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Corangamite region social benchmarking survey 2006

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List of acronyms
ABS – Australian Bureau of Statistics
CCMA – Corangamite CMA
CMA – Catchment Management Authority
CRC - Cooperative Research Centre
CRP – Current Recommended Practices
GIS – Geographic Information System
GMO – Genetically modified organisms
LGA – Local Government Area
LMU – Land Management Unit
NAP – National Action Plan for Salinity & Water Quality
NHT – Natural Heritage Trust
NLP – National Landcare Program
NRM – Natural Resource Management
QA – Quality Assurance
RCS – Regional Catchment Strategy
Executive Summary

Introduction

This report presents findings from research commissioned by the Corangamite Catchment Management Authority (CCMA). Data were collected through a survey of rural landholders in the CCMA region during 2006. A response rate of 57% (552 completed surveys) was achieved.

The survey followed a similar research process to that employed in the Glenelg Hopkins region (Byron et al. 2004) so that findings can be compared across the two regions. Previous surveys have been undertaken in other Australian catchments (Curtis et al. 2005). Data collection was intended to establish benchmarks that will enable assessment of the achievement of natural resource management (NRM) objectives; provide insights into the social and farming structure of the region to inform landholder engagement; and provide a coherent explanation of landholder adoption of current recommended practices (CRP) that would enhance program delivery.

Key findings will be summarised below using survey topics. This is a research project and the report is part of the process by which the CCMA staff and Board will examine and reflect on the survey data. Given this context, it is not appropriate to include recommendations in the report. A discussion of the implications of key findings for CCMA engagement with rural landholders has been included as a discussion in the body of the report but not in this summary.

Assessment of issues

- A mixture of environmental issues (cost of managing weeds and pest animals), economic (increasing property prices constraining opportunities for farmers to expand) and social (outward movement of young people), were the three most important issues affecting respondents’ local district.
- Socio-economic issues linked to the declining viability of rural communities were rated above NRM issues.
- The management of weeds and pest animals was the highest rated issue at the property and district scales.
- Issues affecting private property rights and trust in government were rated as important by over 50% of respondents. These issues rated more highly than uncertain/low financial returns limiting investment on property and NRM issues such as dryland salinity.
- Of the emerging issues included in the survey, climate change due to global warming was rated above most NRM issues and well above wind farming undermining landscape values, intensive industries affecting environmental quality or the impacts of genetically modified organisms (GMO).
- Dryland salinity undermining the long-term productive capacity of properties and lack of awareness about Aboriginal cultural heritage sites received the lowest ratings.
- There were significant differences across the 15 Land Management Units (LMU) in the CCMA region with respect to landholders’ assessment of issues. Some of this variation is related to spatial variation in the occurrence of issues such as salinity. As will be explained later, there are significant differences across the CCMA region in the proportion of landholders who see themselves as farmers by occupation. In this study, farmers and non-farmers often have different views about the importance of issues.
• There were significant links between the assessment of on-property issues and adoption of CRP. For example, respondents who said that the management of pest plants and animals on public land near their property was important are significantly more likely to adopt the CRP controlling pest animals and weeds on their property. As well, awareness of saline affected areas is linked to increased adoption of salinity mitigating CRP.

• Most respondents did not report saline affected areas and the expert maps agreed with their assessments. Those that identified saline affected areas reported that those areas were relatively small in size.

• Respondents who were farmers by occupation, had larger properties and were in Landcare were more likely to identify saline affected areas that were not identified by the expert maps.

• The expert maps predicted less than half of the saline affected areas identified by landholders, suggesting those maps are out-of-date.

**Values attached to property**

• Social values related to the lifestyle offered by living in rural areas/ rural communities were the highest rating topics included in the survey.

• Economic values related to the sense of accomplishment from building a business; capital gains from holding rural land; and income from farm enterprises were rated highly by more than half the respondents.

• No environmental value was rated in the top 10 values, but just under half of all respondents said it was important that their property contributes to the environmental health of the district; work on the property keeps them in touch with nature; and native vegetation on their property provides habitat for native animals.

• The values respondents attach to their property are linked to the adoption of CRP. In the main, these links reflect the different values of farmers and non-farmers. For example, the value ‘provides most of the household income’ was linked to higher adoption of CRP for soil testing; sowing perennial pastures; lime application; rotation cropping with pasture; time controlled or rotational grazing; and using minimum tillage practices. On the other hand, those giving a higher rating for the value of their property as a place for recreation had higher adoption of fencing native bush/ grasslands to manage stock access and lower levels of adoption of sowing perennial pasture (including lucerne).

• There were significant differences across the 15 LMU in terms of the values respondents attached to their property. To a large extent these contrasts are linked to differences in the proportion of farmers in the LMU.

**Knowledge of NRM topics**

• The majority of respondents rated their knowledge below sound (sufficient to act/ explain to others) for all topics surveyed.

• The highest rated topics were the benefits of pastures in crop rotations for soil health; legislation related to handling and storage of chemicals; the benefits of ground cover for soil health; and the ability of vegetation to improve water quality.

• Few respondents said they had sound knowledge of either the location of Aboriginal cultural sites or who to contact for advice about the management of cultural sites on private property.

• Higher reported knowledge was linked to increased adoption of related CRP.
Attitudes about the role of NRM actors

- Almost all respondents agreed that landholders should manage their properties in the expectation of drought events.
- Most respondents were concerned about right to farm issues.
- About half the respondents expressed a strong commitment to a stewardship ethic in that they agreed that reduced production in the short-term is justified where there are long-term benefits to the environment.
- The stewardship measure was not linked to the adoption of CRP. Indeed, adoption of four sustainable agriculture CRP was negatively correlated with a stronger stewardship ethic.
- Landholders are increasingly aware that they are being asked to deliver biodiversity outcomes for the wider community and three quarters agreed that they should be paid for providing those services.

Confidence in CRP

- There was a high level of confidence in the efficacy of watering stock off-stream and fencing to manage stock access to waterways and wetlands.
- About a third of respondents disagreed with the statement that clearing native vegetation has substantially reduced the existence and diversity of native plants and animals in their district.
- Small majorities of respondents said that it was difficult to obtain reliable expert advice on either agricultural production or environmental topics.
- Higher confidence in the efficacy of CRP was linked to significantly higher adoption of those CRP.

Preferred arrangements for involving landholders in NRM

- None of the options included in the survey attracted strong interest from half the respondents.
- A reduction in local government rates was the most preferred option, followed by a fixed grant incentive scheme administered by the CCMA, and a tax rebate administered by the Commonwealth.
- The most preferred mix of options attracted strong interest from close to three quarters of all respondents.
- Interest in a fixed grant incentive scheme administered by the CCMA was the only option where there was a significant difference across the LMU.

