wimmera SBS respondents to ABS survey respondents within the Wimmera region

Variable	Wimmera SBS	ABS
Mean age	57 years	56 years
Percent male	86%	87%

2.9 Data analysis

Descriptive statistics such as frequencies, means and medians were used to summarise responses to all survey questions (“not applicable” and missing responses were removed from the calculation of means). For questions that required respondents to specify an amount (e.g. hectares of trees planted) zeros were excluded in the calculation of means and medians (hence, these were treated as a ‘no’ response). In these situations, the means and medians should be treated as the mean or median of those who had undertaken the practice.

Kruskal Wallis Chi Square tests were used to test for differences on a continuous variable or a Likert scale based on a grouping variable (e.g. farmer/non-farmer). Chi Squared Tests were used to examine dependent between two categorical (or grouping) variables (e.g. between farmer/non farmer and member of landcare/non membership).

In all analyses the p statistic represents the significance level where a value below 0.05 is considered to be statistically significant. A p value below 0.05 means that it is unlikely (probability of less than five percent) that the observed relationship or difference has occurred purely by chance. All statistical analyses were performed using *R* software and Microsoft Excel.

3 FINDINGS BY RESEARCH TOPIC: REGIONAL SCALE

The following tables and figures present descriptive statistics for each topic included in the 2016 survey. For some survey questions, respondents were asked to rate how strongly they agreed with a topic, how important an issue was for them, or how likely an outcome was for them on a Likert-type scale of 1 (not likely, not important, strongly disagree) to 5 (highly likely, very important, strongly agree). Not applicable/don't know was a separate response option (6).

To simplify the presentation of these data, the six response options have been collapsed into four categories: “unimportant” (combining not important and of minimal importance), “some importance”, “important” (combining important and very important) and “don't know/not applicable”. For items asking respondents whether they agreed with a statement, the response options have been collapsed into “disagree” (strongly disagree and disagree), “unsure”, “agree” (combining agree and strongly agree) and “don't know/not applicable”. For questions asking the likelihood of a certain outcome, response options have been collapsed into “unlikely” (highly unlikely and unlikely), “unsure”, “likely” (likely and highly likely) and “don't know/not applicable”.

Mean values for all respondents on each item are also reported in the tables. The items in each table are sorted according to means (highest to lowest). In each case the mean is calculated from a range between 1 (strongly disagree/not important/highly unlikely) through to 5 (strongly agree/very important/highly likely). Don't know/not applicable responses were not included in the calculation of means. A mean of 4 can be interpreted as a high level of agreement, concern or knowledge, while a mean of 2 can be interpreted as a lower level.

3.1 Long-term plans

The long-term plan most often selected as likely by respondents was that *Ownership of the property will remain within the family*, with 69% of respondents indicating that this was likely or highly likely to occur [Table 13]. It seems that for some respondents this is an aspirational goal more than an objective they are actively pursuing. For example, a much small proportion of respondents (49%) indicated they had family interested in taking on the property in the future [Figure 2] and only 27% of these respondents had a completed or well advanced succession plan, while the same proportion had not yet started on a succession plan [Figure 3].

More respondents indicated that it was likely (37%) that they would expand their farm business (i.e. purchase, lease or share farm additional land) than contract their business by either leasing all or most of the property (26%) or by selling all or most of the property (19%). There was minimal intention to subdivide and sell part of the property (9%).

Given the ageing of farmers in Australia, it was interesting that 36% of respondents said it was unlikely they would move off their property around/soon after reaching retirement.

Table 13 Wimmera 2016 Social Benchmarking Survey: Long-term plans (N=691)

Long term plan	n	Mean	Likely	Unsure	Unlikely	NA
Ownership of the property will stay within the family	667	3.9	69%	11%	19%	2%
I will move off property around/soon after reaching age 65	649	2.7	21%	24%	36%	18%
Additional land will be purchased, leased or share farmed	645	2.7	37%	16%	45%	3%
All or most of the property will be leased	652	2.5	26%	16%	55%	3%
I will reduce the extent of my off-property work	644	2.4	14%	14%	33%	39%
The enterprise mix will be changed	642	2.3	17%	24%	54%	4%
The property will be sold	654	2.1	19%	11%	68%	2%
I will seek additional off-property work	644	2.1	17%	8%	62%	14%
All or most of the property will be share farmed	645	2	13%	14%	69%	5%
Some part of the property will be placed under a conservation covenant	642	1.9	13%	12%	69%	6%
The property will be subdivided and part of the property sold	643	1.7	9%	9%	79%	3%

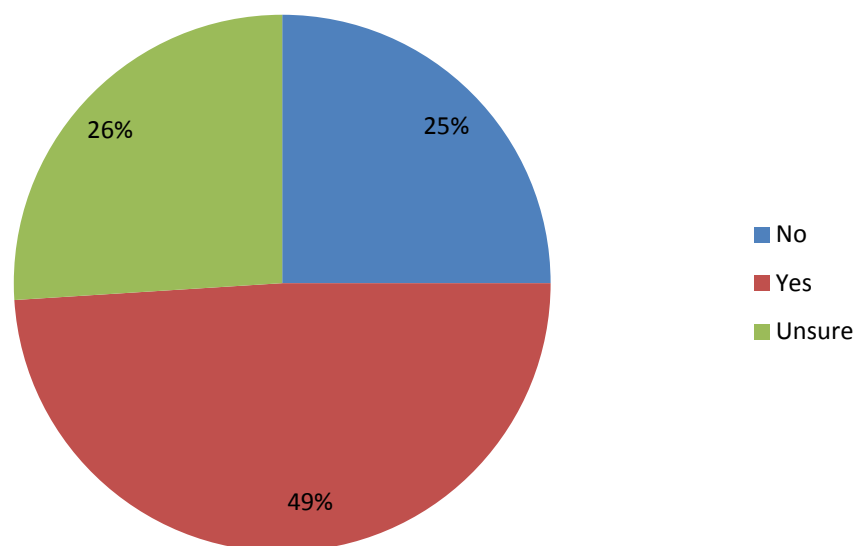


Figure 2 Wimmera 2016 Social Benchmarking Survey: Extent family members interested in taking on management of the property (n=684, N=691)

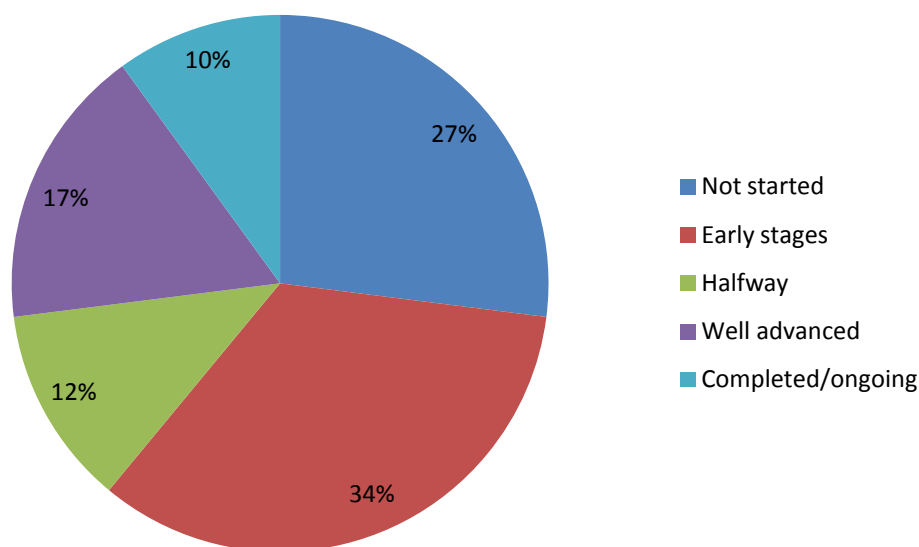


Figure 3 Wimmera 2016 Social Benchmarking Survey: If family members are interested in taking on management of the property, extent there is an agreed succession plan (n=329, N=691)

3.2 Assessment of issues

3.2.1 District level issues

The results for this topic reinforce the importance of NRM agencies addressing the social, economic and environmental dimensions of NRM if they are to effectively engage rural landholders. For example, the top three issues in this study [Table 14, Figure 4] reflect the importance of environmental (long-term health of rivers/streams/wetlands), social (opportunities for recreation) and economic values (soil health related to declining soil fertility). Given the dry seasonal conditions prevailing in the Wimmera, it was not surprising that the top two issues were directly linked to the impacts of lower rainfall on river flows and lakes. Soil health was rated as an important issue by half of all respondents and it seems almost all of those landholders are prepared to acknowledge that existing farming practices contribute to soil erosion. Of the other issues, it seems that substantial proportions of respondents (i.e. >30%) are concerned about most of the other issues listed, including salinity impacts on water quality, property purchases by absentees, ground water extraction, pest plants and animals on public land adjoining private property and vegetation in waterways obstructing floods (all rated as important by >40%). In the table below, results for analyses conducted for respondents with properties located adjacent to rivers and streams are also presented for the river and streams related topics. The proportion of land managed by respondents who rated these issues as important/very important, some importance and minimal/not important are shown in Appendix 2.

Table 14 Wimmera 2016 Social Benchmarking Survey: Assessment of issues at the district scale (N=691)

Assessment of issues - district	n	Mean	Important	Some importance	Not important	NA/ don't know
Impact of reduced water flows on the long-term health of rivers/streams/wetlands	674	3.8	63%	16%	15%	6%
<i>River/stream respondents:</i>	186	4.1	10%	11%	75%	4%
Reduced opportunities for recreation as lakes dry out	670	3.8	61%	18%	16%	5%
Decline in soil health (e.g. declining fertility or structure)	667	3.6	59%	17%	20%	4%
Farming practices contributing to erosion	669	3.4	48%	20%	26%	6%
Salinity threatening water quality in rivers/streams/wetlands	670	3.3	46%	18%	28%	8%
<i>River/stream respondents:</i>	184	3.6	21%	16%	56%	7%
The effect of existing ground water extraction	668	3.3	42%	17%	27%	14%
Long-term negative impacts of property purchased by absentees	668	3.3	42%	22%	26%	10%
Impact of pest plants and animals on private land adjoining rivers and streams	669	3.3	42%	21%	24%	13%
<i>River/stream respondents:</i>	185	3.7	16%	17%	55%	12%
Vegetation in waterways obstructing flows leading to flooding	669	3.3	44%	16%	27%	13%
<i>River/stream respondents:</i>	183	3.7	19%	11%	60%	10%
Long-term negative impacts of mining on farmland	668	3.2	38%	15%	31%	16%
Dryland salinity threatening the long-term productive capacity of land	670	3	32%	22%	35%	12%
Nutrient run-off from rural properties affecting water quality in rivers/streams/wetlands	667	3	33%	23%	33%	11%
<i>River/stream respondents:</i>	185	3.2	28%	25%	39%	8%
Loss of native plants and animals caused by cropping or draining wetlands	670	2.9	31%	25%	36%	8%
Loss of paddock trees	670	2.8	30%	24%	41%	5%
Long-term negative impacts of property purchased by hobby farmers and non-farmers	670	2.8	29%	18%	43%	11%
Stock damage to native vegetation/rivers/streams/wetlands	669	2.8	26%	25%	39%	10%
<i>River/stream respondents:</i>	185	3	31%	28%	33%	9%
The effect of increased surface water extraction	667	2.8	27%	21%	36%	16%

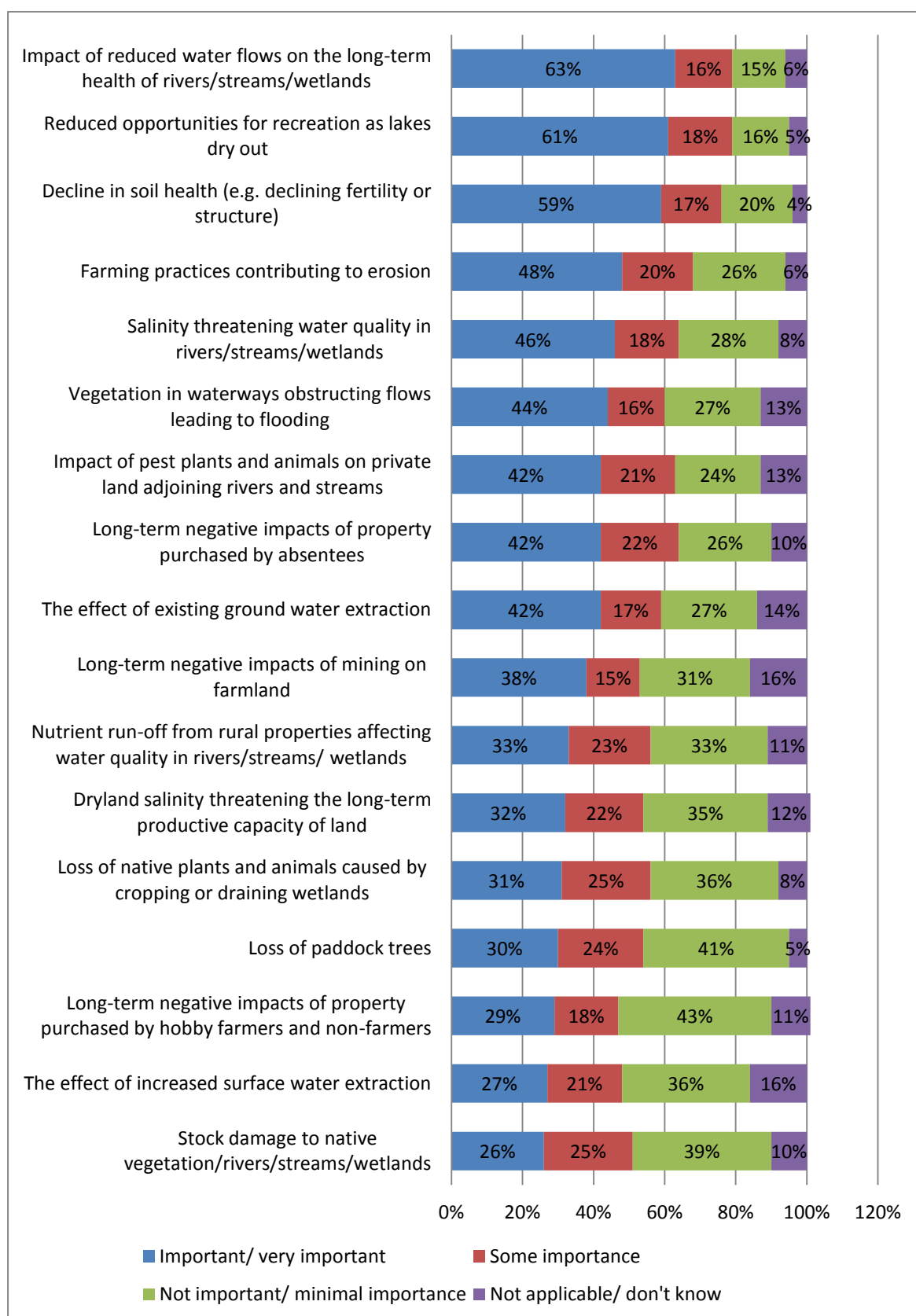


Figure 4 Wimmera 2016 Social Benchmarking Survey: Assessment of issues at the district scale (N=691)

3.2.2 Property level issues

The issues included in the survey at the property level were largely focused on farm viability. Given the dry seasonal conditions prevailing in the Wimmera it is not surprising that the issue rated as important by most (79%) respondents was the *Impact of drought and/or changing rainfall patterns on property viability*. Rural landholders frequently express concerns about the impact of pest plants and animals, including those present in adjoining public land, and these topics were the second and fourth highest rating issues in this survey [Table 15, Figure 5]. The proportion of land managed by respondents who rated these issues as important/very important, some importance and minimal/not important are shown in Appendix 2.

Table 15 Wimmera 2016 Social Benchmarking Survey: Assessment of issues at the property scale (N=691)

Assessment of issues - property	n	Mean	Important	Some importance	Not important	NA/ don't know
Impact of drought and/or changing rainfall patterns on property viability	675	4.2	79%	12%	7%	2%
The impact of weeds and pest animals (including native species) on profitability	669	3.8	66%	14%	16%	4%
Uncertain/low returns limiting capacity to invest in my property	669	3.7	60%	16%	17%	8%
Impact of poor management of pest plants and animals on public land	673	3.7	61%	16%	19%	4%
Crop weed resistance to herbicides	670	3.5	56%	14%	23%	7%
Risk to life and property from wild fires	674	3.3	46%	19%	33%	3%
Lack of skilled labour to undertake important on-property work	668	2.9	34%	22%	35%	10%
Dryland salinity undermining long-term productive capacity	664	2.2	15%	14%	53%	18%

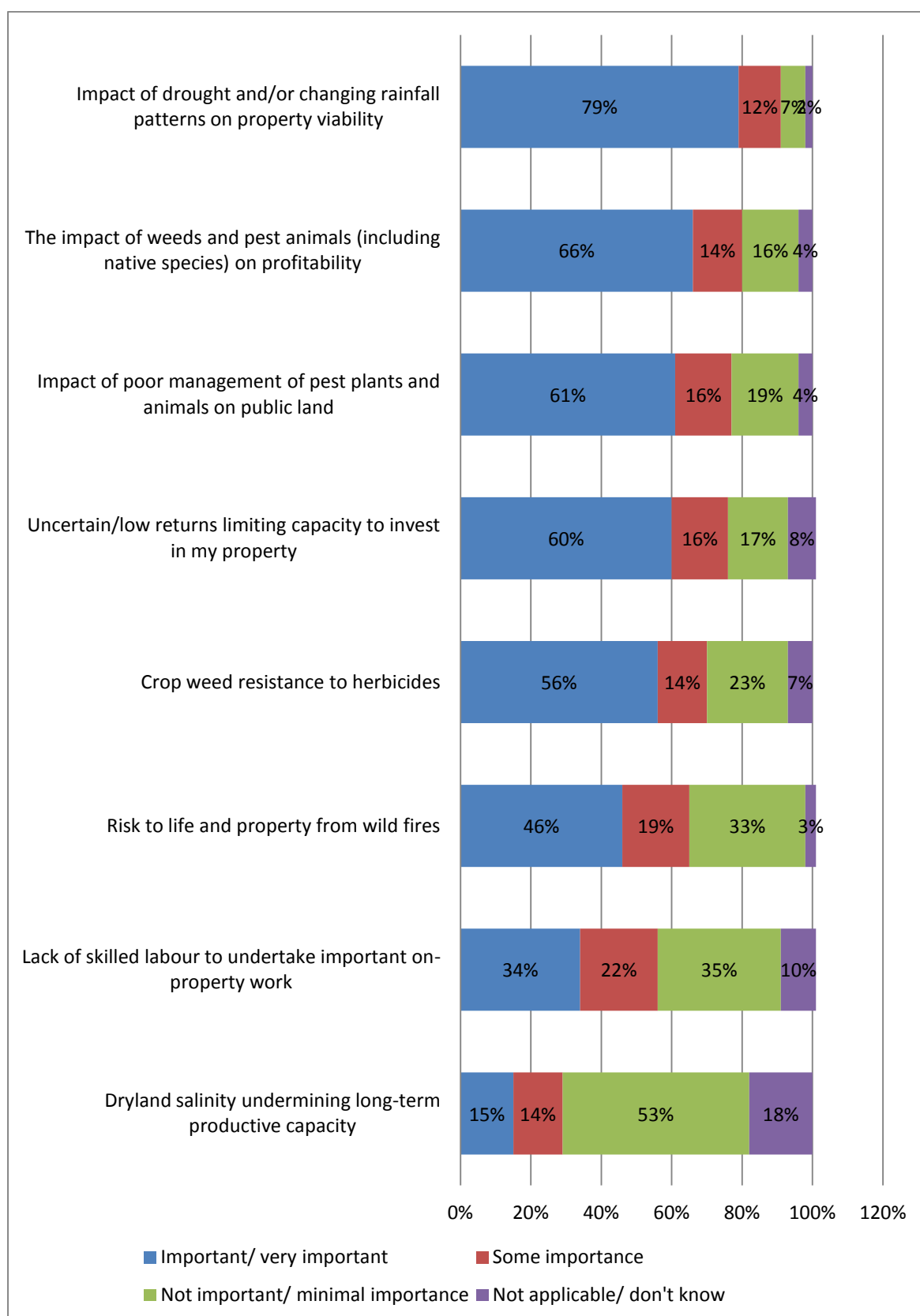


Figure 5 Wimmera 2016 Social Benchmarking Survey: Assessment of issues at the property scale (N=691)

3.3 Values

3.3.1 Attached values

Eight of the 10 items exploring values respondents might attach to their properties (i.e. why they were important to them) were rated as important by a majority of survey respondents. A mix of social, economic and environmental values were amongst those items and emphasise the importance of appeals that address the range of values most rural landholders attach to their properties [Table 16].

It seems there is a strong sense of stewardship amongst most respondents in that 87% said that the *Being able to pass the property on to others in better condition* was important. The precise meaning of “better condition” was not spelled out, but it is clear that for most respondents this encompasses their farm as a viable business (82% rated *Sense of accomplishment from building/maintaining a viable business* as important); their property being *An attractive place to live* (77%) and *A great place to raise a family* (77%); and maintaining ecological values (64% rated *The environment on my farm sustains life for many different plants and animals* as important). The importance of property income to most of the respondent’s household budgets (79% said it was important) may mean that in difficult periods (e.g. severe drought or depressed markets for primary products) that environmental values (e.g. by grazing or cropping wetlands) will be compromised. This conclusion is reinforced by the close to universal (94%) rating of *Looking after my family and their needs* as important [Table 17]. These results provide the Wimmera CMA with insights about how to frame effective engagement with rural landholders using the concept of “*Being able to pass the property on to others in better condition.*” In the table below, results for analysis conducted for respondents with properties located adjacent to rivers and streams is also presented for the river and streams related topics for the item *Floodplain land and wetlands provide important places for native birds to live.*

Table 16 Wimmera 2016 Social Benchmarking Survey: Values attached to property (N=691)

Attached values	n	Mean	Important	Some importance	Not important	NA
Being able to pass the property on to others in better condition	676	4.4	87%	7%	4%	1%
Sense of accomplishment from building/maintaining a viable business	674	4.4	82%	6%	6%	5%
A great place to raise a family	675	4.4	77%	7%	6%	10%
An important source of household income	678	4.3	79%	8%	10%	4%
An attractive place to live	670	4.3	79%	9%	5%	6%
The environment on my farm sustains life for many different plants and animals	674	3.8	64%	20%	14%	1%
Opportunity to learn new things	669	3.7	61%	22%	13%	4%
A place for recreation	672	3.6	56%	25%	15%	4%
Floodplain land and wetlands provide important places for native birds to live	674	3.4	44%	23%	18%	16%
River/stream respondents:	187	3.6	53%	20%	17%	10%
Work on the property is a welcome break from my normal occupation	668	3.3	29%	9%	17%	46%

3.3.2 Held values

Items exploring held values (expressions of guiding principles) can appear as “motherhood” statements that fail to discriminate between respondents. That has not been the case in this research where responses varied from a 94% rating as important for *Looking after my family and their needs* compared to only 32% for *Being able to lead others* [Table 17].

The results presented in Table 17 are consistent with those presented in Table 16, in that the egoistic values related to creating a viable business and supporting family members were rated as important by more respondents than the altruistic values of working for the welfare of others, caring for the weak or fostering equal opportunity. Having said that, two of the four items exploring egoistic values were rated as important by less than 40% of respondents; and a mix of egoistic, altruistic and biospheric values were rated as important by more than 60% of respondents [Table 17].

Table 17 Wimmera 2016 Social Benchmarking Survey: Values that guide your life (N=691)

Held values	Mean	Important	Some importance	Not important
Looking after my family and their needs (Traditional)	4.8	94%	3%	1%
Creating wealth and striving for a financially profitable business (Egoistic)	4.4	82%	6%	6%
Protecting the environment and preserving nature (Biospheric)	4	72%	22%	5%
Preventing pollution and protecting natural resources (Biospheric)	4	73%	20%	6%
Respecting the earth and living in harmony with other species (Biospheric)	3.8	65%	25%	10%
Working for the welfare of others (Altruistic)	3.7	63%	25%	10%
Caring for the weak and correcting social injustice (Altruistic)	3.4	48%	27%	21%
Fostering equal opportunities for all community members (Altruistic)	3.3	44%	33%	20%
Being influential and having an impact on other people and events (Egoistic)	3.1	39%	32%	26%
Being able to lead others (Egoistic)	3	32%	35%	29%

3.4 Your views

Survey respondents provided a strong endorsement of the regional delivery of NRM programs (73% agreed and only 4% disagreed) [Table 18]. There also appear to be social norms developing around the responsibility of landholders to ... *maintain areas where conservation work has been carried out consistent with the purpose of the grant* (72%) and *abide by agreements entered into by previous owners where public funds have paid for land protection or conservation work* (60%) [Table 19]. However, there is also evidence that more than a third of respondents believe that their private property rights trump other values. For example, 42% agreed that *Landholders should have the right to*

harvest water that falls on their property, even if that action impacts on others.

Respondents who were located within the footprint of the Wimmera-Mallee Pipeline (see Figure 6) were significantly less likely to support this statement with a mean value of 3.23 compared to the overall mean 3.5 ($p=0.01$). Forty-two percent of respondents appeared to support what is really an the illegal activity in that they agreed *Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals* [Table 19]. Only 27% disagreed with the statement assessing whether landholders have a duty of care for the environment [Table 18]. At the same time, only 13% agreed that *The public should have the right to access rivers/streams/wetlands on private land* [Table 19].

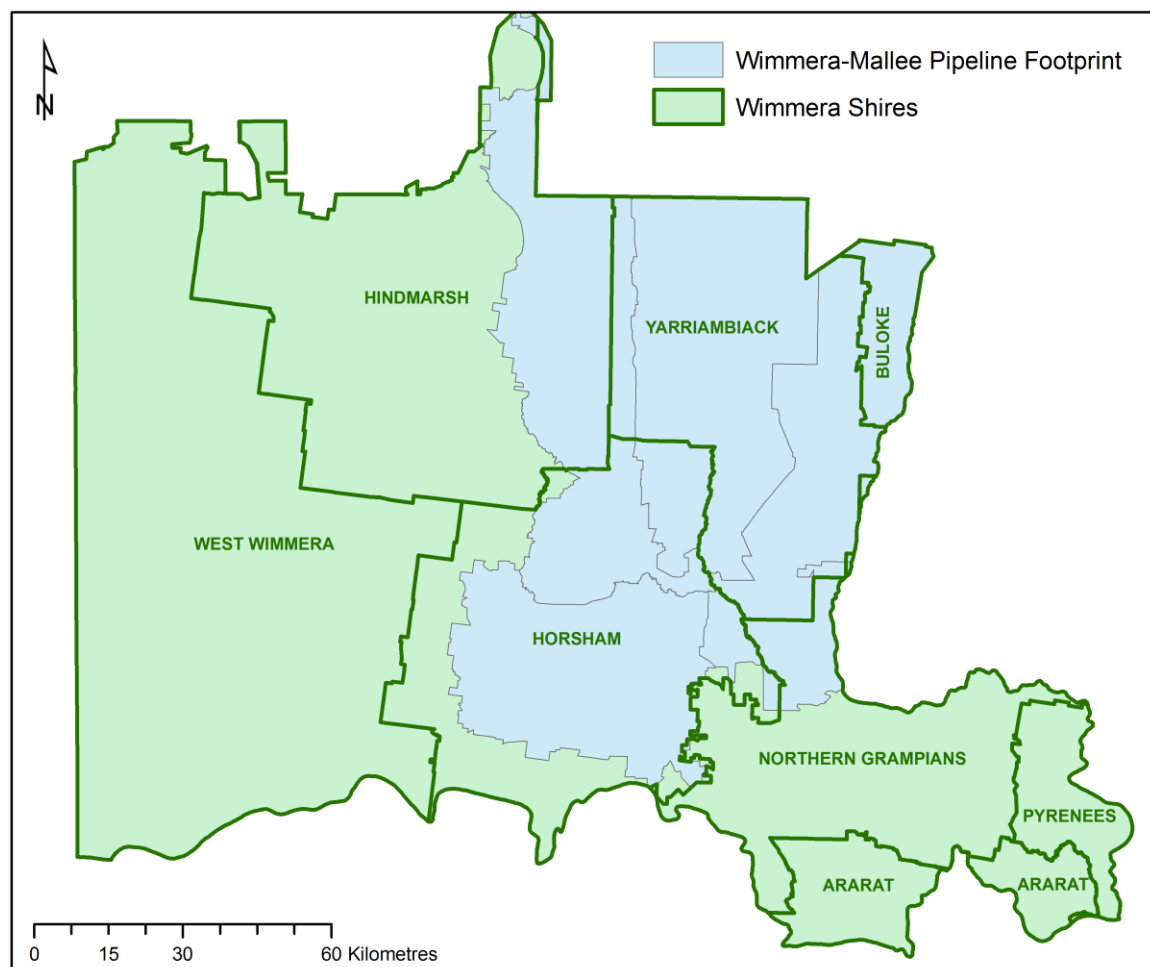


Figure 6 Wimmera-Mallee Pipeline footprint: properties with access to the Wimmera-Mallee Pipeline

Although most respondents acknowledged the impact on biodiversity of clearing native vegetation since European settlement, there remains a substantial minority who either disagree (19%) or are unsure (24%) [Table 18]. A substantial proportion (85%) of respondents agreed that *Landholders should manage their properties in expectation of a highly variable climate* [Table 19].

Survey results suggest there is widespread confidence in the efficacy of fencing waterways and wetlands to manage stock access the benefits of stubble retention and to a lesser extent, watering stock off-stream (in each case, only 6-7% disagreed that these were essential, beneficial or justified [Table 20].

In the tables below, results for analysis conducted for respondents with properties located adjacent to rivers and streams are also presented for the river and streams related topics. The proportion of land managed by respondents who agreed/strongly agreed, were unsure, and disagreed/strongly disagreed with these items is shown in Appendix 2.

Table 18 Wimmera 2016 Social Benchmarking Survey: Beliefs about NRM, including a landholder duty of care for the environment (N=691)

Your views	n	Mean	Agree	Unsure	Disagree	NA/ don't know
Funding for Wimmera landholders for environmental work is best delivered through regional bodies rather than centralised state or federal bodies	658	4	73%	19%	4%	4%
Conservation that involves reduced grazing of native vegetation leads to substantially increased fire hazard	657	3.9	72%	16%	9%	2%
Clearing native vegetation since European settlement has substantially reduced the number and variety of native plants and animals in this district	659	3.5	52%	24%	19%	5%
It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment (duty of care for the environment)	659	3.3	51%	21%	27%	2%
There will be opportunities for carbon farming on my property in the future	660	3.1	26%	46%	14%	14%

Table 19 Wimmera 2016 Social Benchmarking Survey: Attitudes about NRM (N=691)

Your views	n	Mean	Agree	Unsure	Disagree	NA/ don't know
Landholders should manage their properties in expectation of a highly variable climate	660	4.1	85%	10%	3%	2%
Landholders should be paid for providing environmental services that benefit the wider community (e.g. managing habitat for native plants & animals)	664	4	73%	18%	7%	2%
Landholders receiving grants from Governments for environmental work should maintain those areas after the grant has expired in ways consistent with the purpose of the grant	662	3.9	72%	18%	6%	4%
New owners should abide by agreements entered into by previous owners where public funds have paid for land protection or conservation work	658	3.6	60%	22%	15%	3%
Landholders should be supported to conserve Aboriginal heritage on private land	661	3.5	53%	26%	18%	3%
Governments should give a high priority to the allocation of water to support recreation on lakes during dry periods	658	3.4	53%	19%	26%	1%
The environment should have a specific allocation of river water	657	3.4	45%	28%	21%	6%
<i>River and stream respondents:</i>	186	3.4	45%	31%	19%	5%
Landholders should have the right to harvest water that falls on their property, even if that action impacts on others	660	3.3	42%	27%	27%	3%
Carbon farming/biofuels should be confined to less productive farmland	655	3.1	26%	42%	23%	9%
Landholders who receive grants from Governments for environmental work should put those areas under long-term covenants that protect those areas into the future	655	3.1	37%	30%	30%	3%
Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals	660	2.7	23%	30%	42%	5%
The public should have the right to access rivers/streams/wetlands on private land	659	2.1	13%	13%	71%	3%
<i>River and stream respondents:</i>	186	2	9%	12%	77%	2%

Table 20 Wimmera 2016 Social Benchmarking Survey: Confidence in CRP (N=691)

Your views	n	Mean	Agree	Unsure	Disagree	NA/ don't know
Fencing to manage stock access is an essential part of the work required to protect and conserve waterways and wetlands	659	4	77%	10%	7%	5%
<i>River and stream respondents</i>	186	4	77%	12%	8%	3%
The benefits of stubble retention on cropping land outweigh problems arising	659	3.8	63%	25%	6%	6%
The time and expense involved in watering stock off-river/stream/wetland is justified by improvements in bank stability, water quality or stock condition	659	3.6	45%	28%	7%	19%
<i>River and stream respondents</i>	186	3.5	45%	32%	11%	12%

3.5 Sources of information about NRM

The most commonly used source of information was newspapers (65%), followed by friends/neighbours/family (52%) and field days (50%). Thirty-eight per cent of respondents indicated that they used the Wimmera CMA as a source of information for NRM (above television and the internet) [Figure 7]. Survey data suggests that at this time there is very limited use of social media (10%), or specific elements of social media (e.g. Instagram, YouTube, Facebook, Twitter) to access information about NRM compared to traditional media sources (e.g. newspapers, books/magazines/journals, radio, and TV) and personal networks such as friends/neighbours/relatives. Survey data confirmed that existing platforms such as landcare (31%) and to a lesser extent, commodity groups (10%) reach substantial proportions of respondents. The Bureau of Meteorology (49%) and Government departments (27%) are sources of information for substantial cohorts.

We explored the extent occupation and age influence the information sources used by respondents. To examine the influence of occupation we combined those who identified as full-time and part-time farmers into a “farming” cohort (both have a focus on farming as a business) and those who identified as hobby farmers and non-farmers into a “non-farming” cohort. To explore the influence of age of we split the respondents into two groups: those aged 45 years and younger and those 45 years and above.

As indicated in Table 21, the “farming” cohort is more likely to report using almost all information sources for NRM listed in the survey. The exceptions were television and environmental organisations. A second finding is that the relative importance (i.e. rank order) of different information sources for the two cohorts is very similar. For example, newspapers and friends/neighbours/relatives are in the top three sources of information for both the “farming” and “non-farming” cohorts. Nevertheless, there are significant differences in the extent each cohort identified particular information sources. Some important differences are that the “farming” cohort is three times more likely to use consultants and commodity groups and more likely to use newspapers, field days and radio. It is somewhat surprising that the “non-farming” cohort are less likely to use the

internet (33% compared to 26%) and social media, including YouTube, Facebook, Twitter and Instagram, although the only significant difference was for YouTube.

There was only one significant difference between the two age cohorts for the top 16 sources of NRM information (as identified by the 45 years and below cohort) [Table 22]. That difference was for the use of the internet (43% for ≤ 45 years; 30% for >45 years). Younger respondents were also significantly more likely to use social media for information about NRM (21% compared to 8%).