Sources of information about NRM

- Newspapers were both the most frequently listed and the most useful sources of information about NRM.
- Books, magazines, journals, and mailed brochures/leaflets were identified as a source of information by most respondents and were in the top five of the most useful sources of information.
• Friends, neighbours, relatives and Landcare groups were the other sources listed by half of all respondents. Landcare group was one of only two sources that were rated higher (#2) for usefulness than for use (#5).
• The internet was identified as a source of information by about a quarter of all respondents but had a much higher rating for usefulness (#8) than for use (#17).
• The CCMA was identified as a source of information by just under half of all respondents and had a similar rating for use and usefulness (#7).
• There were no significant differences in the sources of information used about NRM across the 15 LMU.
• There were some differences in the sources of information identified by those adopting different CRP.

Stage of life and long-term plans

• The average age of landholders in the Corangamite region was 55 years.
• The median length of residence was 34 years and the median length of property ownership was 22 years.
• About two-thirds of the respondents said they would continue to live on the property and that ownership of the property would stay in their family.
• Just under one quarter indicated that they had plans to expand their property (buy, lease or share-farm additional land). Over a third of all respondents said they would dispose of all or a large part of their property either through sale, leasing or share farming. Those planning to acquire more land operated larger farms, were more likely to be farmers, were younger, more likely to be involved in a commodity group, and more likely to have family members interested in taking on the property. There was a trend, but not statistically significant link, between acquiring land and adoption of most CRP.
• Modelling changes in ownership of properties suggested that half of the rural properties in the CCMA would change hands by 2016. Most property acquisition is expected to be by new settlers rather than existing residents. This rate of change is a significant increase on past trends given that only 17% of respondents said they had lived in their district for less than 10 years. Analysis of property sales data held by the Victorian Valuer General that are tagged to Local Government Area (LGA) suggested that one quarter (25%) of rural properties in the CCMA region greater than 10 ha changed hands between 1995 and 2005.
• Newer residents in the CCMA region are less likely to be farmers, work fewer hours on-farm/ more off-farm, are younger, less likely to report an on-property profit, own smaller properties and are less likely to have family members interested in taking on the property than longer-established residents.
• Respondents living longer in their local district are more likely to adopt most of the CRP included in this survey. This finding is contrary to our expectation that newer settlers, whether they were farmers or non-farmers would be more innovative.
Involvement in planning processes

- While about two-thirds of respondents expected ownership to stay in the family, just under half said they had family members interested in taking over the property and only a quarter had begun to plan the property transfer to the next generation.

- Less than half of all respondents were involved in whole farm planning, although three quarters said they had a long-term plan or vision for improvements they would like to make on their property.

- Just under half of all respondents said they had been involved in local action planning (e.g. with Landcare, community development or industry associations).

- Involvement in planning processes didn’t vary significantly across LMU but was linked to significantly higher adoption of CRP.

Involvement in government programs, Landcare and commodity groups

- Just under a third of respondents said that they had work undertaken on their property in the past five years that was at least partially funded by government programs.

- Over a third of respondents said they were currently a member of a Landcare group. Compared to non-Landcare participants; members were significantly more likely to operate larger properties; be farmers by occupation; report a profit; have owned their property for longer; expected a family member to take on the property; be involved in a commodity group; and have completed a short-course relevant to property management.

- Less than a quarter of respondents were a member of a local commodity group.

- There were no significant differences in the proportion of landholders involved in government funded programs across the CCMA region, but there were differences across the region for participation in Landcare and commodity groups.

- Involvement in government programs, commodity groups and Landcare were all linked to significantly higher adoption of most CRP.

Property size and farming as an occupation

- The median property size of landholders surveyed was 130 ha.

- One half of the respondents said they were farmers. Farmers were significantly more likely to operate larger properties; be Landcare members; report a profit; have lived in the district longer; expect a family member to take on the property; be involved in a commodity group; and have completed a short-course relevant to property management.

- The proportion of respondents who were farmers varied significantly across the LMU and farming as an occupation was linked to higher adoption of sustainable agriculture CRP, but not to some CRP related to biodiversity conservation.

- A quarter of respondents lease, share-farm or agist land to others and a similar proportion lease, share-farm or agist from others. Leasing, share-farming or agisting land is linked to adoption of CRP. In this study, those leasing from others are more likely to adopt sustainable agriculture CRP and those leasing to others are more likely to adopt biodiversity conservation CRP.
Levels of income and property equity

- Sixty-one per cent of respondents said they had an on-property profit last year.
- The median on-property income was $25,000 with a third of respondents indicating their profit was over $50,000.
- Most respondents reported they had more than 80% equity in their property and equity levels were not linked to adoption of CRP.
- Reporting an on-property profit was linked to significantly higher levels of adoption of most CRP. The exceptions included farm forestry; fencing native bushland and grassland to manage stock access; and controlling pest animals and non-crop weeds.

Land use and enterprise mix

- Beef cattle was the most common livestock enterprise, reported by just over half of all respondents. Sheep and dairy cattle were the other major livestock enterprises.
- About ten per cent of properties had irrigated pasture or crops.
- Farm forestry was reported on more properties than grapes and other horticulture enterprises.
- Most respondents expected they would increase the area of their property under tree planting for NRM in coming years.
- Of the production-based land uses, the area allocated to beef cattle was the most frequently listed as likely to be expanded.

Adoption of CRP

There were significant positive links between many of the levers at the disposal of the CCMA and adoption of CRP, including awareness of issues, knowledge of NRM, participation in Landcare and commodity groups, and receipt of government NRM funds in the past five years. Other factors linked with the adoption of CRP were less amenable to CCMA investment, but provide critical information for more effectively engaging rural landholders.

- There was a significant positive relationship between awareness of issues and knowledge of NRM topics. A higher rating for the value ‘I’m always learning new things’ was linked to higher adoption of most CRP, including those across biodiversity conservation and sustainable farming. Participation in short-courses related to property management was also linked to higher adoption of most CRP.
- Consistent with previous research in Australia, a stronger stewardship ethic (placing the health of the land above short-term economic gain) was not linked to higher adoption of CRP. Indeed, the adoption of four of the sustainable agriculture CRP in the survey was negatively correlated with a stronger stewardship ethic.
- Landcare membership was linked to significantly higher adoption of all the CRP surveyed with the exception of testing for water quality. Landcare groups were also identified as the second most useful source of information about NRM (ranked 2 out of 25 sources).
- In this study there were significant links between confidence in CRP and adoption of CRP. Commodity groups provide opportunities for trialling CRP and in this study membership of a local commodity group was linked to significantly higher adoption of most CRP surveyed.
• Half of all properties in the CCMA are expected to change hands in the next 10 years. Contrary to expectation, longer-term residents were significantly more likely to adopt most CRP, including some related to biodiversity conservation.

• About a quarter of the respondents said they planned to expand their property (buy, lease or share-farm additional land). Over a third said they would dispose of all or a large part of their property either through sale, leasing or share farming. There was a trend for those planning to acquire more land to be more likely to adopt CRP.

• Having a long-term vision for the management of their property, and involvement in planning from the property to district scale, were linked to higher adoption of most CRP.

• Respondents who said they were farmers, lived on their property (as opposed to absentee owners) reported an on-property profit, and had family members interested in taking on the property were significantly more likely to adopt a range of CRP.

• Receipt of government funds in the past five years was linked to higher adoption of all CRP included in the survey.

Differences across the CCMA region

The Corangamite region has been divided into 15 LMU. This study highlighted a range of differences in the social and farming context at the LMU scale, including:

• Property size
• Occupation (proportion of farmers)
• Knowledge of NRM topics
• Values landholders attach to their property
• Attitudes about the roles and responsibilities of NRM actors
• Proportion of landholders identifying saline affected areas
• Interest in a fixed grant incentive scheme
• Landcare membership
• Membership of a commodity group
• Proportion reporting an on-property profit and level of profit.
1 Introduction

Research context

This report presents findings from research commissioned by the Corangamite Catchment Management Authority (CCMA) that involved a survey of a random sample of rural landholders in the CCMA region during 2006. A response rate of 57% (552 completed surveys from the sample of 972) was achieved.

This research drew heavily on the methodology of similar projects completed in the Goulburn Broken Dryland in 1999 (Curtis et al. 2000), the Ovens Catchment in 2001 (Curtis et al. 2002), Wimmera region in 2002 (Curtis and Byron 2002), and the Glenelg Hopkins region in 2003 (Byron et al. 2004). As far as possible, the intention of the CCMA was that survey findings should be comparable with those of the Glenelg Hopkins region.

Funding for this project was sourced through a mix of national, state and regional programs, including the Natural Heritage Trust Extension (NHT).

Research objectives

1. Establish benchmarks of important social and economic variables that, with subsequent surveys, will enable assessment of the achievement of NHT and National Action Plan (NAP) intermediate objectives that are consistent with objectives in the CMA Regional Catchment Strategy (RCS).
2. Predict trends in social/ farming structure (property size, property turnover, property subdivision/ amalgamation).
3. Provide a coherent explanation of landholder adoption of recommended practices identified in the CMA RCS.
4. Predict landholder response to a limited range of policy options, including stronger cost-sharing.
2 Report structure

The next chapter provides some background to the Corangamite region. The subsequent methodology chapter includes a summary of the literature the research team drew upon to identify the variables included in the survey, brief descriptions of the mail out process and the approach to data analysis. Research findings are presented in Section 5 of this report and are arranged around major topics explored in the mail survey, namely:

- assessment of issues affecting property and district;
- comparison of landholder identified salinity sites and discharge maps;
- values attached to property;
- knowledge of natural resource management (NRM) topics;
- attitudes about the roles and responsibilities of key NRM actors;
- preferred arrangements for involving landholders in NRM programs;
- source of information about NRM;
- stage of life, long-term plans and predicted property turnover;
- involvement in planning process;
- involvement in government funded programs, Landcare and commodity groups;
- property size and farming as an occupation;
- levels of income and property equity;
- land use and enterprise mix; and
- adoption of current recommended practices (CRP).

The concluding chapter discusses the implications of key findings for CCMA engagement with private landholders in the CCMA region.
Figure 1 Corangamite Catchment Management Authority region
Corangamite social benchmarking survey 2006
3 Background

The location and character of the Corangamite region

The Corangamite region is located in southern Victoria and covers an area of approximately 13,340 sq km or approximately 6% of the State [Figure 1]. About 330,000 people live in the CCMA region. Major cities and townships include Ballarat, Greater Geelong, Lorne, Port Campbell and Colac. Included in the Corangamite region are the shires of Queenscliff, Colac-Otway, Golden Plains, Surf Coast, Greater Geelong, Ballarat, and parts of Corangamite, Moorabool and Moyne shires.

Agriculture is a major contributor to the region’s economy and is the leading land use by area of land. In 1998/1999 agricultural production in the region was worth almost $770 million which was approximately 12% of the value for agriculture in Victoria (Corangamite Catchment Management Authority 2003).

The CCMA RCS identified intensification as an important land use trend, particularly in the areas with dairying, cropping, eggs and poultry, and piggeries. Forestry, aquaculture and tourism activities are also expanding. Amenity or lifestyle residents are purchasing land closer to Melbourne, Geelong and Ballarat and in attractive coastal and highland landscapes and these new settlers are changing the profile of communities in the region.

The CCMA RCS has identified water health and water quality; native vegetation retention and enhancement; soil management; protection of heritage and recreational sites; biodiversity; and protection of indigenous flora and fauna from pest animals as NRM issues affecting the catchment (Corangamite Catchment Management Authority 2003).

For planning purposes the Corangamite region has been divided into 15 sub-catchments or LMU [Figure 2]. These are Aire, Bellarine, Curdies, Gellibrand, Hovells, Leigh, Lismore, Mid Barwon, Moorabool, Murdeduke, Otway Coast, Stony Rises, Thompsons, Upper Barwon, and Woady Yaloak. The LMU are identified on the basis of soil type, slope, and land capability characteristics.
Figure 2 LMU in the Corangamite Catchment Management Authority region
Corangamite social benchmarking survey 2006
4 Methodology

Background to this research

Catchment groups in Australia are required to develop regional plans that set out how the land, water and biodiversity of the region are to be managed. Each catchment plan is to be endorsed by State and Federal government agencies prior to their implementation. While there are State and regional differences, these catchment groups are typically asked to:

- articulate their vision and objectives (where do we want to go?);
- describe their catchment condition and identify the key regional challenges (where are we now?);
- explain how they will implement their strategy (how do we go forward?); and
- identify targets for the implementation of management actions and for improvements in resource condition that will enable the assessment of progress towards plan objectives (how do we know what we have achieved and learned?).

Clearly, there are opportunities for social research to play an important role at each stage of the planning phase identified above. Potential roles for social research could include:

- contributing to processes that capture the range of stakeholder perspectives about possible futures for catchments;
- drawing on secondary and primary data sources to describe the social structure across a catchment;
- employing processes that enable stakeholders to explore potential trade-offs inherent in many resource allocation decisions across different issues and parts of a catchment;
- drawing on a range of research that would enhance the communication activities of catchment groups, the uptake of recommended practices for managing land and water degradation, and the efficacy of investment through community education;
- assisting groups to develop measures of progress that can be attributed to investments and actions undertaken through their catchment plans; and
- employing social impact assessment tools to predict and minimise the negative social impacts of proposed interventions, including changes to land use or resource access.