Table 21 Wimmera 2016 Social Benchmarking Survey: Information sources. Extent of significant differences by occupation (N=691)

Information source	% farmers (n=544)	% non-farmers (n=147)	P value
Newspapers	69%	52%	0.000
Field days	55%	30%	0.000
Friends/neighbours/relatives	53%	52%	Not significant
Radio	52%	38%	0.004
Books/magazines/journals	52%	39%	0.009
Bureau of Meteorology	51%	44%	Not significant
Mailed brochures	49%	35%	0.005
Wimmera CMA	40%	34%	Not significant
Agricultural consultants	39%	12%	0.000
Television	36%	40%	Not significant
Internet	33%	26%	Not significant
Landcare group/network/coordinator	33%	24%	0.044
Government agencies/ departments	28%	23%	Not significant
Local Council	27%	24%	Not significant
Victorian Farmers Federation	24%	14%	0.011
Commodity groups	12%	4%	0.008
Social media	11%	7%	Not significant
Extension officers	11%	4%	0.019
Environmental organisations	10%	18%	0.017
Facebook	8%	7%	Not significant
YouTube	5%	1%	0.05
Twitter	4%	1%	Not significant
Instagram	1%	1%	Not significant

Table 22 Wimmera 2016 Social Benchmarking Survey: Information sources. Extent of significant differences by age (N=691)

Information source	% ≤45 years (n=115)	% >45 years (n=528)	P value
Newspapers	64%	67%	Not significant
Bureau of Meteorology	55%	49%	Not significant
Friends/neighbours/relatives	55%	52%	Not significant
Field days	51%	50%	Not significant
Radio	44%	51%	Not significant
Wimmera CMA	44%	39%	Not significant
Internet	43%	30%	0.006
Books/magazines/journals	43%	52%	Not significant
Mailed brochures	42%	47%	Not significant
TV	36%	38%	Not significant
Landcare group/network/coordinator	32%	31%	Not significant
Agricultural consultants	30%	27%	Not significant
Government agencies/departments	27%	28%	Not significant
VFF	23%	22%	Not significant
Social media	21%	8%	0.000
Local Council	18%	29%	0.02
Facebook	18%	6%	0.000
Extension officers	13%	9%	Not significant
Commodity groups	11%	10%	Not significant
YouTube	10%	3%	0.000
Twitter	7%	3%	0.04
Instagram	0%	1%	Not significant
Environmental organisations	8%	13%	Not significant

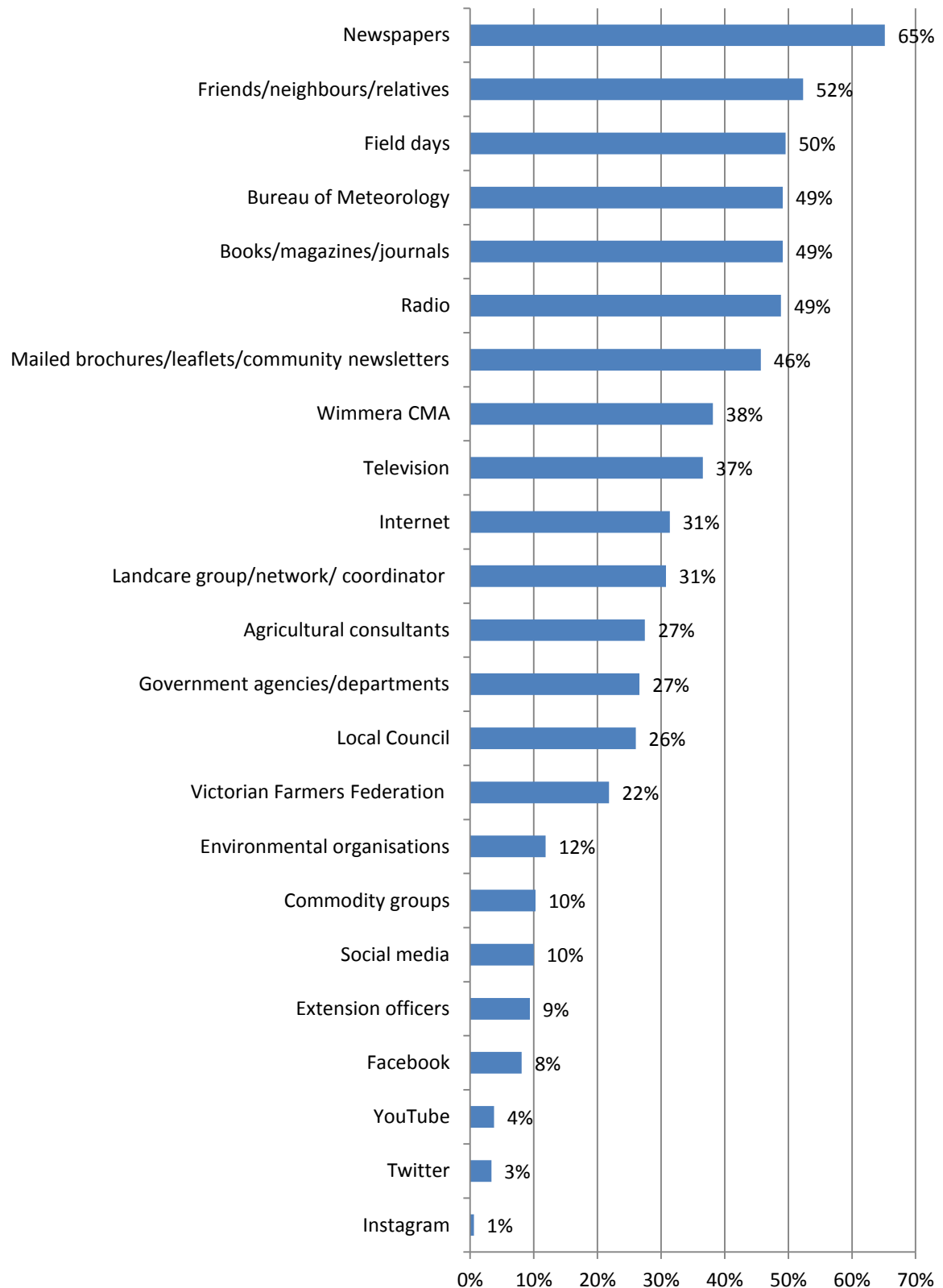


Figure 7 Wimmera 2016 Social Benchmarking Survey: Sources of information about NRM (N=691)

3.6 Occupational identity

Two approaches were used to explore the extent respondents saw themselves as farmers. The first approach was to invite respondents to select one of four options that best described them, from full-time farmer, part-time farmer, hobby-farmer and non-farmer. As indicated in Figure 8, 59% of respondents indicated they were full-time farmers, 19% as part-time farmers, 8% as hobby-farmers and 14% as non-farmers.

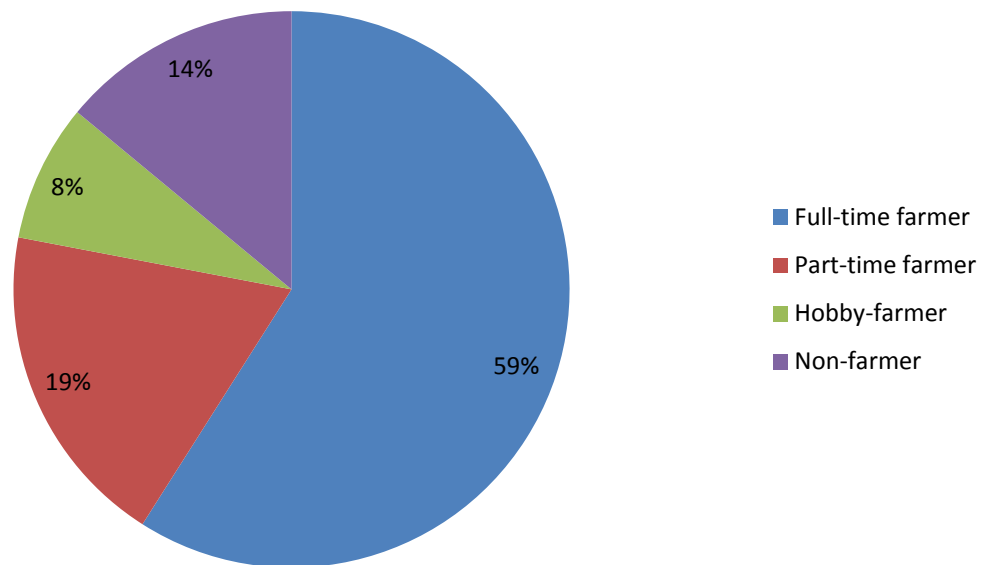


Figure 8 Wimmera 2016 Social Benchmarking Survey: Extent of self-identified occupation as a farmer (n=664, N=691)

The second approach was to employ Groth's F-COIC construct that utilises 12 items (11 for this study) (Groth et al., 2016). The F-COIC produced a reliable and valid scale with an overall Cronbach's alpha (the statistical test used to test for reliability) of 0.914, above the suggested threshold score of 0.8 indicating reliability [Table 23].

Summing the scores for each item produces an F-COIC score for each respondent. A higher F-COIC score indicates a stronger farmer identity.

Analysis undertaken by Dr Groth using F-COIC scores identified a typology of three clusters: full-time farmers (63%, n=411), part-time farmers (29%, n=187), and non-farmers (9%, n=57). This is different to the four-cluster typology identified in the North Central CMA (full-time, part-time, hobby and non-farmers).

Using the F-COIC also provided a slightly different perspective than the approach of using self-declaration to measure occupation. Using the F-COIC there is a similar proportion of full-time farmers (63% using the F-COIC compared to 59%); a much larger proportion of part-time farmers (29% using the F-COIC compared to 19%); and a much

smaller proportion of hobby and non-farmers (8% using F-COIC compared to 22%). It seems that some of those who self-identified as hobby-farmers, and perhaps some of the non-farmers, are really part-time farmers.

Table 23 Wimmera 2016 Social Benchmarking Survey: Scores for the 11 items comprising the F-COIC scale measuring extent of farmer identity (n=662, N=691)

Occupational identity	n	Mean	Agree	Neutral	Disagree	NA
In general, I'm glad that I'm an agricultural producer	660	4.3	82%	8%	2%	8%
Intergenerational farms/farmers are an important part of this area's history	660	4.2	86%	10%	2%	2%
I very much identify with agricultural producers in my district	662	4.1	79%	14%	4%	3%
What happens to agricultural producers as a whole will have an effect on what happens in my life	661	4	75%	16%	5%	3%
I have a strong sense of belonging or attachment to other agricultural producers	660	3.7	61%	27%	8%	5%
Being a part of the larger group of agricultural producers is an important reflection of who I am	660	3.6	54%	29%	9%	8%
When someone criticises agricultural producers, it feels like a personal insult	660	3.6	57%	25%	14%	4%
When I think of myself as an agricultural producer, thoughts, feelings, and images about my past, present and future in the agricultural industry flood my mind	655	3.6	54%	26%	13%	7%
In general, others value agricultural producers	652	3.5	54%	27%	16%	2%
My regular social contacts and relationships are with other agricultural producers	659	3.5	51%	31%	14%	3%
My agricultural production activities distinguish me from those who are not agricultural producers	655	3.4	44%	33%	15%	8%
I consider myself to be a typical agricultural producer in this area	662	3.4	52%	19%	22%	7%
I embody most of the characteristics that people associate with an agricultural producer	654	3.3	45%	29%	19%	7%
Not being able to identify myself as an agricultural producer would severely undermine my sense of who I am	658	3	33%	29%	31%	6%
It would be costly and painful to abandon my agricultural identity because the majority of my contacts and relationships reinforce this identity	659	3	33%	28%	31%	8%

Using Wimmera SBS data Dr Groth has prepared profiles of the three landholder clusters she identified. The descriptions provided draw upon analyses using other survey data, including that summarised in Table 24.

A key finding from Dr Groth's analysis of the 2014 North Central SBS data was that part-time farmers are more similar to full-time farmers than they are to hobby farmers or non-farmers in that part-time farmers and full-time farmers share a strong focus on agricultural production and the business of farming. Information in the cohort profiles

provided below suggests that this finding also holds for the Wimmera. While there may be a trend to an increasing proportion of rural landholders in Victoria who identify as part-time, hobby and non-farmers, it seems that at this time, this trend is not changing the structure of agriculture across the Wimmera. Of course, there may be subregional differences and these are illustrated in Figure 9 using the F-COIC scores and in Figure 14 using the four categories based on the self-declaration survey item. As expected, median F-COIC scores are lower in the Ararat, Pyrenees and Northern Grampians LGA.

3.6.1 Full-time farmers

This is the largest cluster (63%, n=411) of respondents and they managed almost all (90%) of the farmland. These respondents are proud that they are agricultural producers. Out of all of the clusters, these respondents have more regular social contact with other farmers, spend the most time in on-property work (median of 55 hours/week) and own the largest areas of farm land (median 1,370 ha). These individuals are the most likely to hold strong values related to production and building a viable business, report an on-property profit; be planning for family succession, declare the Wimmera as their principal place of residence (94%), be members of a landcare group; and spend the most amount of time volunteering in the community (mean of 4.63 hrs/week). These respondents are the least likely to accept that rural landholders have a duty of care for biodiversity and the least likely to trust the Wimmera CMA.

3.6.2 Part-time farmers

This cluster is the second to largest cluster with 29% (n=187) of all respondents and they manage 9% of the land. The respondents in this cluster identify as agricultural producers, are more focused on production than conservation or recreation, but are relatively neutral in declaring the importance that a farmer identity plays in their life. Individuals in this cluster socialise with both farmers and non-farmers. These individuals own medium sized properties (median 259 ha) and are typically not engaged full-time in on-property work (median of 15 hours/week). Most (80%) of these respondents report their principal place of residence is within the Wimmera. Individuals in this cluster are also involved in the community (e.g. mean 4.2 hours contributing to voluntary groups).

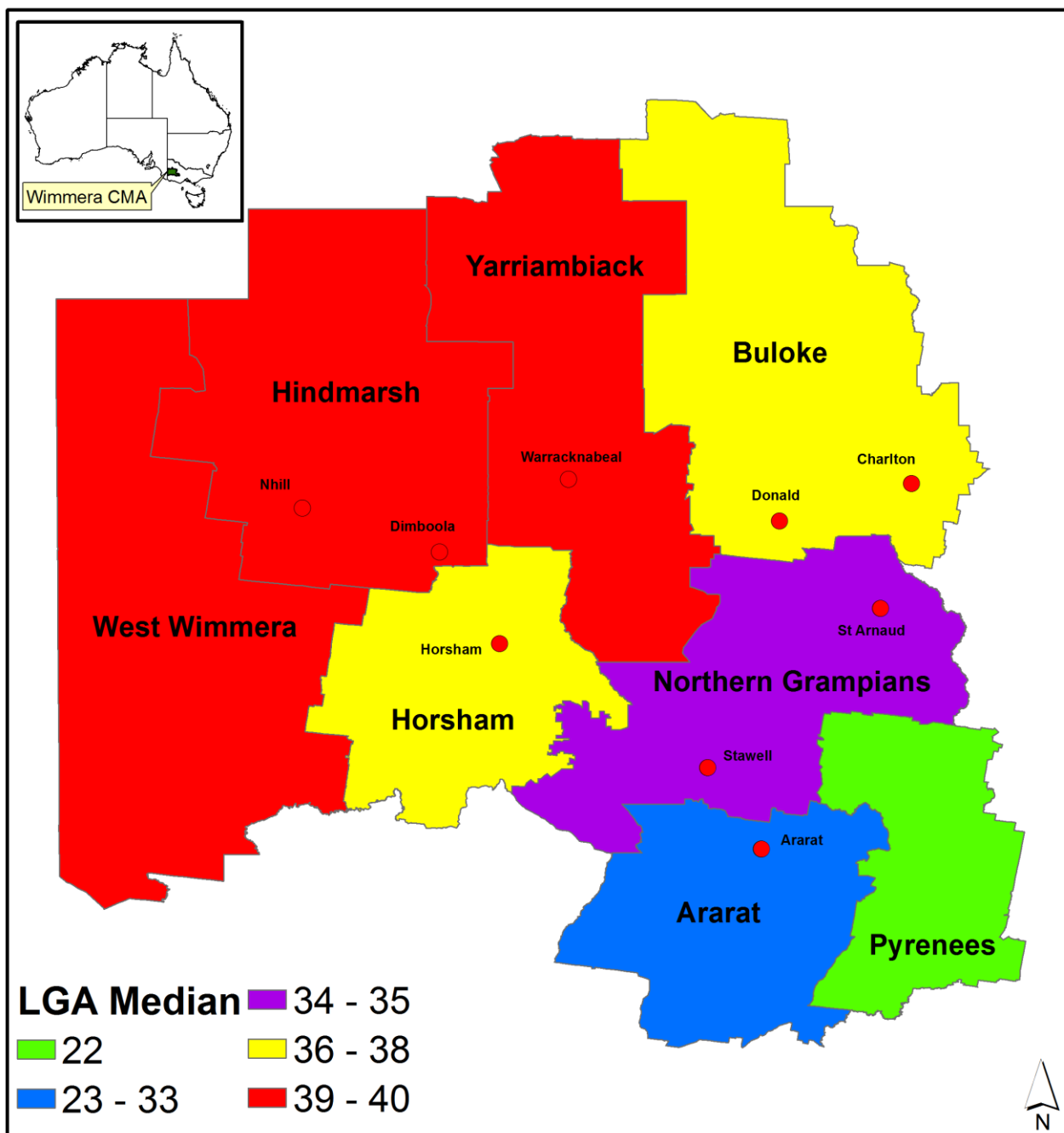
3.6.3 Non-farmers

This cluster contains the smallest number (n=57) and proportion of respondents (9%). The respondents in this cluster own small properties (median 40 ha) and spend limited time working on their property (median 5 hours/week). These individuals have strong environmental values and are least likely to be motivated by economic or production values. These individuals are least likely to report being involved in cropping or sheep for wool enterprises. Consistent with their values, these individuals were more concerned than those in the other cohorts about the potential negative environmental impacts of land management practices (e.g. about nutrient run-off from rural properties affecting water quality, loss of native plants and animals caused by cropping or draining wetlands, and

the loss of paddock trees in their district). These respondents do not see themselves as agricultural producers; do not relate to other agricultural producers in their district; and their regular social contacts are with people who are not farmers. Individuals in this cohort are the least likely to have their principal place of residence in the Wimmera region (only 52% of this cluster did) and the least likely to be members of landcare (5%).

Table 24 Wimmera 2016 Social Benchmarking Survey: Profiles of the 3 cluster F-COIC typology

Item	Full-time farmers	Part-time farmers	Non-farmers
Percent of respondents	411 (63%)	187 (29%)	57 (9%)
Percent of land	90%	9%	1%
Median property size	1370 ha	259 ha	40 ha
Enterprise type	Cropping 87%	Sheep meat 65%	Sheep meat 33%
	Sheep meat 78%	Cropping 59%	Cropping 14%
	Sheep wool 72%	Dryland pasture 67%	Dryland pasture 30%
	Dryland pasture 71%	Sheep wool 53%	Sheep wool 11%
Age	56 yrs	59 yrs	58 yrs
Principal place of residence in Wimmera	94%	80%	52%
Landcare membership	38%	13%	5%
Time spent volunteering	Mean 4.6 hours	Mean 4.2 hours	Mean 2.2 hours



Note: A higher F-COIC score indicates stronger farmer identity.

Figure 9 Wimmera 2016 Social Benchmarking Survey: Median F-COIC scores by LGA (n=655, N=691).

3.7 Knowledge

Knowledge and understanding are important precursors to action and survey respondents were asked to self-assess their knowledge on a range of NRM topics. Self-assessment is an accepted approach to gather this information. For this survey, the response options were no knowledge (1), very little knowledge (2), some knowledge (3), sound knowledge (i.e. sufficient to take action) (4), and very sound knowledge (i.e. can give a detailed explanation) (5). These response options have been employed in other surveys and the approach accepted through peer-review.

Some items address knowledge topics that apply to most rural landholders (e.g. *how to protect and improve the health of native bush areas on properties*) but others are more relevant to landholders engaged in specific types of farm enterprise, such as cropping (e.g. *using online crop simulation tools to respond to changes in seasonal or market conditions*) or who are managing particular assets, such as waterways and wetlands because those assets are on or adjoin their property. Results presented in Table 25 are for all respondents and make no allowance for the relevance of the knowledge topics for respondents. Additional analysis will be undertaken to provide the Wimmera CMA with results relevant to specific enterprise types and environmental assets.

Some items explored topics that have been the focus of NRM for some years, other items addressed topics that have more recently been addressed as important knowledge gaps or related to new technologies. It was therefore expected that the level of self-reported knowledge would vary across the topics. That variation is illustrated in Table 25, with 60% of respondents indicating they had sound knowledge for *Grazing or cropping strategies to maintain ground cover to minimise soil erosion* compared to 13% for *Using online crop simulation tools to respond to changes in seasonal or market conditions*. Whilst variation was expected, it seems there is considerable scope to increase knowledge across most topics (only 1 topic with >50% rating their knowledge as sound), assuming that sound knowledge is the requirement for action. In the table below, results for analyses conducted for respondents with properties located adjacent to rivers and streams are also presented for the river and streams related topics.

Table 25 Wimmera 2016 Social Benchmarking Survey: Self-assessed knowledge of NRM (N=691)

Knowledge	n	Mean	Sound/ very sound knowledge	Some knowledge	No/ very little knowledge	NA
Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion	655	3.7	60%	25%	10%	6%
The benefits of retaining native vegetation on properties	654	3.4	46%	41%	12%	2%
The use of stock containment areas to manage stock in drier seasons	655	3.4	47%	29%	14%	9%
How to use soil sample results to guide fertiliser applications	654	3.3	44%	29%	20%	7%
The implications for soil moisture of applying fertiliser to crops or pasture post establishment	654	3.1	39%	26%	26%	9%
The ability of perennial vegetation to prevent water tables rising	651	3.1	34%	38%	23%	4%
The role of wetlands in filtering water entering rivers/streams	652	3.1	29%	44%	22%	5%
How to protect and improve the health of native bush areas on properties	651	3.1	31%	43%	22%	4%
How to prepare a farm or property plan that allocates land use according to different land classes	654	3.1	39%	31%	25%	5%
How to identify local plant species including weeds in the understorey vegetation	658	3	27%	44%	26%	3%
How to protect and improve the health of native vegetation/rivers/streams/wetlands	655	2.9	27%	41%	28%	5%
<i>River and streams respondents:</i>	187	3	28%	44%	25%	3%
The value of woody debris such as snags in rivers/streams/wetlands	652	2.7	18%	39%	36%	6%
How to use information from soil moisture probes to make decisions about crop or pasture selection at the start of the growing season	656	2.6	21%	28%	40%	11%
The nature of native vegetation cover in the Wimmera before European settlement	657	2.6	17%	38%	42%	3%
The severity of gully erosion across the Wimmera	652	2.5	13%	33%	48%	7%
The area of land (hectares) with saline affected vegetation in your district	647	2.4	9%	32%	52%	7%
Aboriginal heritage values in the Wimmera region	653	2.3	12%	28%	55%	5%
Location of the four nationally significant ecological communities on private land in Wimmera region (i.e. Buloke woodlands, Grey box grassy woodlands, Murray grasslands, Seasonal herbaceous wetlands)	650	2.2	10%	25%	60%	5%
Using online crop simulation tools to respond to changes in seasonal or market conditions	651	2.2	13%	22%	54%	11%
Organisations or people to contact for advice about Aboriginal heritage in Wimmera	655	2.2	14%	22%	59%	5%

3.8 Trust and trustworthiness

The survey included two items exploring trust and three items exploring judgements about the trustworthiness of the Wimmera CMA. The topic of interest was the management of rivers, streams and wetlands. A filter question asked if respondents were aware of the Wimmera CMA. Those who indicated they were aware of the Wimmera CMA (85% said Yes) were then asked to complete the five items by selecting from one of six response options: strongly disagree, disagree, neutral, agree, strongly agree and don't know/not applicable. The responses for strongly disagree and disagree have been combined and responses for agree and strongly agree have been combined for the presentation of data in Table 26. As explained, the focus topic was rivers, streams and wetlands. Given the environmental and recreational significance in the Wimmera of this asset class, we have assumed that most respondents who are aware of the Wimmera CMA will have some knowledge of this topic. Of course, respondents could select the 'don't know/not applicable' response option. In the table below, results for analyses conducted for respondents with properties located adjacent to rivers and streams are also presented for the river and streams related topics. In all instances, respondents with properties adjacent to rivers and streams rated the Wimmera CMA more favourably.

Survey results indicate that respondents are more likely to agree than disagree that they can trust the Wimmera CMA in relation to the management of rivers, streams and wetlands [Table 26]. Respondents were more than twice as likely to have a positive view of the Wimmera CMA for the provision of advice (i.e. 39% agree compared to 15% disagreed) but the extent of favourable judgements declined for the provision of financial assistance (i.e. 26% agree compared to 17% disagreed).

Slightly more than a third of the respondents (i.e. 35%-40%) said they held a neutral view about whether they could trust the Wimmera CMA on this topic. This result may be a response to a mix of positive and negative experiences with the Wimmera CMA or simply reflect limited exposure to the Wimmera CMA. Similar levels of neutral or unsure responses have been recorded in our previous research exploring trust in a regional NRM organisation in Victoria (Curtis & Mendham, 2015). In our previous research we have suggested this large neutral cohort represents an opportunity for the regional body to build trust. However, regional NRM bodies have relatively small budgets and limited staff and are best advised to focus on building trust amongst their key partners, many of whom are not rural landholders (e.g. Non-government organisations) and those they directly engage or seek to engage in programs addressing priority assets

We therefore compared assessments of trust amongst respondents we thought had direct experience of the Wimmera and those less likely to do have done so. We did this by comparing those who had used the Wimmera CMA as a source of information for NRM and those who had not; those who had received government support in the past 5 years and those who had not; and those involved and not involved in landcare. As indicated in Table 28, those who used the Wimmera CMA as a source of information were more likely to trust the CMA and express positive judgement about the trustworthiness of the Wimmera CMA. There was not a significant relationship between landcare participation

and assessments of trust and trustworthiness. On the other hand, those who had received government support were significantly more likely to trust the Wimmera CMA for advice (but not for providing financial assistance); and significantly more likely to have a positive view of the trustworthiness of the CMA for the item measuring ability [Table 28]. These are important findings, but it is unclear whether engagement with the CMA is building trust or that those who already trust the CMA are the ones using the CMA as a source of information or seeking/accepting financial assistance.

A key way to build trust is to ensure that an organisation is seen as trustworthy across the dimensions of ability (being very good across key roles), integrity (acting in ways consistent with your values) and benevolence (responding to other's needs). Survey results indicate that positive assessments of trustworthiness outweigh negative assessments by about 2 to 1 (i.e. from 36% to 41% positive compared to 16% to 21% negative [Table 26]. Those judgements were most favourable for the item focused on the ability dimension of trustworthiness (i.e. 41% compared to 16%). About a third of respondents indicated they had a neutral assessment of the trustworthiness of the Wimmera CMA.

Trust and trustworthiness judgements about an organisation are influenced by the nature of interactions with the organisation but are also shaped by individual's predisposition to trust others. Three items explored predisposition to trust [Table 27]. Most of those returning a survey responded to these items (i.e. about 100 more than responded to the trust and trustworthiness items). The results suggest that most respondents are not predisposed to trust others. For example, 65% agreed that *You can't be too careful when dealing with people*; 62% agreed that *One must be alert to avoid being taken advantage of*; and 48% agreed that *People are almost always interested in their own welfare* [Table 27]. About a quarter of respondents were neutral for each item, but very small proportions disagreed (from 6% to 23%) with these statements. Similar results occurred in the recent SBS in the North Central region (Curtis & Mendham, 2015).

Establishing trusting relationships has long-term benefits for organisations and their staff. The results for this topic suggest that the Wimmera CMA is succeeding in building trust amongst rural landholders. However, in this survey about 20% of respondents said they don't trust the Wimmera CMA (in relation to the management of rivers, streams and wetlands). With evidence that about half of all rural landholders are not predisposed to trust others, the CMA needs to consider every engagement with a rural landholder (and their other partners) as an opportunity to build trust. The three dimensions of trustworthiness (i.e. ability, integrity and benevolence) provide a useful structure for the Wimmera CMA to plan and evaluate engagement with landholders (and other stakeholders).

Table 26 Wimmera 2016 Social Benchmarking Survey: Assessments of Wimmera CMA trust and trustworthiness (n= 557-560; N=691)

Trust and trustworthiness	n	Mean	Agree	Neutral	Disagree	NA/ don't know
I can rely on the Wimmera CMA to provide useful advice about river/stream/wetland management (Intention to trust: advice)	558	3.3	39%	35%	15%	11%
<i>River and stream respondents:</i>	156	3.4	45%	35%	12%	8%
I can rely on the Wimmera CMA to provide appropriate financial assistance for river/ stream/wetland management (Intention to trust: financial assistance)	557	3.1	26%	40%	17%	17%
<i>River and stream respondents:</i>	156	3.2	35%	41%	13%	11%
The Wimmera CMA is very knowledgeable about river/stream/wetland management (Trustworthiness: ability)	560	3.3	41%	34%	16%	9%
<i>River and stream respondents:</i>	156	3.3	44%	38%	13%	6%
The Wimmera CMA keeps landholders' interests in mind when making decisions about river/stream/wetland management (Trustworthiness: benevolence)	560	3.2	38%	33%	21%	9%
<i>River and stream respondents:</i>	157	3.3	45%	30%	19%	6%
Sound principles guide Wimmera CMA decisions about river/stream/wetland management (Trustworthiness: integrity)	558	3.2	36%	36%	19%	9%
<i>River and stream respondents:</i>	156	3.3	40%	38%	16%	6%

Table 27 Wimmera 2016 Social Benchmarking Survey: Predisposition to trust (N=691)

Disposition to trust	n	Mean	Agree	Neutral	Disagree	NA/ don't know
You can't be too careful when dealing with people	660	3.8	65%	27%	6%	2%
One has to be alert or someone is likely to take advantage of you	658	3.7	62%	27%	10%	1%
People are almost always interested only in their own welfare	661	3.3	48%	28%	23%	1%

Table 28 Wimmera 2016 Social Benchmarking Survey: Significant relationships between trust and trustworthiness items and three measures of the extent of interaction with the Wimmera CMA (n=543-662, N=691)

Trust and trustworthiness and predisposition to trust	Wimmera CMA information source (Yes compared to No)	Landcare membership (Yes compared to No)	Received gov't funding last 5 years (Yes compared to No)
I can rely on the Wimmera CMA to provide useful advice about river/stream/wetland management (Intention to trust: advice)	+	ns	+
I can rely on the Wimmera CMA to provide appropriate financial assistance for river/ stream/wetland management (Intention to trust: financial assistance)	+	ns	-
The Wimmera CMA is very knowledgeable about river/stream/wetland management (Trustworthiness: ability)	+	ns	+
The Wimmera CMA keeps landholders' interests in mind when making decisions about river/stream/wetland management (Trustworthiness: benevolence)	+	ns	ns
Sound principles guide Wimmera CMA decisions about river/stream/wetland management (Trustworthiness: integrity)	+	ns	ns

Note: + significant positive relationship); - significant negative; ns no significant relationship

3.9 Land use and enterprise mix

Broadacre cropping was the most common landuse (72%) and almost all cropping and pasture-based enterprises were undertaken using dryland farming rather than irrigation (30 irrigators). Sheep for meat was the second most common land use (62%). Only 12% of respondents had a beef enterprise [Table 29].

Table 29 Wimmera 2016 Social Benchmarking Study: Land use and enterprise mix (N=691)

Land use	n	Percent yes	Median
Broadacre cropping	496	72%	600 ha
Sheep for meat	428	62%	-
Dryland pasture	423	61%	262 ha
Wool	372	54%	-
Beef cattle	84	12%	-
Farm forestry	38	5%	-
Intensive livestock	34	5%	-
Other livestock	34	5%	-
Irrigated pasture/cropping	30	4%	138 ha
Horticulture	18	3%	-
Carbon farming	15	2%	-
Farm based tourism	10	1%	-
Viticulture	8	1%	-
Dairy	2	0%	-

3.10 Uptake of CRP

It is important to acknowledge that the objective of NRM is unlikely to be 100% uptake of CRP. For example, some properties will not be located in priority areas for NRM investment. It is also unlikely that CRP will need to be implemented on every property to achieve NRM condition targets for specific environmental assets. In some instances, the cost of action may outweigh the benefits expected. There are also likely to be examples where remedial action has already been implemented. It is also unlikely that NRM organisations will have sufficient resources to invest in supporting every landholder with a priority asset to implement CRP at any one time, or even over a period of some years. The key is that NRM organisations are able to make these decisions, including identifying the CRP to be implemented and the extent of implementation required over time to accomplish condition targets.

There were 12 survey items exploring the implementation of CRP (Tables 30-32). Some items sought information for the last three years, others for the full period of management. Some items were cropping or grazing specific, while others applied to all or most landholders. For items which were cropping or grazing specific, only respondents who indicated they were involved in those land uses were included in the analyses. In the tables below, the percentage of respondents who indicated that they had undertaken each CRP is provided as well as the median amount of work undertaken (where available) for those who had undertaken the practice. Some CRP are more relevant to specific environmental assets (e.g. fencing of rivers, streams, wetlands). In the table below, results for analyses conducted for respondents with properties located adjacent to rivers and streams are also presented for the river and streams related topics.

The SBS provides the Wimmera CMA with the capacity to benchmark and then monitor the implementation of specific CRP that have been identified as key outcomes for specific programs. To do that effectively requires the same or similar items to be included in the SBS. There are some measures that have been repeated and those comparisons will be provided in the Evaluation report that will be prepared during 2017.

The relevance of the results presented in Tables 30-32 will vary for different readers. Some of the results that appear to be of interest are that 45% of croppers had used minimum tillage; 31% of croppers had used precision farming techniques; 34% of graziers had established stock containment areas; 17% of graziers had established off-stream watering points in the past three years; 43% of all respondents had established pasture to take advantage of available soil moisture; and 31% of all respondents were actively managing rabbits in areas of native vegetation. These and other data suggest that respondents are adapting to changes in seasonal conditions, adopting new technologies, and implementing substantial environmental work.

Table 30 Wimmera 2016 Social Benchmarking Survey: Uptake of current recommended practices (past three years), cropping specific (n=204 to 313, N=502)

Activities undertaken	Yes	Median
Maximum area of crop sown in any year using adaptive no-till techniques (last 3 years)	29%	600 ha
Maximum area of crop sown in any year using minimum tillage techniques (last 3 years)	45%	450 ha
Used precision farming techniques for cropping (last 3 years)	31%	1000 ha

Table 31 Wimmera 2016 Social Benchmarking Survey: Uptake of current recommended practices (last 3 years or full period of management), grazing specific (n=89-470, N=503)

Activities undertaken	Yes	Median
Established stock containment areas to manage stock (last 3 years)	34%	-
Length of fencing erected to manage stock access to rivers/streams/wetlands (last 3 years)	17%	2 km
<i>River and stream respondents (n=57)</i>	36%	3 km
Length of fencing erected to manage stock access to rivers/streams/wetlands (full period of management)	24%	3 km
<i>River and stream respondents (n=71)</i>	46%	5 km
Area of native bush/grasslands fenced to manage stock access (last 3 years)	13%	10 ha
Area of native bush/grasslands fenced to manage stock access (full period of management)	20%	10 ha
Number of off-stream stock watering points established (last 3 years)	17%	5
<i>River and stream respondents (n=62)</i>	36%	4
Number of off-stream stock watering points established (full period of management)	21%	6
<i>River and stream respondents (n=62)</i>	41%	5

Table 32 Wimmera 2016 Social Benchmarking Survey: Uptake of current recommended practices (last 3 years or full period of management) (n=46-285, N=691)

Activities undertaken	Yes	Median
Sowed pastures to take advantage of available soil moisture (last 3 yrs)	43%	-
Area of trees and shrubs planted (including direct seeding) (last 3 yrs)	22%	3 ha
Area of trees and shrubs planted (including direct seeding) (full period of management)	41%	7.5 ha
Area of native vegetation/rivers/streams/wetlands where actively managing rabbits (last 3 yrs)	31%	20 ha
<i>River and stream respondents (n=157):</i>	36%	20ha
Area of native vegetation/rivers/streams/wetlands where actively managing weeds (last 3 yrs)	29%	20 ha
<i>River and stream respondents (n=157):</i>	35%	20ha
Area of gully erosion addressed (last 3 yrs)	7%	5 ha
Area of gully erosion addressed (full period of management)	11%	5 ha

3.11 Flexible and adaptive farmers

The Wimmera CMA has decided to move beyond CRP as a key intermediate outcome of their programs and explore the extent farmers are “flexible and adaptive”. That is, they want to know whether farmers are responding to seasonal and market conditions by making changes in their enterprises (i.e. land use and management). The assumption being that farmers who are more flexible and adaptive are more effectively responding to the challenges they face, are more likely to remain profitable and to be good

environmental stewards (in part because they are profitable). For the 2016 survey, the CSU research team and Wimmera CMA staff focused on ways to measure the extent farmers are flexible and adaptive. The long-term objective is to identify the attributes of those who are more/less flexible and adaptive and to use that, and other knowledge, to support farmers to become more flexible and adaptive managers. As is highlighted below, this is a topic for further research.

Working with Wimmera CMA staff, the research team identified 10 items [Table 33] to explore the extent farmers (i.e. not hobby farmers or non-farmers) were flexible and adaptive over the previous three years, a period where there has been variation in seasonal and market conditions. Five items focused on cropping and five items were relevant to pastures and therefore, to graziers (and perhaps to croppers who produce hay or silage for sale rather than for grazing their own animals). For that reason we have relied on croppers who are not graziers or fodder producers to select the not applicable response option for items for the pasture items. The results in Table 33 suggest that has happened (e.g. about 25% selected the not applicable option for pasture topics). For this exploratory research the respondents were asked to indicate if they had made a 'substantial change' or 'some change' for a large or small part of the property (or no change). The terms 'substantial' and 'some' were not defined in the survey, allowing the respondent to interpret these terms with respect to each management action. With the 2016 survey data and follow-up interviews with landholders it should be possible to provide a definition of these qualitative terms for the next survey.

The majority of farmers had made some, albeit small change. However, it is important to acknowledge that incremental change is often a sensible strategy and that small steps can lead to substantial change over time. The first point to make is that between 26% and 48% of respondents had made no change across the 10 management actions over the three years. This stability is also reflected in the mean scores for the ten management actions which vary from 1.8 to 2.3 out of a possible 5 points. Indeed, few respondents indicated they had made a substantial change for a large or small part of their property for any of the 10 management actions (from 4% to 12%). Respondents were more likely to say they had made some change for a substantial part of their property (from 9% to 19%). There is evidence of substantial change amongst a substantial proportion (i.e. at least 30%) of respondents for two management actions: the mix of crops sown; and the time of year of sowing crops.

Given that most crops are annuals and pastures are often perennials, we expected there to be more change in the management actions for crops. An examination of the mean scores suggest that this is the case in that, based on the extent of change, four of the top five management actions are crop focused (stock numbers is the only exception). A good comparison is that there was substantial change by 30% of respondents for the mix of crops sown but only 13% for the mix of pastures sown.