Affecting behavioural change in private landholders is a complex task and experience suggests that no single instrument will address the underlying reasons for non-adoption (Vanclay 1997; Curtis et al. 2000). As Dovers (1995) and Dovers and Mobbs (1997) emphasised, the challenge is to develop integrated packages that may include:

- legislation or regulations to create the institutional framework for management, set aside areas of land, and enforce standards and prohibitions;
- self regulation;
- research to clarify problems, develop solutions, and monitor environmental conditions;
- education to convince people of the need to change behaviour, gain support for policies, and ensure the ability to apply policy instruments; and
- economic measures such as charges, subsidies, penalties, and tradeable permits to assist efficient allocation of resources and equitable distribution of costs and benefits.

This research also recognised that regional catchments are, increasingly, the scale at which NRM occurs in Australia. As recent research in the Glenelg Hopkins (Byron et al. 2004), Goulburn Broken Dryland (Curtis et al. 2000), Ovens Catchment (Curtis et al. 2002), and Wimmera Region (Curtis and Byron 2002) illustrated, there are also considerable differences at the sub-regional scale. To the extent that there are significant differences at the sub-regional scale, there will also need to be sub-regional differences in the policy mix implemented by the regional groups and other organisations (Curtis and Byron 2002).

Governments have assumed that, at least in part, poor adoption rates for CRP arose because landholders were unaware of important land degradation issues; lacked sufficient knowledge and skills; or had attitudes that emphasised short-term economic returns over...
maintaining the long-term health of the land (MDBC 1990; ASCC 1991). There has been a large investment of resources over the past decade in awareness raising and education programs, including those carried out by Landcare groups. There is credible evidence that these activities do contribute to increased awareness and understanding and that these changes enhance landholder capacity to adopt recommended practices (Vanclay 1992; Curtis and De Lacy 1996; Curtis and Byron 2002). However, there are limits to the capacity of landholders to voluntarily effect required change at the landscape scale (Curtis 2000).

Some landholders have lifestyles and values that limit their response to approaches that focus on increasing agricultural production and profit maximisation (Barr et al. 2000; Curtis et al. 2002). Non-farmers and retirees may respond less quickly to economic signals; be more averse to risking off-property income in on-property enterprises; and will probably have less time for property management (Barr et al. 2000). On the other hand, non-farmers may bring new ideas, skills and financial resources that contribute to the renewal of local communities and they may be more likely to respond to appeals for biodiversity conservation (Curtis and De Lacy 1996; Curtis and Robertson 2003). These are important considerations for catchment managers given the trend towards rural lifestyle properties in many areas, including the CCMA region (Barr et al. 2005).

Low on-property income will constrain the capacity of landholders to respond to new opportunities. There is increasing evidence that many rural landholders have limited on-property incomes and that this is a critical constraint to adoption (Barr et al. 2000; Curtis and Byron 2002). Poor returns from grazing have meant that landholders could not afford the remedial lime and fertiliser regimes required to maintain pastures and prevent the downward spiral in grass production that affects water uptake and eventually, farm income (Millar and Curtis 1997). It is also unlikely that many dryland landholders will generate substantial income from new enterprises such as olives, wine grapes and farm forestry (Stirzacker et al. 2000; Curtis et al. 2000).

Lack of confidence in CRP has been identified as an important constraint affecting adoption (Curtis et al. 2002). Many CRP or alternate enterprises are either unprofitable and/or unsustainable. Amongst other things, some of the recommended plant-based management systems “leak” water and contribute to ground water flows that mobilise salt (Stirzacker et al. 2000; Walker et al. 1999). Problems also arise if CRP or new enterprises are complex, are perceived as being risky, do not fit with existing enterprises or conflict with existing social norms (Vanclay 1992; Curtis and Race 1996; Barr and Cary 2000; Pannell et al. 2006). Landholders are also very reluctant to take on new enterprises that will involve entering long-term agreements with powerful industry partners, as is the case with farm forestry where there are often regional monopolies (Curtis and Race 1996).

Landholders are also increasingly aware that they are being asked to implement work that has community benefits in terms of biodiversity conservation, improved public health and protecting export income (agriculture and tourism) and infrastructure. They also understand that many of the problems that they are being asked to address have in part resulted from previous government policies. Establishment of the Natural Heritage Trust (NHT), with the Federal Government sharing the costs of large-scale on-ground work on private land, was an acknowledgment of the legitimacy of these arguments (Curtis and Lockwood 2000).

Discontinuity between the source and impact of issues, particularly those related to water degradation, adds a further complication. Many landholders in the upper reaches of catchments are either not experiencing these problems, believe they can live with them or are unaware or unconcerned about contributing to downstream impacts (Curtis and Byron 2002).

Australia has an ageing rural population (even many of the new settlers are retirees) with life expectancy increasing and younger people drifting from rural areas to the more prosperous and attractive lifestyles in urban centres (Haberkorn et al. 1999). We can no longer assume that a substantial proportion of the intergenerational transfer of properties
will occur within families. Where family succession is unlikely, current property owners may be less willing to invest in CRP or new enterprises. Guerin (1999) and Curtis and Byron (2002) found that there was no clear correlation between landholder age and adoption, and suggested this was an important area for future investigation.

**Need to conduct the survey**

Australians profiling regional communities have usually included attributes that measure some aspect of the four capitals: human capital (e.g. skills and education), produced economic capital (e.g. financial resources and infrastructure), social capital (e.g. networks and links), and natural capital (e.g. landforms, plants and animals) (Webb and Curtis 2002; Cavaye 2003).

Barr et al. (2000) used Census and other national databases to combine social and economic data to explore the structure of agriculture over time in the catchments of the Murray-Darling Basin. Using local government areas as the unit of analysis, this seminal study examined attributes such as farm size, farm family income, farmer age, entry and exit from farming, and changes in farming family numbers, and clearly demonstrated that these attributes had changed over time. Barr et al. (2005) has more recently used census data to identify local government areas of Victoria where rural landholders are mostly lifestyle or mostly agricultural or in transition.

The analysis of data collected through farm and household censuses can provide useful information, but as Schultz et al. (1998) and Curtis et al. (2001) demonstrated, these data are unlikely to satisfy catchment managers who need to monitor outcomes from investments they make in NRM; understand landholder adoption of CRP; and make judgements about the likely efficacy of available policy instruments. In the first instance, national data collection processes are unlikely to address most of the topics for which data are needed. Secondly, data are only available to the public in aggregated form, the smallest scale being census collector districts that combine data for about 200 households. In most cases, analysis is at the local government scale. This level of aggregation reduces the usefulness of data, particularly when sub-regional contexts are so different, as for the Corangamite region.