Table 33 Wimmera Social Benchmarking Survey: Assessing extent farmers are flexible and adaptive managers (last 3 years) (full-time and part-time farmers only) (n= 507- 517, N=691)

Approach to property management	Extent of change in property management actions							NA
	n	Mean	Substantial change for a large part of the property	Substantial change for a small part of the property	Some change for a substantial part of the property	Some change for a small part of the property	No change from one year to the next	
The mix of crops sown	516	2.3	7%	5%	18%	36%	26%	8%
Stock numbers	517	2.3	9%	5%	14%	32%	27%	13%
The time of year sowing crops	517	2.2	10%	2%	19%	26%	36%	8%
Fertiliser application rates for crops	516	2.1	7%	3%	19%	24%	39%	7%
Application of herbicides after crop establishment	515	2	6%	3%	14%	26%	40%	10%
The time of year sowing pastures	512	1.9	4%	3%	9%	22%	37%	26%
The method of establishment of crops	515	1.9	7%	3%	10%	24%	48%	9%
Fertiliser application rates for pastures	508	1.9	5%	3%	9%	22%	38%	23%
The mix of pastures sown	507	1.8	2%	2%	9%	26%	33%	29%
The method of establishment of pastures	509	1.8	3%	2%	10%	20%	40%	25%

3.12 Background social and farming variables

In this section we provide a summary of data for other survey items. These items include topics that relate to what is often termed the social structure of a region, such as property size, extent of absentee/resident property ownership and on and off-property income. Information summarised in Table 34 provides a summary for the region as a whole. There are important differences in some of these topics across the LGA and that information is provided in the next section.

The data presented in Table 34 suggests that Wimmera landholders have long experience of farming in their region and long established networks. For example, the median age

was 57 years, the median length of residence was 50 years, 86% had their principal place of residence in the Wimmera region, 33% were members of landcare and 28% members of a commodity group and 79% contributed their time to a voluntary organisation.

There is also evidence of landholders adopting strategies to remain profitable. For example, 40% own multiple properties and 38% leased land from others. There is also evidence of respondents seeking information through field days (69% in past year) and employing farm consultants such as agronomists (55% in the past year). At the same time, the extent of the challenge to remain profitable is highlighted by evidence that only 57% reported an on-property profit (median \$45K) and the relative importance of off-property income which was reported by 69% for a median of \$45K. Perhaps in response to that challenge, 41% reported paid off-property work with a median of 130 days. Information about equity levels suggests that few landholders have low equity levels. For example, 85% of respondents had 60% or more equity in their property and only 6% had 40% or less equity.

Forty-percent of respondents indicated that property management decisions were made by them and their partner. Another 32% indicated that multi-generations of their family were involved in decision making. A quarter of respondents were the sole decision makers, while three percent enlisted a property manager in decision making [Figure 12].

Twenty-eight percent of respondents (n=195) indicated they had prepared a property management plan. Sixteen percent of respondents indicated that part of their property was under a conservation covenant (n=108).

Table 34 Wimmera 2016 Social Benchmarking Study: Social and farming variables

Item	n	Percent	Median
Property size	642	-	765 ha
Land leased from others	660 (222)	38%	400 ha
Land leased by others	664 (162)	27%	260 ha
Multiple property ownership	666	39%	3 properties
Irrigated in 2015	670	4%	5ML surface water (n=3) 300ML ground water (n=20)
Principal place of residence within Wimmera CMA region	673	86%	-
Length of residence in Wimmera	631	-	50 years
Male	673	86%	-
Age	642	-	57 years
Attended field days/farm walks/demonstrations in the past 12 months	673	69%	-
Completed a short course relevant to property management in past 5 years	674	40%	-
Hours/week on farming/property related activities over the past 12 months	640	94%	48 hours
Days/year that you were involved in paid off-property work in the past 12 months.	576	41%	130 days
Hours/week spent attending activities for any voluntary groups in the past 12 months	602	79%	3 hours
Utilised a farm consultant (e.g. agronomist) in the last 12 months	668	55%	-
Utilised a contractor for any aspect of property management in the last 12 months	665	48%	-
On property profit	653	57%	\$40-\$50,000
Off property profit	652	69%	\$40-\$50,000
Level of equity	378	60% > 80% equity 6% < 40% equity	
Member or involved with a local commodity group	664		28%
Member or involved with a local Landcare group	664		33%
Received financial support through federal or state government programs or Wimmera CMA provide for on property work in the past 5 years. If Yes, was this as:	659		22%
Part of a community grant	32		22%
A specific grant to you as a landholder	127		88%

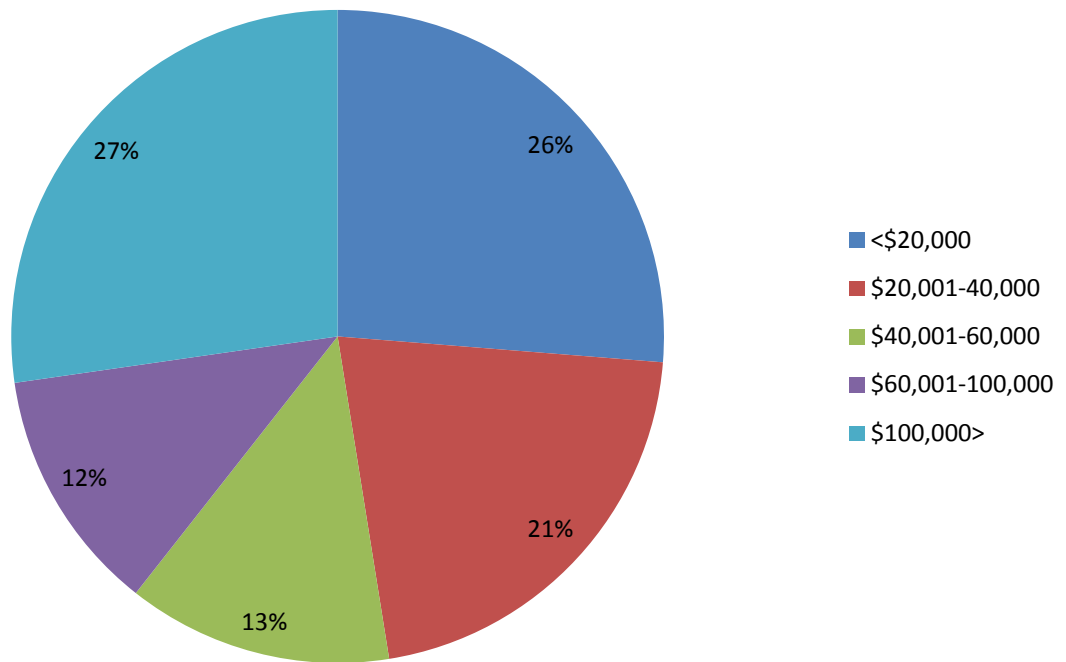


Figure 10 Wimmera 2016 Social Benchmarking Survey: Net on property profit (n=353, N=691)

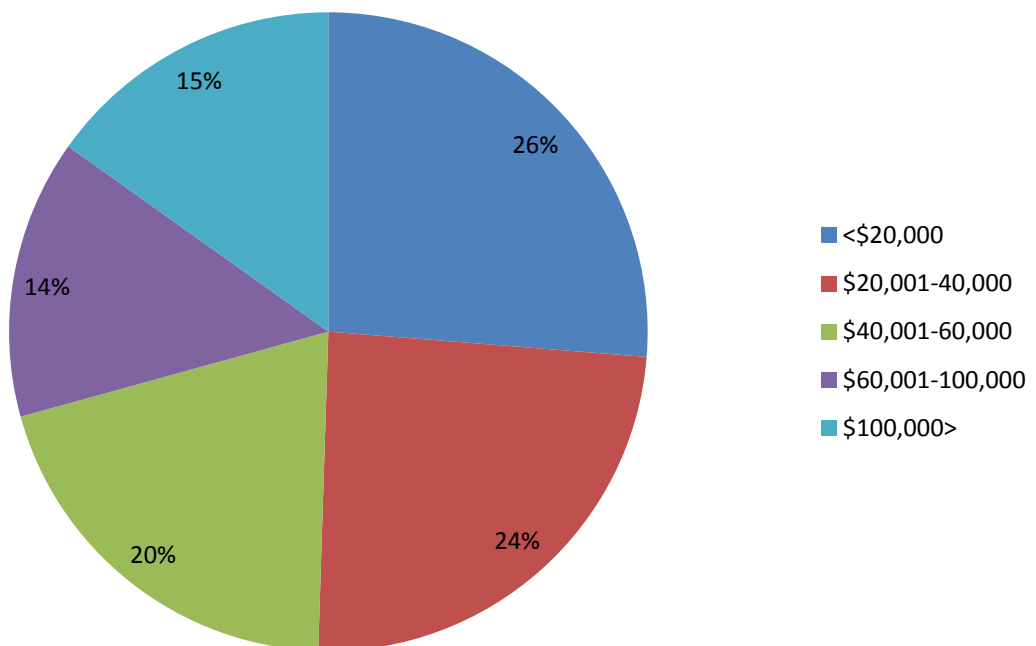


Figure 11 Wimmera 2016 Social Benchmarking Survey: Net off property profit (n=378, N=691)

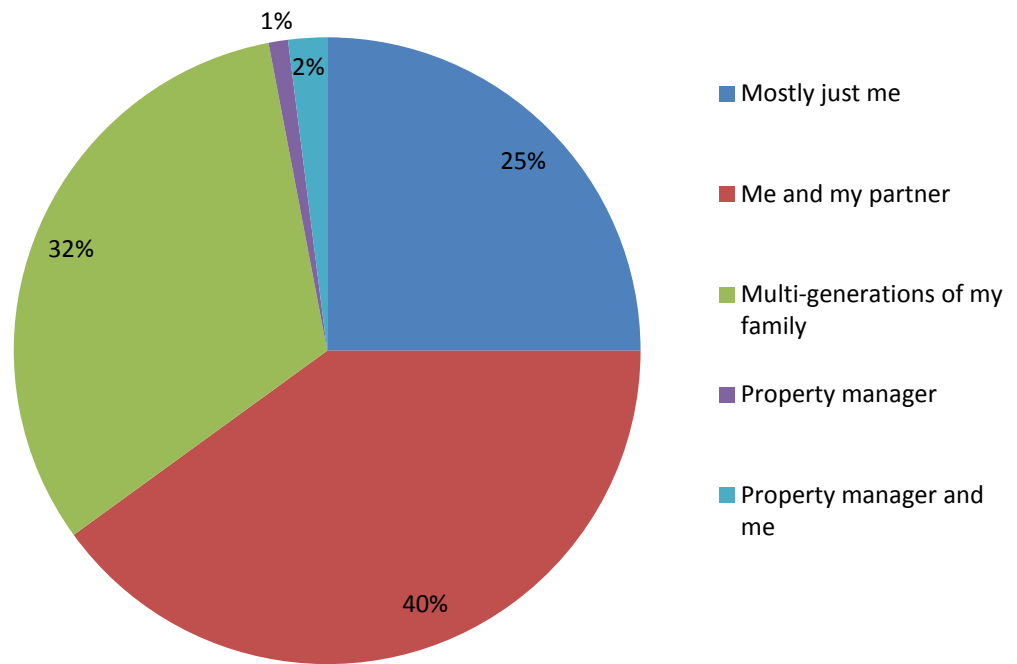


Figure 12 Wimmera 2016 Social Benchmarking Survey: Participants in decision making (n=682, N=691)

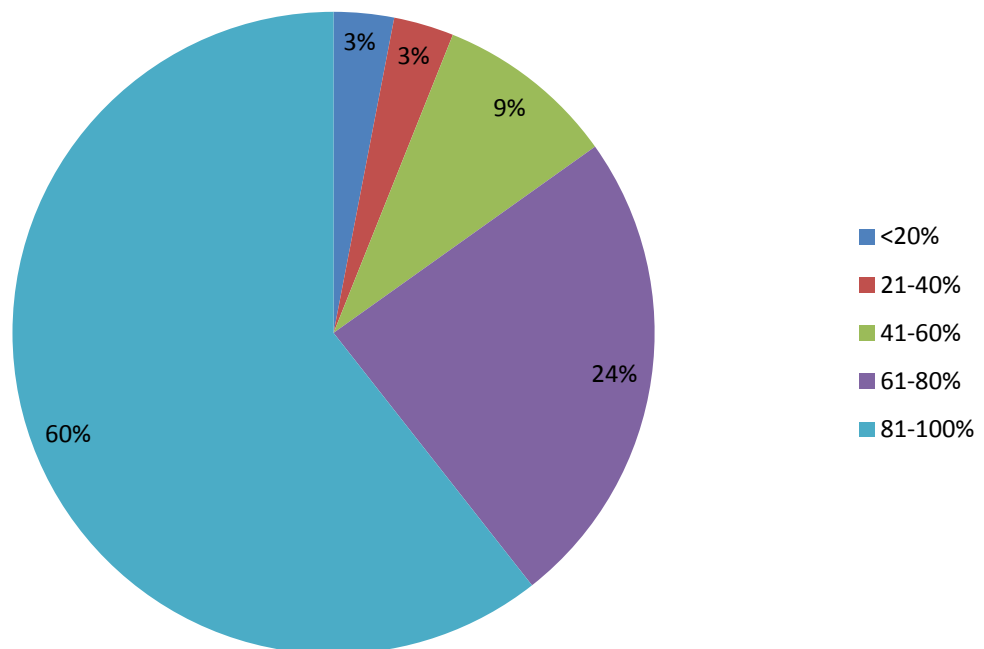


Figure 13 Wimmera 2016 Social Benchmarking Survey: Level of equity, 2016 (n=378, N=691)

4 COUNCIL (LGA) PROFILES

The regional summaries for each topic that have been presented so far are useful, but can mask important subregional differences. In this section, we present subregional summaries (in this case, at the LGA level) which are useful for practitioners operating in the field.

Working with Wimmera CMA staff, we identified a range of topics for inclusion in the LGA profiles. The profiles include information that will be useful for practitioners seeking to engage with landholders in an area, such as key issues of concern, values, occupation, levels of knowledge and confidence in CRP. We have also included a number of items relevant to the Carbon Ready Plan.

Comparisons between the LGA for significant differences on each variable were conducted [Table 36]. Please note that where a significant difference is identified, that difference may be between many or only a few of the LGA (the specific differences have not been reported here) [Table 36].

In Figure 14 we have shown the different proportion of full-time farmers, part-time farmers, hobby-farmers and non-farmers across the LGA (i.e. based on the survey item asking respondents to select one of four farmer-types). Using this information (as well as the map of median F-COIC scores [Figure 9]), it is possible to identify a change in the social structure between the south-east Wimmera and remaining areas. For example, Ararat, Pyrenees and the Northern Grampians LGA have fewer full-time farmers and greater proportions of the remaining cohorts. Other data in the LGA profiles provided below reflect these differences in occupational identity with differences in the issues of concern, values and beliefs between these areas. A comparison of the Northern Grampians and Yarriambiack LGA [Table 35] illustrates the extent and nature of that change in social structure.

Table 35 Wimmera 2016 Social Benchmarking Survey: Comparison of the social structure of Northern Grampians (n=89) and Yarriambiack (n=96) LGA

LGA comparison	Northern Grampians	Yarriambiack
Property size	378 ha	1290 ha
Occupational identity	Full-time farmer: 39% Part-time farmer: 26% Hobby farmer: 15% Non-farmer: 19%	Full-time farmer: 67% Part-time farmer: 14% Hobby farmer: 1% Non-farmer: 18%
Top 3 attached values	<i>Being able to pass the property on to others in better condition: 87%</i> <i>The environment on my farm sustains life for many different plants and animals: 79%</i> <i>A great place to raise a family: 78%</i>	<i>Being able to pass the property on to others in better condition: 91%</i> <i>Sense of accomplishment from building/maintaining a viable business: 90%</i> <i>An important source of household income: 89%</i>
Off property income	76% (\$40-50,000)	73% (\$30-40,000)
On property income	48% (\$30-40,000)	56% (\$50-60,000)
Landcare membership	38%	34%
Commodity group membership	32%	43%
Land use	Sheep for meat: 77% Sheep for wool: 70% Dryland pasture: 67%	Broadacre cropping: 91% Sheep for meat: 57% Sheep for wool: 50%
Top issue of concern	District: <i>Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 76%</i> Property: <i>Impact of drought and/or changing rainfall patterns on property viability: 82%</i>	District: <i>Reduced opportunities for recreation as lakes dry out: 66%</i> Property: <i>Impact of drought and/or changing rainfall patterns on property viability: 86%</i>

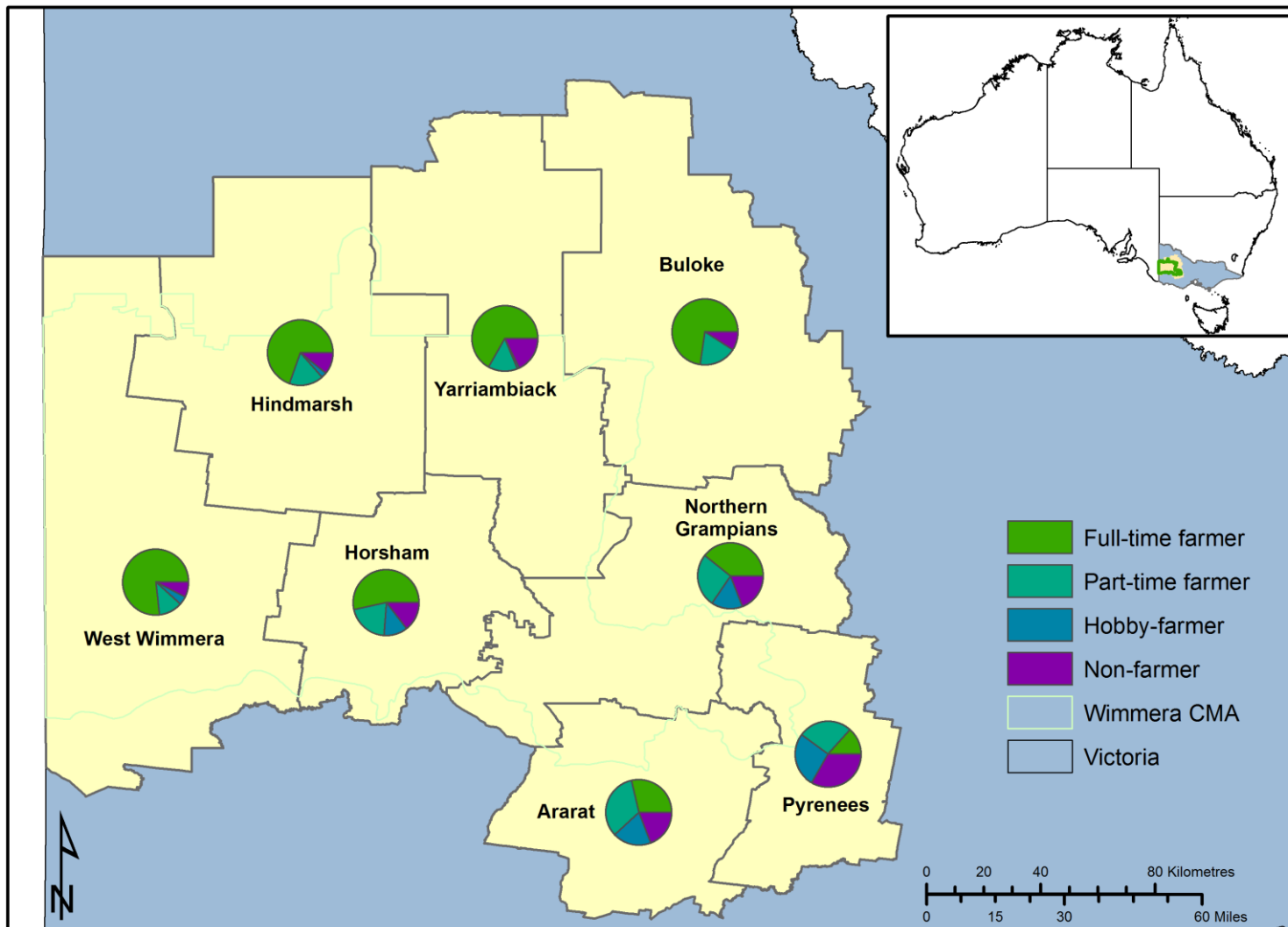


Figure 14 Wimmera 2016 Social Benchmarking Survey: Self-declared occupational identity (full-time, part-time, hobby and non-farmers) across the LGA

Table 36 Wimmera 2016 Social Benchmarking Survey: Significant differences across the LGA

Topic	Item
Background social and farming variables	Property size
	Occupational identity
	Years resided in Wimmera
	Age
	Hours worked on property
	Days worked off property
	Lease land from others
	Land leased by others
	Multiple property ownership
	Place of residence in Wimmera
	% Male respondents
	Used farm consultant
	Used farm contractor
	On property income
	Off property profit range
Long term plans	All or most of the property will be share farmed
Attended field days	
Member of landcare	
Received government support	
Involvement in whole farm planning	
Stage of completion in succession planning	
Participation in decision making for the property	
Concern about issues	Crop weed resistance to herbicides
	Risk to life and property from wild fires
	Decline in soil health (e.g. declining fertility or structure)
	Reduced opportunities for recreation as lakes dry out
	Loss of paddock trees
Attached values	Farming practices contributing to erosion
	The environment on my farm sustains life for many different plants and animals
	An important source of household income
	Work on the property is a welcome break from my normal occupation
Held values	Working for the welfare of others
	Protecting the environment and preserving nature
	Preventing pollution and protecting natural resources
Views	Respecting the earth and living in harmony with other species
	Landholders should have the right to harvest water that falls on their property, even if that action impacts on others
	Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals

	The environment should have a specific allocation of river water
	Conservation that involves reduced grazing of native vegetation leads to substantially increased fire hazard
	Clearing native vegetation since European settlement has substantially reduced the number and variety of native plants and animals in this district
	Governments should give a high priority to the allocation of water to support recreation on lakes during dry periods
Duty of care	It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment
Confidence in CRP	The benefits of stubble retention on cropping land outweigh problems arising
	The time and expense involved in watering stock off-river/stream/wetland is justified by improvements in bank stability, water quality or stock condition
Approach to property management	The time of year sowing pastures
	The mix of pastures sown
	The method of establishment of crops
	Stock numbers
	Fertiliser application rates for pastures
Land use	Beef
	Sheep for meat
	Farm tourism
	Viticulture
	Sheep for wool
	Other livestock
	Irrigation
Information sources	VFF, Twitter, landcare, agricultural consultants
Property management	Area of trees and shrubs planted (including direct seeding) full period of management
	Sowed pastures to take advantage of available soil moisture (3 years)
	Maximum area of crop sown in any year using adaptive no-till techniques (3 years)
	Maximum area of crop sown in any year using minimum tillage techniques (3 years)
	Used precision farming techniques for cropping (3 years)

In each profile we report on:

- Median property size
- Median length of residence
- Median age
- Proportion who are full-time, part-time, hobby and non-farmers by occupation
- Proportion whose primary residence is not in the Wimmera region
- Proportion who own more than one rural property
- Percent involved in landcare
- Percent who are members of a commodity group
- Percent who have completed a short course (last five years)
- Percent involved in property management planning
- Percent who have received government funding and the type of grant received
- Off and on-property income
- Top three sources of information
- NRM topic reported most knowledge
- Three most likely long-term plans
- Top three values attached to property
- Top three district issues and top three property issues
- Five most common land uses
- Landholder agreement with a duty of care for the environment (*It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment*)
- Landholder agreement with *Landholders should manage their properties in expectation of a highly variable climate*
- Confidence in CRP, including:
 - fencing to manage stock access (*Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands*)
 - stubble retention (*The benefits of stubble retention outweigh problems arising*)
 - establishing off-stream watering points (*The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition*)
- The three most commonly adopted conservation practices and three most commonly adopted sustainable agricultural practices
- Topics related to the Carbon Ready Plan: *impact of drought and/or changing rainfall patterns on property viability* (concern); *there will be opportunities for carbon farming on my property in the future* (belief); *landholders should manage their properties in expectation of extreme weather events* (attitude); *carbon farming/biofuels should be confined to less productive land* (attitude); *carbon farming* (land use)

4.1 Ararat (n=43)

Median property size	150 ha	Residence not in Wimmera region	21%
Median length of residence	39.5 years	Own more than one property	29%
Median age	60 years	Landcare membership	54%
Occupational identity	Full-time farmer: 29% Part-time farmer: 33% Hobby farmer: 19% Non-farmer: 19%	Completed a short course in the past five years	33%
On-property income (median)	34% (\$20-30,000)	Off-property income (median)	66% (\$50-60,000)
On-property work (hrs/week)	30 hrs	Off-property work (days/year)	200 days
Commodity group membership	21%	Involved in property management planning	39%
Proportion with government funded work on property (past 5 years)	22% (22% community grant; 100% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 60% ▪ Friends/neighbours/relatives: 56% ▪ Field days: 49%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>Using online crop simulation tools to respond to changes in seasonal or market conditions: 5%</i> ▪ <i>The area of land (hectares) with saline affected vegetation in your district: 5%</i> ▪ <i>Location of the four nationally significant ecological communities on private land in Wimmera region: 7%</i> 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 50%</i> ▪ <i>The benefits of retaining native vegetation on properties: 45%</i> ▪ <i>The use of stock containment areas to manage stock in drier seasons: 43%</i>

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> ▪ Risk to life and property from wild fire: 81% ▪ Impact of drought and/or changing rainfall patterns on property viability: 69% ▪ The impact of weeds and pest animals (including native species) on profitability: 55% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> ▪ Impact of reduced water flows on the long-term health of rivers/streams/wetland: 78% ▪ Salinity threatening water quality in rivers/streams/wetland: 67% ▪ Decline in soil health (e.g. declining fertility or structure): 64%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> ▪ Being able to pass the property on to others in better condition: 86% ▪ An attractive place to live: 81% ▪ The environment on my farm sustains life for many different plants and animals: 72% 	5 most common land uses	<ul style="list-style-type: none"> ▪ Dryland pasture: 72% ▪ Sheep for meat: 63% ▪ Sheep for wool: 62% ▪ Broadacre cropping: 26% ▪ Cattle: 20%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 70% ▪ Landholders should manage their properties in expectation of a highly variable climate: 84% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands: 79% ▪ The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 47% ▪ The benefits of stubble retention outweigh problems arising: 47%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> ▪ Sowed pastures to take advantage of available soil moisture: 29% ▪ Established stock containment areas to manage stock: 28% ▪ Maximum area of crop sown in any year using minimum tillage techniques: 23% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> ▪ Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 37% ▪ Area of trees and shrubs planted (including direct seeding) : 35% ▪ Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 33%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> ▪ Ownership of the property will stay within the family: 62% ▪ I will reduce the extent of my off-property work 32% ▪ Additional land will be purchased, leased or share farmed: 22% 	Carbon Ready Items	<ul style="list-style-type: none"> ▪ Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 69% ▪ Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 84% ▪ Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 30% ▪ Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 26% ▪ Land use: Carbon farming (percent yes): 6%

4.2 Buloke (n=12)

Median property size	1700 ha	Residence not in Wimmera region	0%
Median length of residence	51 years	Own more than one property	36%
Median age	51 years	Landcare membership	25%
Occupational identity	Full-time farmer: 73% Part-time farmer: 18% Hobby farmer: 0% Non-farmer: 9%	Completed a short course in the past five years	50%
On-property income (median)	18% (\$10-20,000)	Off-property income (median)	73% (\$20-30,000)
On-property work (hrs/week)	60 hrs	Off-property work (days/year)	200 days
Commodity group membership	27%	Involved in property management planning	70%
Proportion with government funded work on property (past 5 years)	27% (100% community grant, 67% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> Books/magazines/journals: 67% Newspapers: 67% Field days: 67% Internet: 67%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> The severity of gully erosion across the Wimmera: 0% Organisations or people to contact for advice about Aboriginal heritage in Wimmera: 10% The value of woody debris such as snags in rivers/streams/wetlands: 10% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> The implications for soil moisture of applying fertiliser to crops or pasture post establishment: 70% Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 70% How to use soil sample results to guide fertiliser applications: 70%
Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 100% Crop weed resistance to herbicides: 91% The impact of weeds and pest animals (including native species) on profitability: 90% Uncertain/low returns limiting capacity to invest in my property: 90% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Decline in soil health (e.g. declining fertility or structure): 73% Reduced opportunities for recreation as lakes dry out: 55% Farming practices contributing to erosion: 55%

Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> ▪ <i>Being able to pass the property on to others in better condition:</i> 100% ▪ <i>An important source of household income:</i> 100% ▪ <i>Sense of accomplishment from building/maintaining a viable business:</i> 82% 	5 most common land uses	<ul style="list-style-type: none"> ▪ Broadacre cropping: 75% ▪ Sheep for meat (70%) ▪ Sheep for wool (62%) ▪ Dryland pasture (33%) ▪ Beef cattle (29%)
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ <i>It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment:</i> 11% ▪ <i>Landholders should manage their properties in expectation of a highly variable climate:</i> 89% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> ▪ <i>Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands:</i> 89% ▪ <i>The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition:</i> 56% ▪ <i>The benefits of stubble retention outweigh problems arising:</i> 67%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> ▪ <i>Established stock containment areas to manage stock:</i> 67% ▪ <i>Maximum area of crop sown in any year using minimum tillage technique:</i> 67% ▪ <i>Used precision farming techniques for cropping:</i> 50% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> ▪ <i>Area of trees and shrubs planted (including direct seeding):</i> 42% ▪ <i>Area of native vegetation/rivers/streams/wetlands where actively managing rabbits:</i> 33% ▪ <i>Area of native vegetation/rivers/streams/wetlands where actively managing weeds:</i> 33%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> ▪ <i>Ownership of the property will stay within the family:</i> 67% ▪ <i>I will move off property around/soon after reaching age 65:</i> 42% ▪ <i>Additional land will be purchased, leased or share farmed:</i> 33% 	Carbon Ready Items	<ul style="list-style-type: none"> ▪ <i>Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important)</i> ▪ <i>Attitude: Landholders should manage their properties in expectation of extreme weather events (percent agree/strongly agree):</i> 89% ▪ <i>Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree):</i> 44% ▪ <i>Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree):</i> 11% ▪ <i>Land use: Carbon farming (percent yes):</i> 17%

4.3 Hindmarsh (n=115)

Median property size	1000 ha	Residence not in Wimmera region	10%
Median length of residence	51 years	Own more than one property	50%
Median age	55 years	Landcare membership	51%
Occupational identity	Full-time farmer: 70% Part-time farmer: 17% Hobby farmer: 3% Non-farmer: 11%	Completed a short course in the past five years	45%
On-property income (median)	68% (\$50-60,000)	Off-property income (median)	70% (\$30-40,000)
On-property work (hrs/week)	50 hrs	Off-property work (days/year)	100 days
Commodity group membership	29%	Involved in property management planning	24%
Proportion with government funded work on property (past 5 years)	18% (15% community grant, 90% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 69% ▪ Magazines: 53% ▪ BOM: 53% ▪ Friends/neighbours/relatives: 53%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Organisations or people to contact for advice about Aboriginal heritage in Wimmera: 9% ▪ The severity of gully erosion across the Wimmera: 12% ▪ Location of the four nationally significant ecological communities on private land in Wimmera region: 12% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 64% ▪ The implications for soil moisture of applying fertiliser to crops or pasture post establishment: 50% ▪ The benefits of retaining native vegetation on properties: 50%

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 85% Crop weed resistance to herbicide: 72% The impact of weeds and pest animals (including native species) on profitability: 71% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Reduced opportunities for recreation as lakes dry out: 61% Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 60% Decline in soil health (e.g. declining fertility or structure): 58%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> Being able to pass the property on to others in better condition: 91% Sense of accomplishment from building/maintaining a viable business: 88% An important source of household income: 87% 	5 most common land uses	<ul style="list-style-type: none"> Broadacre cropping: 90% Sheep for meat: 60% Sheep for wool: 55% Dryland pasture: 49% Intensive livestock: 11%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 49% Landholders should manage their properties in expectation of a highly variable climate: 93% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands: 70% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 44% The benefits of stubble retention outweigh problems arising: 72%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Maximum area of crop sown in any year using minimum tillage techniques: 59% Maximum area of crop sown in any year using adaptive no-till technique: 42% Sowed pastures to take advantage of available soil moisture : 42% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 31% Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 27% Area of trees and shrubs planted (including direct seeding) : 17%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 72% Additional land will be purchased, leased or share farmed: 37% All or most of the property will be leased: 30% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 85% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 93% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 29% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 18% Land use: Carbon farming (percent yes): 2%

4.4 Horsham (n=168)

Median property size	416 ha	Residence not in Wimmera region	12%
Median length of residence	53 yrs	Own more than one property	35%
Median age	58 yrs	Landcare membership	19%
Occupational identity	Full-time farmer: 53% Part-time farmer: 21% Hobby farmer: 12% Non-farmer: 15%	Completed a short course in the past five years	34%
On-property income (median)	47% (\$60-80,000)	Off-property income (median)	70% (\$40-50,000)
On-property work (hrs/week)	40 hrs	Off-property work (days/year)	160 days
Commodity group membership	23%	Involved in property management planning	28%
Proportion with government funded work on property (past 5 years)	19% (23% community grant; 87% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 70% ▪ Friends/neighbours/relatives: 56% ▪ Mailed brochures/leaflets/community newsletters: 55%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Location of the four nationally significant ecological communities on private land in Wimmera region: 8% ▪ The area of land (hectares) with saline affected vegetation in your district: 10% ▪ The severity of gully erosion across the Wimmera: 11% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 60% ▪ The use of stock containment areas to manage stock in drier seasons: 52% ▪ The benefits of retaining native vegetation on properties: 47%

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 75% The impact of weeds and pest animals (including native species) on profitability: 68% Impact of poor management of pest plants and animals on public land: 63% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Reduced opportunities for recreation as lakes dry out: 69% Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 63% Decline in soil health (e.g. declining fertility or structure): 63%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> An attractive place to live: 85% Being able to pass the property on to others in better condition: 84% Sense of accomplishment from building/maintaining a viable business: 82% 	5 most common land uses	<ul style="list-style-type: none"> Broadacre cropping: 75% Sheep for meat: 65% Dryland pasture: 59% Sheep for wool: 55% Beef: 14%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 48% Landholders should manage their properties in expectation of a highly variable climate: 82% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands): 80% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 50% The benefits of stubble retention outweigh problems arising): 60%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Sowed pastures to take advantage of available soil moisture: 88% Maximum area of crop sown in any year using minimum tillage techniques: 43% Established stock containment areas to manage stock: 38% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 32% Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 29% Area of trees and shrubs planted (including direct seeding) : 24%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 63% Additional land will be purchased, leased or share farmed: 34% All or most of the property will be leased: 27% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 75% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 82% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 21% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 30% Land use: Carbon farming (percent yes): 1%

4.5 Northern Grampians (n=89)

Median property size	378 ha	Residence not in Wimmera region	12%
Median length of residence	42 yrs	Own more than one property	30%
Median age	56 yrs	Landcare membership	38%
Occupational identity	Full-time farmer: 39% Part-time farmer: 26% Hobby farmer: 15% Non-farmer: 19%	Completed a short course in the past five years	40%
On-property income (median)	48% (\$30-40,000)	Off-property income (median)	76% (\$40-50,000)
On-property work (hrs/week)	40 hrs	Off-property work (days/year)	240 days
Commodity group membership	32%	Involved in property management planning	42%
Proportion with government funded work on property (past 5 years)	38% (21% community grant, 89% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 64% ▪ Friends/neighbours/relatives: 54% ▪ Books/magazines/journals: 47%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 47%</i> ▪ <i>The ability of perennial vegetation to prevent water tables rising: 41%</i> ▪ <i>The benefits of retaining native vegetation on properties: 40%</i> 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>The area of land (hectares) with saline affected vegetation in your district: 6%</i> ▪ <i>Using online crop simulation tools to respond to changes in seasonal or market conditions: 10%</i> ▪ <i>Location of the four nationally significant ecological communities on private land in Wimmera region: 13%</i>

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 82% The impact of weeds and pest animals (including native species) on profitability: 62% Impact of poor management of pest plants and animals on public land: 62% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 76% Salinity threatening water quality in rivers/streams/wetlands: 63% Vegetation in waterways obstructing flows leading to flooding: 63%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> Being able to pass the property on to others in better condition: 87% The environment on my farm sustains life for many different plants and animals: 79% A great place to raise a family: 78% 	5 most common land uses	<ul style="list-style-type: none"> Sheep for meat: 77% Sheep for wool: 70% Dryland pasture: 67% Broadacre cropping: 60% Beef cattle: 19%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 58% Landholders should manage their properties in expectation of a highly variable climate: 88% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands): 80% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 46% The benefits of stubble retention outweigh problems arising): 51%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Sowed pastures to take advantage of available soil moisture: 45% Maximum area of crop sown in any year using minimum tillage techniques: 44% Established stock containment areas to manage stock: 30% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 30% Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 30% Area of trees and shrubs planted (incl. direct seeding) : 28%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 68% Additional land will be purchased, leased or share farmed: 35% The property will be sold: 23% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 82% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 88% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 25% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 33% Land use: Carbon farming (percent yes): 4%

4.6 Pyrenees (n=18)

Median property size	64.5 ha	Residence not in Wimmera region	59%
Median length of residence	31 yrs	Own more than one property	12%
Median age	64 yrs	Landcare membership	41%
Occupational identity	Full-time farmer: 13% Part-time farmer: 27% Hobby farmer: 27% Non-farmer: 33%	Completed a short course in the past five years	19%
On-property income (median)	24% (\$20-30,000)	Off-property income (median)	56% (\$60-100,000)
On-property work (hrs/week)	17.5 hrs	Off-property work (days/year)	72 hrs
Commodity group membership	12%	Involved in property management planning	36%
Proportion with government funded work on property (past 5 years)	24% (25% community grant, 50% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers (61%) ▪ Friends/neighbours/relatives: 44% ▪ TV: 39% ▪ BOM: 39%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>How to use soil sample results to guide fertiliser applications: 35%</i> ▪ <i>The use of stock containment areas to manage stock in drier seasons: 35%</i> ▪ <i>The benefits of retaining native vegetation on properties: 29%</i> 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>Using online crop simulation tools to respond to changes in seasonal or market conditions: 0%</i> ▪ <i>The nature of native vegetation cover in the Wimmera before European settlement: 0%</i> ▪ <i>Location of the four nationally significant ecological communities on private land in Wimmera region: 0%</i>