**Topics and questions included in the mail survey**

Drawing on the above literature and given the constraints of a mail survey (mainly space and the type of questions that can be effectively posed), the authors, in collaboration with the CCMA, identified the topics listed below for inclusion in the survey. As explained earlier, the intention was, as far as practicable, to ensure that the CCMA region survey data were comparable with Glenelg Hopkins survey data. Response options for each topic and any additional background information are also provided in the relevant section of this report. The principal survey topics were:

- assessment of issues affecting property and district
- values attached to property
- self-assessment of knowledge for different NRM topics
- awareness of on-property dryland salinity
- views about the roles and responsibilities of key NRM actors
- preferred arrangement for involving landholders in NRM programs
- sources of information about NRM
- involvement in planning related to family succession and property planning
- long-term plans for the property
- land use/enterprise mix
- management practices on-property
- background socio-economic and property data, including: property size, age, gender, education, occupation, on and off-property workload, on-property income, involvement in voluntary organisations, Landcare membership, funding through government programs, use of financial counsellors, if property is placed under a
conservation covenant, involvement in short-courses, time lived in district, time owned or managed property, and level of equity in property.

**Current recommended practices – CRP**

An important research objective was to explore the key factors linked to adoption of CRP identified in the CCMA RCS. There were 12 CRP included in the survey:

- Time controlled or rotational grazing
- Use of minimum tillage for cropping or pasture establishment
- Time spent to control pest animals and non-crop weeds
- Cropping using a rotation with pasture (e.g. lucerne)
- Application of lime
- Establishing perennial pasture and lucerne
- Soil testing
- Fencing native bush/ grasslands to manage stock access
- Fencing to manage stock access to waterways
- Farm forestry
- Planting trees and shrubs, including through direct seeding
- Testing quality of main water source for stock/ irrigation.

**The mail survey process**

The following points outline the sampling method used in the mail survey to rural landholders in the Corangamite region.

1. CCMA approached the nine municipalities in the region to provide their local government rural property lists.
2. Local government property data were provided to CSU on the provision that it be used for this survey only and that the lists be destroyed at the conclusion of the survey process.
3. Local government staff excluded all properties less than 10 ha from the potential survey sample.
4. The remaining property details were forwarded to CSU, where duplicate names were identified and removed.
5. Tables containing rural property information were then entered into a Geographic Information System (ArcViewGIS) and each property assigned to one of the 15 CCMA region LMU.
6. A stratified random sample (spread evenly across the region) of 1,162 landholders was obtained from the remaining names and addresses.

As the size and population within the 15 LMU varied widely a stratified sampling strategy was used to ensure that all LMU would have a statistically useful number of respondents (minimum of 20 respondents, so with an expected response rate of 60%, 30 were required in the sample for each LMU). The following guidelines were used to develop the sample:

- A random sample of 1,100 properties larger than 10 ha was taken across the CCMA region.
- Where the resultant number in an LMU was less than 30 properties, the random sample for that LMU was increased to 30 properties, to give a total of 1162 potential properties.
- The list of the 1162 properties was then checked for deceased estates, public property (included city councils), and duplicate owners. These were all removed to give the final mail-out sample of 972.

The survey design and mail out processes employed a modified Dillman (1979) process that has been refined through the experience of successive catchment surveys (a detailed explanation is provided in Curtis et al. 2005). A draft survey instrument was refined by the project steering committee and then pre-tested using two focus groups comprised of representatives from a cross section of landholders in the Corangamite region.
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. In the Corangamite study, the first mail out of surveys was followed by a reminder card sent out one week later, with a second and third reminder card mailed out each consecutive week. Eight weeks after the initial survey mail out, another copy of the survey and a brief letter were sent to landholders that had not responded. The second mail out was followed by another reminder card one week later.

Surveys were addressed to property owners identified on the local government rural property owner lists. In the majority of cases only a surname and an initial were provided. It was therefore impossible to tell the gender balance in the survey sample. After a period of approximately 12 weeks a final survey response rate of 57% was achieved [Figure 3]. Of the 972 surveys sent out to landholders, 552 were completed and returned, 19 were returned incomplete as the person no longer owned or managed the property, or they were too ill to complete the form, 10 were returned to sender as the addressee was no longer living on the property, and a further 25 were returned blank [Table 1]. Figure 4 shows the geographical spread of survey respondents across the region.
Table 1

Survey response rate by LMU (N=552)

<table>
<thead>
<tr>
<th>LMU</th>
<th>N (population)</th>
<th>n Sample</th>
<th>n Returned</th>
<th>% returned</th>
<th>Unuseable</th>
<th>Usable (used for analysis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>96</td>
<td>30</td>
<td>17</td>
<td>57 %</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>BELLARINE</td>
<td>517</td>
<td>37</td>
<td>18</td>
<td>49 %</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>CURDIES</td>
<td>964</td>
<td>110</td>
<td>64</td>
<td>58 %</td>
<td>7</td>
<td>57</td>
</tr>
<tr>
<td>GELLiBRAND</td>
<td>507</td>
<td>47</td>
<td>27</td>
<td>57 %</td>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>HOVELLS</td>
<td>226</td>
<td>28</td>
<td>13</td>
<td>46 %</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>LEIGH</td>
<td>720</td>
<td>61</td>
<td>34</td>
<td>56 %</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>LISMORE</td>
<td>412</td>
<td>42</td>
<td>28</td>
<td>67 %</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>MID BARWON</td>
<td>529</td>
<td>65</td>
<td>33</td>
<td>51 %</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>MOORABOOL</td>
<td>1,237</td>
<td>118</td>
<td>57</td>
<td>48 %</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>MURDEDUKE</td>
<td>169</td>
<td>30</td>
<td>16</td>
<td>53 %</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>OTWAY COAST</td>
<td>195</td>
<td>34</td>
<td>18</td>
<td>53 %</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>STONY RISES</td>
<td>1,161</td>
<td>134</td>
<td>78</td>
<td>58 %</td>
<td>12</td>
<td>66</td>
</tr>
<tr>
<td>THOMPSONS</td>
<td>604</td>
<td>67</td>
<td>43</td>
<td>64 %</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>UPPER BARWON</td>
<td>671</td>
<td>86</td>
<td>55</td>
<td>64 %</td>
<td>7</td>
<td>48</td>
</tr>
<tr>
<td>WOADY YALOAK</td>
<td>628</td>
<td>83</td>
<td>51</td>
<td>61 %</td>
<td>8</td>
<td>43</td>
</tr>
<tr>
<td>Overall</td>
<td>8,636</td>
<td>972</td>
<td>552</td>
<td>57 %</td>
<td>70</td>
<td>482</td>
</tr>
</tbody>
</table>

Data analysis

Statistical analysis included in this report consists of: descriptive statistics (including mean, median, sum and total data); Pearson’s Chi-Square Test for count data; multiple linear regression modelling; Kruskal-Wallis Rank Sum Test; and Spearman rank order correlations. A brief explanation of the statistical methods is given below.