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 67% Risk to life and property from wild fires: 61% Impact of poor management of pest plants and animals on public land: 44% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 59% Farming practices contributing to erosion: 59% Vegetation in waterways obstructing flows leading to flooding: 53%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> Being able to pass the property on to others in better condition: 78% A place for recreation: 61% Opportunity to learn new things: 56% 	5 most common land uses	<ul style="list-style-type: none"> Sheep for meat: 50% Sheep for wool: 46% Other livestock: 31% Horticulture: 14% Broadacre cropping: 11%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 41% Landholders should manage their properties in expectation of a highly variable climate: 71% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands: 76% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 29% The benefits of stubble retention outweigh problems arising: 35%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Established stock containment areas to manage stock: 44% Sowed pastures to take advantage of available soil moisture : 14% Maximum area of crop sown in any year using minimum tillage techniques: 11% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Number of off-stream stock watering points established: 28% Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 22% Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 22%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 61% The property will be sold: 44% I will move off property around/soon after reaching age 65: 22% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 67% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 71% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree) 24% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 35% Land use: Carbon farming (percent yes): 0%

4.7 West Wimmera (n=150)

Median property size	1080 ha	Residence not in Wimmera region	16%
Median length of residence	50 yrs	Own more than one property	49%
Median age	57 yrs	Landcare membership	26%
Occupational identity	Full-time farmer: 77% Part-time farmer: 12% Hobby farmer: 4% Non-farmer: 8%	Completed a short course in the past five years	45%
On-property income (median)	77% (\$40-50,000)	Off-property income (median)	64% (\$30-40,000)
On-property work (hrs/week)	50 hrs	Off-property work (days/year)	60 days
Commodity group membership	23%	Involved in property management planning	25%
Proportion with government funded work on property (past 5 years)	18% (22% community grant, 85% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 61% ▪ Radio: 57% ▪ BOM: 53%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Organisations or people to contact for advice about Aboriginal heritage in Wimmera: 2% ▪ Aboriginal heritage values in the Wimmera region: 5% ▪ The area of land (hectares) with saline affected vegetation in your district: 7% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion: 63% ▪ How to use soil sample results to guide fertiliser applications: 51% ▪ The use of stock containment areas to manage stock in drier seasons: 49%

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 77% The impact of weeds and pest animals (including native species) on profitability: 66% Impact of poor management of pest plants and animals on public land: 62% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> The effect of existing ground water extraction: 59% Reduced opportunities for recreation as lakes dry out: 58% Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 56%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> Being able to pass the property on to others in better condition: 87% An important source of household income: 87% Sense of accomplishment from building/maintaining a viable business: 87% 	5 most common land uses	<ul style="list-style-type: none"> Sheep for meat: 89% Dryland pasture: 82% Sheep for wool: 74% Broadacre cropping: 71% Beef cattle: 22%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 45% Landholders should manage their properties in expectation of a highly variable climate: 85% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands): 74% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 43% The benefits of stubble retention outweigh problems arising): 60%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Sowed pastures to take advantage of available soil moisture: 56% Maximum area of crop sown in any year using minimum tillage techniques: 47% Established stock containment areas to manage stock: 33% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 33% Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 27% Area of trees and shrubs planted (including direct seeding) / Length of fencing erected to manage stock access to rivers/streams/wetlands / Number of off-stream stock watering points established: 17%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 69% Additional land will be purchased, leased or share farmed: 41% All or most of the property will be leased: 27% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 77% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 85% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 26% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 26% Land use: Carbon farming (percent yes): 1%

4.8 Yarriambiack (n=96)

Median property size	1290 ha	Residence not in Wimmera region	11%
Median length of residence	55 yrs	Own more than one property	35%
Median age	60 yrs	Landcare membership	34%
Occupational identity	Full-time farmer: 67% Part-time farmer: 14% Hobby farmer: 1% Non-farmer: 18%	Completed a short course in the past five years	43%
On-property income (median)	56% (\$50-60,000)	Off-property income (median)	73% (\$30-40,000)
On-property work (hrs/week)	49.5 hrs	Off-property work (days/year)	51 days
Commodity group membership	43%	Involved in property management planning	27%
Proportion with government funded work on property (past 5 years)	22% (16% community grant, 100% individual grant)	Top 3 sources of information	<ul style="list-style-type: none"> ▪ Newspapers: 66% ▪ Field days: 56% ▪ Books/magazines/journals: 51%
NRM topics respondents reported least knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>The severity of gully erosion across the Wimmera</i> : 5% ▪ <i>The area of land (hectares) with saline affected vegetation in your district</i>: 6% ▪ <i>Aboriginal heritage values in the Wimmera region</i>: 11% 	NRM topics respondents reported most knowledge (percent sound/very sound knowledge)	<ul style="list-style-type: none"> ▪ <i>Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion</i>: 70% ▪ <i>The implications for soil moisture of applying fertiliser to crops or pasture post establishment</i>: 58% ▪ <i>The benefits of retaining native vegetation on properties</i>: 54%

Top 3 property issues (percent important/very important)	<ul style="list-style-type: none"> Impact of drought and/or changing rainfall patterns on property viability: 86% Crop weed resistance to herbicides: 77% The impact of weeds and pest animals (including native species) on profitability: 69% 	Top 3 district issues (percent important/very important)	<ul style="list-style-type: none"> Reduced opportunities for recreation as lakes dry out: 66% Impact of reduced water flows on the long-term health of rivers/streams/wetlands: 61% Decline in soil health (e.g. declining fertility or structure): 57%
Top 3 values attached to property (percent important/very important)	<ul style="list-style-type: none"> Being able to pass the property on to others in better condition: 91% Sense of accomplishment from building/maintaining a viable business: 90% An important source of household income: 89% 	5 most common land uses	<ul style="list-style-type: none"> Broadacre cropping: 91% Sheep for meat: 57% Sheep for wool: 50% Dryland pasture: 47% Intensive livestock: 9%
Your views on (percent agree/strongly agree)	<ul style="list-style-type: none"> It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment: 55% Landholders should manage their properties in expectation of a highly variable climate: 83% 	Confidence in CRP (percent agree/strongly agree)	<ul style="list-style-type: none"> Fencing to manage stock access is an essential part of the work required to protect the health of waterways and wetlands): 80% The time and expense involved in watering stock off-stream/wetlands is justified by improvements in bank stability, water quality or stock condition: 41% The benefits of stubble retention outweigh problems arising): 85%
3 most commonly adopted sustainable agricultural practices (percent yes)	<ul style="list-style-type: none"> Maximum area of crop sown in any year using adaptive no-till techniques: 50% Used precision farming techniques for cropping: 49% Maximum area of crop sown in any year using minimum tillage techniques: 46% 	3 most commonly adopted conservation practices (percent yes)	<ul style="list-style-type: none"> Area of native vegetation/rivers/streams/wetlands where actively managing weeds: 33% Area of native vegetation/rivers/streams/wetlands where actively managing rabbits: 27% Area of trees and shrubs planted (including direct seeding) : 24%
3 most likely long term plans (percent likely/very likely)	<ul style="list-style-type: none"> Ownership of the property will stay within the family: 81% Additional land will be purchased, leased or share farmed: 47% All or most of the property will be leased: 31% 	Carbon Ready Items	<ul style="list-style-type: none"> Concern: Impact of drought and/or changing rainfall patterns on property viability (percent important/very important): 86% Attitude: Landholders should manage their properties in expectation of extreme weather events(percent agree/strongly agree): 83% Belief: There will be opportunities for carbon farming on my property in the future (percent agree/strongly agree): 27% Attitude: Carbon farming/biofuels should be confined to less productive land (percent agree/strongly agree): 26% Land use: Carbon farming (percent yes): 5%

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APPENDIX 1 Survey instrument

Supporting landholders in the Wimmera Catchment



2016 Rural landholder survey

Survey number

Land and water management: Wimmera

This survey is a vital part of efforts to understand the important social and economic factors shaping landholder decision making. Information you provide will guide the review of the Wimmera Regional Catchment Strategy that supports landholders and ensures that the services and programs the Wimmera Catchment Management Authority (CMA) offer meet the needs of landholders.

Similar surveys were undertaken in 2002, 2007 and 2011. Information provided has been an important influence on decisions about how the CMA communicates and works with landholders. With the 2016 survey data the CMA will be able to identify and respond to trends over time.

There is no other way to obtain this property level information.

We recognise that other people may be involved in decision making for this property. For this research we are seeking the views of the persons primarily responsible for managing the property. Where the person addressed is not involved in the management of the property, please forward the survey to the property manager or return the survey to Charles Sturt University (CSU).

Surveys have been sent to a random selection of landholders covering large and small properties. It should take approximately 40 minutes to complete. If you have any questions about the survey, please phone Allan Curtis at the University on 1800 901 374.

Some landholders own more than one rural property, some of which may be outside the Wimmera region. You will only be asked for information about property in the Wimmera region.

You are assured of complete confidentiality. Your name will never be placed on the survey or used in any reports. No group outside CSU will have access to the survey data. Information is published at the district scale and individual information is never published.

Thank you for your assistance,



Professor Allan Curtis

1. Long-term plans for your property

Please indicate the possibility that your long-term plans will involve each of the choices in the table below. Please consider your plans for the rural land in the Wimmera region owned by you or your immediate family. Examine the response options underneath this paragraph - for each choice in the table, place the number of your response option in the 'View' column.

RESPONSE OPTIONS:

Highly unlikely	Unlikely	Unsure	Likely	Highly likely	Not applicable
1	2	3	4	5	6

Likelihood your long-term plans will involve	View
The property will be sold	
The property will be subdivided and part of the property sold	
Ownership of the property will stay within the family	
I will move off property around/soon after reaching age 65	
All or most of the property will be leased	
All or most of the property will be share farmed	
Additional land will be purchased, leased or share farmed	
The enterprise mix will be changed	
I will seek additional off-property work	
I will reduce the extent of my off-property work	
Some part of the property will be placed under a conservation covenant	

Do you have family members interested in taking on your property in the Wimmera region in the future? Please tick your response

☐ Yes ☐ No ☐ Unsure

If YES: Has your family agreed to a succession plan for managing the transfer of your property to the next generation? Please circle your answer

Not Started	Early Stages	Halfway	Well Advanced	Completed/Ongoing
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Who participates in the decision making for Your Property? Please circle the best description

Mostly just me	Me and my partner	Multi-generations of my family	Property manager	Property manager and me
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2. Your assessment of issues

These statements explore the importance of a range of social, economic and environmental issues that may affect your property and your local district. *Examine each statement in the table, then place the number of your response option in each space provided for your 'View'.*

RESPONSE OPTIONS:

Not important	Minimal importance	Some importance	Important	Very important	Not applicable/ don't know
1	2	3	4	5	6

Importance of issues affecting your property	View
Lack of skilled labour to undertake important on-property work	
Dryland salinity undermining long-term productive capacity	
Crop weed resistance to herbicides	
The impact of weeds and pest animals (including native species) on profitability	
Uncertain/low returns limiting capacity to invest in my property	
Risk to life and property from wild fires	
Impact of poor management of pest plants and animals on public land	
Impact of drought and/or changing rainfall patterns on property viability	
Other - please list	

Importance of issues affecting your local district	View
Impact of reduced water flows on the long-term health of rivers/streams/wetlands	
Long-term negative impacts of mining on farmland	
Dryland salinity threatening the long-term productive capacity of land	
Loss of paddock trees	
Long-term negative impacts of property purchased by hobby farmers and non-farmers	
Salinity threatening water quality in rivers/streams/wetlands	
Decline in soil health (e.g. declining fertility or structure)	
The effect of existing ground water extraction	
Reduced opportunities for recreation as lakes dry out	
Long-term negative impacts of property purchased by absentees	
Nutrient run-off from rural properties affecting water quality in rivers/streams/wetlands	
Farming practices contributing to erosion	
Loss of native plants and animals caused by cropping or draining wetlands	
Stock damage to native vegetation/rivers/streams/wetlands	
The effect of increased surface water extraction	
Impact of pest plants and animals on private land adjoining rivers and streams	
Vegetation in waterways obstructing flows leading to flooding	
Other - please list	

3. Why your property is important to you

These statements explore the reasons your property is important to you. *Examine each statement in the table and place the number for your response in each space provided for your 'View'.*

RESPONSE OPTIONS:

Not important	Minimal importance	Some importance	Important	Very important	Not applicable
1	2	3	4	5	6

Why your property is important to you	View
Being able to pass the property on to others in better condition	
The environment on my farm sustains life for many different plants and animals	
An important source of household income	
Floodplain land and wetlands provide important places for native birds to live	
Opportunity to learn new things	
A place for recreation	
Sense of accomplishment from building/maintaining a viable business	
Work on the property is a welcome break from my normal occupation	
A great place to raise a family	
An attractive place to live	
Other - please list	

The next set of statements seeks information about the principles that may be important to you. *Examine each statement in the table and place the number for your response in each space provided for your 'View'.*

The principles that may guide your life	View
Looking after my family and their needs	
Working for the welfare of others	
Protecting the environment and preserving nature	
Being influential and having an impact on other people and events	
Fostering equal opportunities for all community members	
Preventing pollution and protecting natural resources	
Being able to lead others	
Respecting the earth and living in harmony with other species	
Caring for the weak and correcting social injustice	
Creating wealth and striving for a financially profitable business	

4. Your views

We would like to know how closely the statements presented below reflect your views. *Examine each statement in the table, then place the number for your response in the space provided for your 'View'.*

RESPONSE OPTIONS:

Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Not applicable/don't know
1	2	3	4	5	6

Statements about your views	View
Landholders should have the right to harvest water that falls on their property, even if that action impacts on others	
Landholders should be supported to conserve Aboriginal heritage on private land	
There will be opportunities for carbon farming on my property in the future	
The public should have the right to access rivers/streams/wetlands on private land	
Landholders should manage their properties in expectation of a highly variable climate	
Fencing to manage stock access is an essential part of the work required to protect and conserve waterways and wetlands	
Landholders should be paid for providing environmental services that benefit the wider community (e.g. managing habitat for native plants & animals)	
The time and expense involved in watering stock off-river/stream/wetland is justified by improvements in bank stability, water quality or stock condition	
Landholders receiving grants from Governments for environmental work should maintain those areas after the grant has expired in ways consistent with the purpose of the grant	
Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals	
It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment	
Governments should give a high priority to the allocation of water to support recreation on lakes during dry periods	
Clearing native vegetation since European settlement has substantially reduced the number and variety of native plants and animals in this district	
The benefits of stubble retention on cropping land outweigh problems arising	
Carbon farming/biofuels should be confined to less productive farmland	
New owners should abide by agreements entered into by previous owners where public funds have paid for land protection or conservation work	
The environment should have a specific allocation of river water	
Conservation that involves reduced grazing of native vegetation leads to substantially increased fire hazard	
Landholders who receive grants from Governments for environmental work should put those areas under long-term covenants that protect those areas into the future	
Funding for Wimmera landholders for environmental work is best delivered through regional bodies rather than centralised state or federal bodies	

5. Trust

These statements explore your **views on managing rivers/streams/wetlands and the role of the Wimmera CMA**. For each choice in the table, place the number of your response in the **'View'** column.

RESPONSE OPTIONS:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Not applicable/ don't know
1	2	3	4	5	6

Your views	View
You can't be too careful when dealing with people	
People are almost always interested only in their own welfare	
One has to be alert or someone is likely to take advantage of you	

Are you aware of the existence of the Wimmera CMA?

☐ Yes ☐ No

If Yes, please answer the next items. If No, please move to the next page and **Topic 6**.

Your views	View
The Wimmera CMA keeps landholders' interests in mind when making decisions about river/stream/wetland management	
Sound principles guide Wimmera CMA decisions about river/stream/wetland management	
The Wimmera CMA is very knowledgeable about river/stream/wetland management	
I can rely on the Wimmera CMA to provide useful advice about river/stream/wetland management	
I can rely on the Wimmera CMA to provide appropriate financial assistance for river/stream/wetland management	

6. Land use / enterprise mix

This question is seeking information about the current land use/enterprise mix for the rural property you own/manage in the Wimmera region. Please provide your response in the table below. An estimate will be sufficient where a specific number is sought, as in the area under crop

Land use / enterprise mix on your property	Situation in 2016	Land use / enterprise mix on your property	Situation in 2016
Broadacre cropping	_____ Ha	Dryland pasture	_____ Ha
Irrigated pasture/cropping	_____ Ha	Viticulture	<input type="checkbox"/> Yes <input type="checkbox"/> No
Dairying	<input type="checkbox"/> Yes <input type="checkbox"/> No	Horticulture	<input type="checkbox"/> Yes <input type="checkbox"/> No
Beef cattle	<input type="checkbox"/> Yes <input type="checkbox"/> No	Farm forestry	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sheep for meat	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sheep for wool	<input type="checkbox"/> Yes <input type="checkbox"/> No
Intensive livestock (e.g. pigs, poultry, feedlot cattle)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Other livestock (e.g. goats, deer, horse studs)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Farm-based tourism (e.g. farm stays)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Carbon farming	<input type="checkbox"/> Yes <input type="checkbox"/> No
Part of the property is under a conservation covenant / management agreement with the Wimmera CMA or another organisation (e.g. Greening Australia)			<input type="checkbox"/> Yes <input type="checkbox"/> No

Have you prepared/are you preparing a **property management or whole farm plan** that involved a map and/or other documents that addressed the existing property situation and included future management and development plans? Please tick your response

☐ Yes ☐ No

7. Your approach to property management

Please circle the descriptor/term that best describes your **occupational identity**:

Full-time farmer	Part-time farmer	Hobby-farmer	Non-farmer
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Please complete this section if you identified as a Full-time or Part-time farmer in the item above. All other respondents (i.e. Hobby-farmers and Non-farmers) please go to Topic 8.

Please indicate the **extent** you varied the management of your property in the Wimmera region during the last 3 years (i.e. 2013, 2014, 2015). *Examine the response options - for each choice in the table, place the number of your response in the 'View' column.*

RESPONSE OPTIONS:

No change from one year to next	Some change for a small part of the property	Some change for substantial part of the property	Substantial change for a small part of the property	Substantial change for a large part of the property	Not applicable
1	2	3	4	5	6

The extent you varied your management during 2013 to 2016	View
The time of year sowing crops	
The time of year sowing pastures	
The mix of crops sown	
The mix of pastures sown	
The method of establishment of crops	
The method of establishment of pastures	
Stock numbers	
Fertiliser application rates for crops	
Fertiliser application rates for pastures	
Application of herbicides after crop establishment	

8. Management activities on your property

The items in this section focus on a **limited range of possible activities undertaken on your property in the Wimmera region**. We are seeking information for activities **during the last 3 years** (all of 2013 through to March 2016) and for the **full period of your management** of the property.