Pearson’s Chi-square test was used compare categorical variables against each other, such as whether or not respondents tested water quality on their property and whether or not respondents had a net profit.

The Kruskal-Wallis Rank Sum test was used to determine the significant difference of a continuous variable based on a second grouping variable. For example, the Kruskal-Wallis Rank Sum was used to determine if there were any significant differences in property size between those adopting a CRP and non-adopters. The value of the Kruskal-Wallis chi-square statistic (or \(X^2\)) indicates the strength of the difference between groups on a given variable, with a higher value indicating a larger difference. However, the \(X^2\) value does not indicate the direction of the relationship.
Multiple linear regression modelling was used to look for relationships between all continuous variables. For example, linear regression was used to test for a relationship between property size and adoption of CRP.

Spearman rank order correlations were used as an exploratory tool to search for relationships between variables, as well as to look for natural groupings (for example, natural groupings of reasons why the property is important to respondents).

In all analyses the p statistic represents the significance level where a value below 0.05 is considered to be statistically significant. The p value statistic was used for significant relationship or difference. A p value below 0.05 means that it is unlikely (probability of less than 5%) that the observed relationship or difference has occurred purely by chance. All statistical analyses were performed using the SPLUS software package and Microsoft Excel.

**Figure 4 Geographic spread of survey respondents (N=482)**
Corangamite social benchmarking survey 2006
Limitations of this research

No single instrument is able to collect data on all possible variables and therefore, some variables were not addressed in this research. Ultimately, professional judgement was used to determine the variables included in the survey. Every research instrument has its strengths and weaknesses. A mail survey allows researchers to collect information across a large number of respondents and at a much lower cost than would be possible with face-to-face interviews. However, the mail survey does not allow for researchers to use follow-up questions to explore respondents’ motivations or decision-making processes.

In this research it was not possible to collect information across time. This is an important limitation given the results of Barr et al. (2000) that identified important temporal trends. The 2006 Corangamite survey should be followed by another, say in five years time. It would then be possible to identify trends over time.
5 Findings by research topics

5.1 Assessment of issues at the property and district levels

Landholders were asked to assess the importance of a range of social, environmental and economic issues in their local district or on their property [Figures 5, 6]. The issues covered in the survey were identified through discussions with the project steering committee and at the survey pre-testing workshops. Respondents were asked to rate the importance of each issue listed in the survey as either “very important”, “important”, “of some importance”, “minimal importance” and “not important”. Respondents could also choose “don’t know/ not applicable”. To simplify the presentation of these data, the response options have been collapsed into three categories – “important” (combining “very important” and “important”), “some” (of “some importance”) and “unimportant” (combining “not important” and “minimal importance”), plus “not applicable” [Figures 5, 6].

Key findings

- A mixture of environmental issues (cost of managing weeds and pest animals, 58% said important); economic (increasing property prices constraining opportunities for farmers to expand, 54%); and social (outward movement of young people, 50%), were the three most important issues affecting respondents' local district.

- The cost of managing weeds and pest animals was the highest rated issue at the district scale. On the same theme, the management of pest plants and animals on public land near the property was the highest rated (57%) property level issue.

- Socio-economic issues linked to the declining viability of rural communities (37%), including the loss of youth (50%), loss of important services (45%), reduced employment opportunities (35%) and the impact of plantations (31%) were rated as important by about a third of respondents. These issues had district level ratings above those for NRM issues such as the impact of salinity on productive capacity (24%) or water quality (25%), the impact of land clearing on habitat (24%), or issues such as soil acidity (25%), soil health (27%), nutrient and chemical runoff affecting water quality (29%) and altered river/ stream flows affecting waterway health (30%).

- Issues affecting private property rights and trust in government, including the management of pest plants and animals on public land; regulations and ‘red tape’ complicating property management; and the right to collect surface and ground water for irrigation were rated as important by over 50% of respondents. These issues rated more highly than uncertain/ low financial returns limiting investment on property and NRM issues such as dryland salinity.

- Of the emerging issues, climate change due to global warming (30% rated as important) was rated above wind farming undermining landscape values (18%), intensive industries affecting environmental quality (17%) or the impacts of genetically modified organisms (GMO) (16%). Lack of awareness of Aboriginal cultural heritage sites was the lowest rated issue (10%).

- Dryland salinity undermining the long-term productive capacity of the property (12%) and lack of awareness about Aboriginal cultural heritage sites (10%) received the lowest ratings at the property and district levels respectively.

- There were significant relationships between respondents’ assessment of issues at the property and district scales and their adoption of CRP.
**Figure 5 Assessment of issues affecting the district (N=462)**
Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Issue</th>
<th>% respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cost of managing weed &amp; pest animals</td>
<td>58 22 16 5</td>
</tr>
<tr>
<td>2. Increased land prices constraining farmers to expand</td>
<td>54 18 22 6</td>
</tr>
<tr>
<td>3. Movement of young people out of district</td>
<td>50 17 24 9</td>
</tr>
<tr>
<td>4. Loss of important services eg health, banks, schools</td>
<td>45 13 30 12</td>
</tr>
<tr>
<td>5. Decline of small towns</td>
<td>37 20 32 11</td>
</tr>
<tr>
<td>6. Reduced employment opportunities</td>
<td>35 19 36 10</td>
</tr>
<tr>
<td>7. Increased plantation areas affect community viability</td>
<td>31 18 39 12</td>
</tr>
<tr>
<td>8. Altered river/stream flows threaten waterways health</td>
<td>30 16 38 17</td>
</tr>
<tr>
<td>9. Nutrient &amp; chemical run-off affecting water quality</td>
<td>29 18 39 15</td>
</tr>
<tr>
<td>10. Decline in soil health undermining productive capacity</td>
<td>27 20 41 12</td>
</tr>
<tr>
<td>11. Soil acidity undermining productive capacity</td>
<td>25 22 38 15</td>
</tr>
<tr>
<td>12. Dryland salinity reducing water quality</td>
<td>25 15 39 20</td>
</tr>
<tr>
<td>13. Dryland salinity undermining productive capacity</td>
<td>24 16 44 17</td>
</tr>
<tr>
<td>14. Loss of habitat due to clearing native vegetation</td>
<td>24 11 49 16</td>
</tr>
<tr>
<td>15. Potential of windfarming to undermine landscape quality</td>
<td>18 11 58 14</td>
</tr>
<tr>
<td>16. Intensive industries affecting quality of environment</td>
<td>17 13 48 21</td>
</tr>
<tr>
<td>17. Lack of awareness of Aboriginal cultural heritage sites</td>
<td>10 13 58 19</td>
</tr>
</tbody>
</table>

**Issues affecting the local district**

Only three of the 17 issues included in the survey were rated as important issues affecting the local district by more than half of all respondents. The highest rated issue was the cost of managing weeds and pest animals, followed by increasing property prices constraining opportunities for farmers to expand and the loss of young people from the district [Figure 5].