*Please write a response in all spaces even if it is a zero - an **estimate is adequate**.*

Have you owned/managed your property in the Wimmera region for less than 1 year (i.e. since start of 2015)? **If Yes, please circle YES and then move to Topic 9** (no need to complete the table below).

Activities undertaken <u>over the last 3 years (2013-2016)</u>	Amount of work
Established stock containment areas to manage stock	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sowed pastures to take advantage of available soil moisture	<input type="checkbox"/> Yes <input type="checkbox"/> No
Length of fencing erected to manage stock access to rivers/streams/wetlands	_____ km
Area of native bush/grasslands fenced to manage stock access	_____ Ha
Area of trees and shrubs planted (including direct seeding)	_____ Ha
Area of native vegetation/rivers/streams/wetlands where actively managing rabbits	_____ Ha
Area of native vegetation/rivers/streams/wetlands where actively managing weeds	_____ Ha
Number of off-stream stock watering points established	_____ number
Area of gully erosion addressed	_____ Ha
Maximum area of crop sown in any year using adaptive no-till techniques	_____ Ha
Maximum area of crop sown in any year using minimum tillage techniques	_____ Ha
Used precision farming techniques for cropping	_____ Ha
Activities undertaken <u>over the full period</u> of your management	Amount of work
Area of trees and shrubs planted (including direct seeding)	_____ Ha
Length of fencing erected to manage stock access to rivers/streams/wetlands	_____ km
Area of native bush/grasslands fenced to manage stock access	_____ Ha
Area of gully erosion addressed	_____ Ha
Number of off-stream stock watering points established	_____ number

9. Your knowledge of different topics

In this section we would like you to provide an assessment of your knowledge of a number of different topics. *Examine the response options - for each choice in the table, place the number of your response in the 'View' column.*

RESPONSE OPTIONS:

No knowledge	Very little knowledge	Some knowledge	Sound knowledge (sufficient to act)	Very sound knowledge (can give a detailed explanation)	Not applicable
1	2	3	4	5	6

Your knowledge of different topics	View
How to use information from soil moisture probes to make decisions about crop or pasture selection at the start of the growing season	
The implications for soil moisture of applying fertiliser to crops or pasture post establishment	
Location of the four nationally significant ecological communities on private land in Wimmera region (i.e. Buloke woodlands, Grey box grassy woodlands, Murray grasslands, Seasonal herbaceous wetlands)	
How to use soil sample results to guide fertiliser applications	
The nature of native vegetation cover in the Wimmera before European settlement	
How to identify local plant species including weeds in the understorey vegetation	
The severity of gully erosion across the Wimmera	
The area of land (hectares) with saline affected vegetation in your district	
The value of woody debris such as snags in rivers/streams/wetlands	
Using online crop simulation tools to respond to changes in seasonal or market conditions	
Organisations or people to contact for advice about Aboriginal heritage in Wimmera	
Grazing and cropping strategies to manage paddock ground cover to minimise soil erosion	
The benefits of retaining native vegetation on properties	
The ability of perennial vegetation to prevent water tables rising	
The role of wetlands in filtering water entering rivers/streams	
How to protect and improve the health of native bush areas on properties	
How to prepare a farm or property plan that allocates land use according to different land classes	
The use of stock containment areas to manage stock in drier seasons	
How to protect and improve the health of native vegetation/rivers/streams/wetlands	
Aboriginal heritage values in the Wimmera region	

10. Occupational identity

This topic explores the **extent you see yourself as a farmer by occupation**. Many respondents are likely to be part-time or non-farmers, and it is important that those people also complete this section. *Examine each statement in the table and place the number for your response in each space provided for your 'View'. Please provide a response for all statements.*

RESPONSE OPTIONS:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Statements	View
I very much identify with agricultural producers in my district	
In general, I'm glad that I'm an agricultural producer	
In general, others value agricultural producers	
Being a part of the larger group of agricultural producers is an important reflection of who I am	
What happens to agricultural producers as a whole will have an effect on what happens in my life	
I have a strong sense of belonging or attachment to other agricultural producers	
When someone criticises agricultural producers, it feels like a personal insult	
My regular social contacts and relationships are with other agricultural producers	
My agricultural production activities distinguish me from those who are not agricultural producers	
I consider myself to be a typical agricultural producer in this area	
Not being able to identify myself as an agricultural producer would severely undermine my sense of who I am	
It would be costly and painful to abandon my agricultural identity because the majority of my contacts and relationships reinforce this identity	
I embody most of the characteristics that people associate with an agricultural producer	
Intergenerational farms/farmers are an important part of this area's history	
When I think of myself as an agricultural producer, thoughts, feelings, and images about my past, present and future in the agricultural industry flood my mind	

Please provide an **estimate** of the level of **your equity in YOUR PROPERTY** (including land, machinery, buildings and livestock). *Please circle your answer*

Below 20%	21% - 40%	41% - 60%	61% - 80%	81% - 100%
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11. Preferred sources of information

In the past 12 months what have been your sources of information about natural resource management for the Wimmera catchment?

Source of information		Source of information	
Television	<input type="checkbox"/> Yes	Twitter	<input type="checkbox"/> Yes
Books/magazines/journals	<input type="checkbox"/> Yes	Instagram	<input type="checkbox"/> Yes
Wimmera CMA	<input type="checkbox"/> Yes	Internet	<input type="checkbox"/> Yes
Victorian Farmers Federation	<input type="checkbox"/> Yes	Landcare group/network/ coordinator	<input type="checkbox"/> Yes
Bureau of Meteorology	<input type="checkbox"/> Yes	Local Council	<input type="checkbox"/> Yes
Government agencies/departments	<input type="checkbox"/> Yes	Mailed brochures/leaflets/ community newsletters	<input type="checkbox"/> Yes
Newspapers	<input type="checkbox"/> Yes	Extension officers	<input type="checkbox"/> Yes
Field days	<input type="checkbox"/> Yes	Environmental organisations	<input type="checkbox"/> Yes
Radio	<input type="checkbox"/> Yes	Commodity groups	<input type="checkbox"/> Yes
Social media	<input type="checkbox"/> Yes	Friends/neighbours/relatives	<input type="checkbox"/> Yes
Facebook	<input type="checkbox"/> Yes	Agricultural consultants	<input type="checkbox"/> Yes
YouTube	<input type="checkbox"/> Yes	Other - please list	_____ _____ _____

12. You and your property

This set of questions seeks **information about you and your property**. Questions cover a number of factors that often influence decision-making. We recognise that several people may be involved in decision making and may have helped complete the survey. For some topics we are asking for **information about the principal decision maker** for your property.

Background Information		Please circle or fill in your response
1.	What is the total area of rural land owned/managed by you or your immediate family or company in the Wimmera region?	_____ Ha
2.	Is any part of <i>your rural land</i> leased, share farmed or agisted from others? <i>[Please tick your response]</i> If YES: What is the total area leased, share farmed or agisted?	<input type="checkbox"/> Yes <input type="checkbox"/> No _____ Ha
3.	Is any part of <i>your rural land</i> leased, share farmed or agisted by others? <i>[Please tick your response]</i> If YES: What is the total area?	<input type="checkbox"/> Yes <input type="checkbox"/> No _____ Ha
4.	Do you own or manage more than one rural property? If YES: How many rural properties do you own in total? How many of these properties are in the Wimmera region?	<input type="checkbox"/> Yes <input type="checkbox"/> No _____ _____
5.	Did you irrigate in 2015? <i>[Please tick your response]</i> IF YES: How much surface water was used? How much ground water was used?	<input type="checkbox"/> Yes <input type="checkbox"/> No _____ _____ ML
6.	Is your principal place of residence in the Wimmera region?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7.	What is the total number of years you have resided in the Wimmera region?	_____ years
8.	Are you male or female? <i>[Please circle your answer]</i>	Male Female
9.	What is your age?	_____ years
10.	Did you attend field days/farm walks/demonstrations in the past 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No
11.	In the past 5 years have you completed a short course relevant to property management? (e.g. financial planning, integrated pest management, grain marketing, whole farm planning, chemical handling, EverGraze).	<input type="checkbox"/> Yes <input type="checkbox"/> No
12.	Estimate the average number of hours per week that you worked on farming/property related activities over the past 12 months.	_____ hrs/week
13.	Estimate the number of days that you were involved in paid off-property work in the past 12 months.	_____ days/year
14.	Estimate the average number of hours per week spent attending activities for any voluntary groups (sporting club, school, Landcare, CFA) in the past 12 months	_____ hrs/week

15.	Are you a member or involved with a local commodity group? (e.g. Vic No-Till, Wimmera Farming Network, Perennial Pasture Systems, Best Wool Best Lamb, Birchip Cropping Group)	<input type="checkbox"/> Yes <input type="checkbox"/> No
16.	Are you a member or involved with a local Landcare group?	<input type="checkbox"/> Yes <input type="checkbox"/> No
17.	In the past 5 years , did federal or state government programs or Wimmera CMA provide financial support for work on your property? If YES: Did you receive this support through: As part of a community grant? Through a specific grant to you as a landholder?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
18	Have you utilised a farm consultant (e.g. agronomist) in the last 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No
19.	Have you utilised a contractor for any aspect of property management in the last 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No

We appreciate that many people are reluctant to divulge information about their incomes. However some information about household income is important for this research. **Your name will never be linked to your answers and information provided will never be available to any person outside this research team.**

Did your property return a net profit (income from your property exceeded all paid expenses before tax) last financial year (2014/2015)?

☐ Yes ☐ No

If Yes: Please indicate the **approximate** figure for the **profit (before tax)** from your property last financial year (2014/2015) by ticking the appropriate box.

Profit		Profit	
Less than \$10,000	<input type="checkbox"/> Yes	\$40,000 to \$50,000	<input type="checkbox"/> Yes
\$10,000 to \$20,000	<input type="checkbox"/> Yes	\$50,000 to \$60,000	<input type="checkbox"/> Yes
\$20,000 to \$30,000	<input type="checkbox"/> Yes	\$60,000 to \$100,000	<input type="checkbox"/> Yes
\$30,000 to \$40,000	<input type="checkbox"/> Yes	Above \$100,000	<input type="checkbox"/> Yes

Rural people often rely upon off-property income (from wages/salaries, dividends, interest, rent or social security) to maintain their living standards and make property improvements.

Did you or your partner receive a net off-property income (after expenses and before tax) last financial year (2014/2015)?

☐ Yes ☐ No

If Yes: Please indicate an approximate figure for **the total off-property income** (before tax) for you and your partner last financial year (2014/2015).

Profit		Profit	
Less than \$10,000	<input type="checkbox"/> Yes	\$40,000 to \$50,000	<input type="checkbox"/> Yes
\$10,000 to \$20,000	<input type="checkbox"/> Yes	\$50,000 to \$60,000	<input type="checkbox"/> Yes
\$20,000 to \$30,000	<input type="checkbox"/> Yes	\$60,000 to \$100,000	<input type="checkbox"/> Yes
\$30,000 to \$40,000	<input type="checkbox"/> Yes	Above \$100,000	<input type="checkbox"/> Yes

Other comments and thank you for your time

Do you have any other comments about any of the topics covered in the survey, or other aspects of land and water management in the Wimmera catchment? Please use the space provided or attach additional sheets. Any comments you make will be recorded.

We appreciate the time you have spent answering the questions. **Please return the completed survey in the stamped envelope provided.**

A summary of survey findings will be available by Spring 2016 and will be mailed to all survey respondents.

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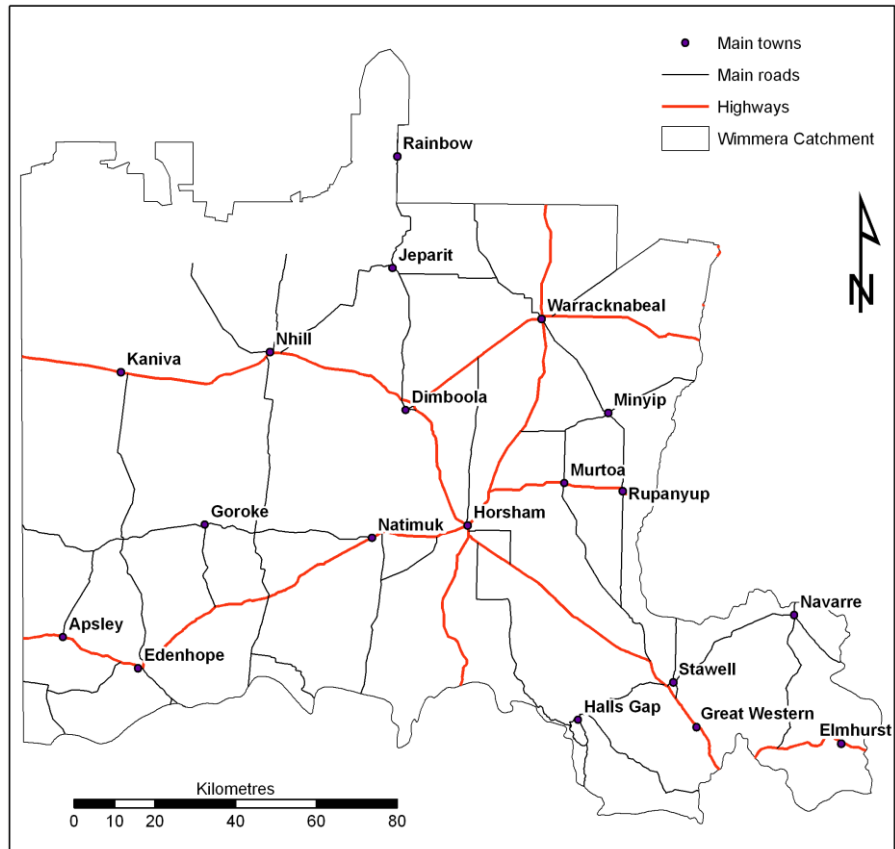
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If you need assistance with the survey, or wish to make specific comments about it, please use the toll free number **1800 901 374** to contact a member of the research team at Charles Sturt University.



Map production: SPAN, Charles Sturt University

APPENDIX 2 Assessment of issues and views: proportion of land

Table 37 Wimmera 2016 Social Benchmarking Survey: Assessment of issues, proportion of land area in hectares (N=691)

District issues	Important/ very important	Some importance	Minimal importance/ not important	NA
Impact of reduced water flows on the long-term health of rivers/streams/wetlands	55%	21%	17%	7%
Long-term negative impacts of mining on farmland	34%	15%	34%	17%
Dryland salinity threatening the long-term productive capacity of land	22%	27%	42%	9%
Loss of paddock trees	19%	30%	49%	2%
Long-term negative impacts of property purchased by hobby farmers and non-farmers	36%	17%	39%	8%
Salinity threatening water quality in rivers/streams/wetlands	37%	23%	33%	7%
Decline in soil health (e.g. declining fertility or structure)	55%	18%	23%	4%
The effect of existing ground water extraction	38%	20%	29%	13%
Reduced opportunities for recreation as lakes dry out	61%	21%	15%	3%
Long-term negative impacts of property purchased by absentees	42%	26%	25%	7%
Nutrient run-off from rural properties affecting water quality in rivers/streams/ wetlands	21%	27%	42%	10%
Farming practices contributing to erosion	42%	24%	30%	4%
Loss of native plants and animals caused by cropping or draining wetlands	20%	27%	46%	7%
Stock damage to native vegetation/rivers/streams/wetlands	16%	25%	50%	9%
The effect of increased surface water extraction	18%	21%	46%	15%
Impact of pest plants and animals on private land adjoining rivers and streams	33%	24%	31%	12%
Vegetation in waterways obstructing flows leading to flooding	39%	16%	31%	14%

Table 38 Wimmera 2016 Social Benchmarking Survey: Assessment of issues, proportion of land area in hectares (N=691)

Property issues	Important/ very important	Some importance	Minimal importance/ not important	NA
Lack of skilled labour to undertake important on-property work	48%	25%	22%	5%
Dryland salinity undermining long-term productive capacity	14%	15%	58%	13%
Crop weed resistance to herbicides	73%	14%	12%	1%
The impact of weeds and pest animals (including native species) on profitability	80%	12%	9%	0%
Uncertain/low returns limiting capacity to invest in my property	65%	19%	16%	2%
Risk to life and property from wild fires	39%	24%	38%	1%
Impact of poor management of pest plants and animals on public land	67%	17%	16%	1%
Impact of drought and/or changing rainfall patterns on property viability	83%	10%	8%	0%

Table 39 Wimmera 2016 Social Benchmarking Survey: Views, proportion of land area in hectares (N=691)

Your views	Agree/ strongly agree	Unsure	Disagree/ strongly disagree	NA
Landholders should have the right to harvest water that falls on their property, even if that action impacts on others	45%	29%	24%	3%
Landholders should be supported to conserve Aboriginal heritage on private land	46%	32%	19%	3%
There will be opportunities for carbon farming on my property in the future	27%	53%	12%	8%
The public should have the right to access rivers/streams/wetlands on private land	10%	10%	77%	3%
Landholders should manage their properties in expectation of a highly variable climate	87%	11%	2%	0%
Fencing to manage stock access is an essential part of the work required to protect and conserve waterways and wetlands	71%	16%	8%	5%
Landholders should be paid for providing environmental services that benefit the wider community (e.g. managing habitat for native plants & animals)	79%	13%	7%	1%
The time and expense involved in watering stock off-river/stream/wetland is justified by improvements in bank stability, water quality or stock condition	42%	32%	7%	19%
Landholders receiving grants from Governments for environmental work should maintain those areas after the grant has expired in ways consistent with the purpose of the grant	67%	24%	7%	2%
Landholders should have the right to crop wetlands on their property regardless of the impacts on native plants and animals	27%	35%	34%	4%
It is fair that the wider community asks landholders to manage their land in ways that will not cause foreseeable harm to the environment	41%	24%	35%	0%
Governments should give a high priority to the allocation of water to support recreation on lakes during dry periods	58%	18%	23%	1%
Clearing native vegetation since European settlement has substantially reduced the number and variety of native plants and animals in this district	43%	29%	26%	2%
The benefits of stubble retention on cropping land outweigh problems arising	71%	20%	8%	1%
Carbon farming/biofuels should be confined to less productive farmland	27%	45%	26%	2%
New owners should abide by agreements entered into by previous owners where public funds have paid for land protection or conservation work	56%	27%	15%	2%
The environment should have a specific allocation of river water	39%	29%	28%	4%
Conservation that involves reduced	77%	17%	5%	1%

grazing of native vegetation leads to substantially increased fire hazard				
Landholders who receive grants from Governments for environmental work should put those areas under long-term covenants that protect those areas into the future	30%	34%	35%	1%
Funding for Wimmera landholders for environmental work is best delivered through regional bodies rather than centralised state or federal bodies	71%	23%	3%	3%