Findings from the survey highlighted considerable concern about the viability of rural communities with five of the top six issues related to this topic. Indeed, socio-economic issues related to the loss of youth, loss of important services, reduced employment...
opportunities, and the effect of increased areas of plantations on community viability were all rated as important by over a third of respondents. These socio-economic issues had district level ratings above those for the impact of salinity on the productive capacity of properties or water quality, the impact of land clearing on habitat, soil acidity, soil health or water quality [Figure 5].

As expected, dryland salinity was rated more highly as a district level issue likely to undermine productive capacity than as an issue at the property level. Other NRM issues given an important rating by about a quarter of respondents included nutrient and chemical run-off affecting water quality, altered stream flows affecting waterway health, decline in soil health, soil acidity undermining productive capacity and the loss of habitat due to land clearing [Figure 5].

Of the emerging issues, climate change due to global warming was rated above wind farming undermining landscape values, intensive industries affecting environmental quality or the impacts of genetically modified organisms (GMO). Lack of awareness of Aboriginal cultural heritage sites was the lowest rated issue [Figure 5].

There were a number of significant differences in respondents’ assessment of issues affecting their local district across the 15 LMU in the CCMA region [Appendix 2 Table A]. For example, movement of young people out of local district, increasing areas of plantations affecting community viability in local district and lack of awareness about Aboriginal cultural heritage sites in local district were among the issues with significant differences across the LMU.

There were some significant relationships between respondents’ assessment of issues in the district and adoption of CRP. For example, respondents who said the cost of managing weeds and pest animals was an important issue were significantly more likely to adopt the CRP conducted work to control pest animals and non-crop weeds. This finding affirms the link between awareness/ concern and adoption. Many of the other relationships between issues and CRP appear to be linked to farmer/ non-farmer occupations and the longer length of residence of farmers in their district. For example, those more concerned about increasing land prices constraining opportunities for farmers to expand their properties in the local district were more likely to have sown perennial pasture and less likely to be involved in farm forestry.

**Issues affecting respondents’ properties**
The management of pest plants and animals on public land near my property was the highest rated property-scale issue, closely followed by regulations and red tape complicating management and the right to collect surface and ground water for irrigation. Low returns limiting investment was also seen as an important issue by more than a third of respondents. Issues relating to climate change due to global warming were rated an important issue by almost a third of respondents. Few respondents were concerned about reductions in the level of technical advice from government; and dryland salinity undermining long-term productive capacity was the lowest rated issue [Figure 6].
There were some significant differences across the 15 LMU with respect to landholders’ assessment of issues affecting their property [Appendix 2 Table B]. For example, concern about dryland salinity undermining the long-term capacity of my property varied from 30% in Mid-Barwon (important/very important issue) to 0% in Aire and Bellarine LMU. Concern about uncertain returns limiting investment in long-term health of the property varied from 78% in Woady Yaloak (important/very important issue) to 30% in Leigh and Otway Coast.

There were significant links between respondents’ assessments of issues on their property and adoption of CRP. For example, respondents who said that the management of pest plants and animals on public land near their property was important were significantly more likely to adopt the CRP controlling pest animals and weeds on their property. Concern about dryland salinity undermining the long-term productive capacity of property was linked to higher adoption of farm forestry. In other words, the level of awareness or concern makes a difference to adoption. However, care needs to be exercised when interpreting these analyses because the relationships can be mediated by other factors. For example, there is a link between concern about regulations and red tape complicating management and adoption of a range of farming-related CRP. It seems likely that occupation (being a farmer) is the key factor here.
5.2 Landholder identified saline affected areas

Key findings

- Most (77%) respondents did not report saline affected areas and the expert maps agreed with their assessments.

- Those that identified saline affected areas reported small areas (median 4 ha).

- Most respondents expressed low levels of concern about the potential impacts of dryland salinity on the productive capacity (24% with a high rating) or water quality (25%) in their district; or on the long-term productive capacity of their property (12%).

- Expert maps agree with 85% of respondents who said they had no areas affected by dryland salinity.

- The expert maps predicted less than half (35%) of the saline affected areas identified by landholders, suggesting they are out-of-date.
• Awareness of saline affected areas is linked to increased adoption of CRP.

• Landcare participation appeared to be a key factor in landholders being able to recognise/ acknowledge they had saline affected areas on their property.

• Respondents who were farmers by occupation, had larger properties and were in Landcare were more likely to identify saline affected areas that were not identified by the expert maps.

**Extent of dryland salinity reported by landholders**

The mail survey asked respondents if they had any areas on their property where plants were showing signs of salinity, and if so what was the area involved.

Twenty-three per cent of the respondents (110/482) recognised they had areas on their property where plants were showing signs of salinity [Figure 7]. The median area affected by salinity was 4 ha, the total area affected was 2,160 ha or 1.9% of the total area surveyed in the CCMA region.

As highlighted in Figure 8, there were significant differences across the 15 LMU in the proportion of landholders reporting signs of salinity on their property. The proportion of respondents reporting saline affected areas ranged from 0% in Hovells and 7% in Otway Coast to 46% in Murdeduke [Figure 8, Appendix 2 Table C].

Respondents who said there were areas on their property where plants showed signs of salinity were significantly more likely to adopt most of the CRP included in the survey: area/establishment of farm forestry; fencing erected to manage stock access to waterways; native bush and grasslands fenced to manage stock access; testing soil in paddocks; perennial pasture (including lucerne); lime applications; rotation cropping with pasture; using minimum tillage practices; and controlling pest animals and weeds [Appendix 3 Table A3-1].

**Landholder awareness of dryland salinity compared to expert maps**

Information on respondents’ assessment of salinity affected areas on their property was entered into a geographic information system (GIS) where it was overlayed and compared with salinity discharge sites identified using the Groundwater Flow Systems. For more information about the salinity discharge maps please refer to Dahlhaus et al. (2002). A one km buffer was used around the discharge sites to provide some margin of error when comparing the location of these sites with landholder identified salinity sites.

GIS analyses using salinity mapping data from the CCMA (using tested areas and a one km buffer, map agrees/disagrees) suggested that most respondents had a high level of awareness and preparedness to acknowledge current, visible dryland salinity impacts on vegetation. For example, only 15% (N=324, n=47) of those who reported no areas with vegetation that showed the effects of salinity were within one kilometre of a discharge site as identified by the expert maps [Figure 9].

The expert maps appeared to contradict the claims by 15% of CCMA respondents who said they had no areas where vegetation showed the effects of salinity [Figure 8]. Assuming the expert maps are correct, that is they didn’t incorrectly predict salinity, these respondents were “unaware” that they had saline affected areas. In other words, 85% of the respondents who said they had no areas currently affected by salinity were correct according to the expert maps. It therefore seems that landholders have a high level of awareness of the areas currently affected by salinity.
The lack of awareness displayed by a small number of the respondents (n=47) may be explained by a number of possibilities, including that these landholders:

- are not able to identify saline affected vegetation; or
- do not want to acknowledge that they have saline affected areas.

Further analysis showed that landholders who appear to be unaware of salinity on their property were more likely to operate smaller properties (median 100 ha compared to overall median of 130 ha) and be less involved in Landcare (median 21% compared to 35% overall) or government programs (19% compared to overall 26%). Somewhat surprisingly, this group worked on-farm for a median 40 hours per week (overall median 30 hours). These data suggest that it is not the extent of on-property work but Landcare participation that has made the difference to landholder ability to recognise/acknowledge salinity affected areas on their property.
It was also possible to examine the efficacy of the expert maps by assessing their capacity to predict areas affected by salinity as identified by landholders [Figure 10]. The expert maps correctly predicted salinity affected areas for 35% of the respondents that reported saline affected areas. It seems unlikely that landholders would deliberately over-state the extent of salinity on their property. For example, Woady Yaloak is one of the LMU where there is a cluster of cases where the expert maps failed to predict salinity identified by landholders. Woady Yaloak has had a long history of active Landcare participation and landholders can be expected to have a high level of NRM literacy. Further analysis showed that this cohort of landholders (n=72) operate very large properties (median of 374 ha compared to 130 ha overall), work for long hours on-property (median 50 hours compared to 30 hours overall), most are Landcare participants (68% compared to 35% overall) and many are involved in government programs (45% compared to 26%) However, there is the possibility that some landholders have failed to distinguish between water logged and saline affected areas.
5.3 Values attached to property

The mail survey included a number of statements exploring the range of social, economic and environmental values landholders might attach to their property [Figure 11]. Respondents were asked to rate the importance of each value using a five-point scale. The response options were “very important”, “important”, “of some importance”, “minimal importance” and “not important”. A “not applicable” option was also provided. As in the previous section these options have been collapsed into three categories plus “not applicable” to simplify presentation – “important” (combining “very important” and “important”), “some” (of “some importance”) and “unimportant” (combining “not important” and “minimal importance”) [Figure 11].

Key findings

- Social values related to the lifestyle offered by rural living received the highest ratings (provides the lifestyle I want, 81% said important; it is an attractive place to live, 78%). Other social values were also rated as important by more than half of all respondents, including the freedom of working for myself (69%), this is a great place
to raise a family (67%), being part of a rural community (62%) and the opportunity to learn new things (54%).

- Economic values were also rated as important by most respondents, although the sense of accomplishment from building a viable business (67%) and the long-term investment returns from rural land (67%) were rated much higher than provides most of the household income (52%).

- There appears to be a strong stewardship ethic amongst most respondents with 71% saying it was important to be able to pass the property on to others in better condition. Better condition was not defined and is likely to include a mix of business and environmental elements. Although there was not one specific environmental value in the top 10 values, around half of all respondents said it was important that their property contributes to the environmental health of the district (49%), work on the property keeps them in touch with nature (48%), and native vegetation on their property provides habitat for native animals (40%).

- Values are linked to adoption of CRP.

Attempts to engage rural landholders in NRM often focus on the potential benefits of a new practice or land use on productivity or the environment. Perhaps the key finding from this section is that impacts on lifestyle are likely to have an important bearing on the decision-making of most landholders in the CCMA region. The survey data also suggest there is a strong or latent interest in environmental stewardship as indicated by the high rating given to the statement “being able to pass the property on to others in better condition”. As is shown below, there was a significant relationship between respondent’s expressing this value and their adoption of CRP across both CRP related to biodiversity conservation and sustainable agriculture.

There were a number of significant differences across the 15 LMU in terms of the values respondents attached to their property [Appendix 1, Appendix 2 Table D]:

- Provides most of the household income
- Tax effective way to build an asset
- Native vegetation on my property provides habitat for native animals
- A place for recreation
- Sense of accomplishment from building/maintaining a viable business
- Rural land represents a sound long-term investment
- To preserve tradition as the property has been in my family for a long time
- My property contributes to the environmental health of the district
- The freedom of working for myself.

To a large extent these contrasts across the LMU are linked to differences in the proportion of farmers in the LMU [Appendix 2 Table D].
Figure 11 Values attached to property (N=480)
Corangamite social benchmarking survey 2006

1. Provides the lifestyle that I want
2. It is an attractive place to live
3. Being able to pass the property to others in better condition
4. The freedom of working for myself
5. Sense of accomplishment from building/maintaining viable business
6. Rural land represents sound long-term investment
7. This is a great place to raise a family
8. Being part of a rural community
9. An asset that will fund my retirement
10. I’m always learning new things
11. Provides most of the household income
12. Sense of accomplishment producing food, fibre for others
13. My property contributes to the environmental health of district
14. Work on a property keeps me in touch with nature
15. A place for recreation
16. Native vegetation on my property provides habitat for native animals
17. Tax effective way to build an asset
18. To preserve tradition as property has been in family for long time
19. Being able to build a business that employs other family members
20. Work on property is welcome break from my normal occupation
21. Work on the property is the only job I’ve ever done

% respondents
Data analysis revealed a large number of significant relationships between the values respondents attached to their property and the adoption of CRP. In the main, these links reflect the different values of farmers and non-farmers. For example, the value provides most of the household income was significantly linked to CRP for fencing erected to limit stock access to waterways; testing soil in paddocks; perennial pasture sown (including lucerne); lime application; rotation cropping with pasture; time controlled or rotational grazing; using minimum tillage practices; and testing water quality. On the other hand, a higher rating for the value a place for recreation was positively linked to the area of native bush/ grasslands fenced to manage stock access; and negatively linked to sowing perennial pasture (including lucerne).

As explained above, higher ratings for the value being able to pass the property on to others in a better condition was positively linked to a large number of CRP, including; fencing erected to manage stock access to waterways; soil testing in paddocks; sowing perennial pasture (including lucerne); application of lime; rotation cropping with pasture; time controlled or rotational grazing; using minimum tillage practices; controlling pest animals and weeds; and testing for water quality.

The importance of learning as a motivator for landholder involvement in NRM was confirmed by findings of a significant positive relationship between higher ratings for the value ‘I’m always learning new things’ and CRP, including fencing erected to manage stock access to waterways; soil testing in paddocks; sowing perennial pasture (including lucerne); lime applications; rotation cropping with pasture; using minimum tillage practices; and controlling pest animals and weeds [Appendix 3 Table A3-2].

5.4 Knowledge of natural resource management (NRM) topics

Self-assessment is a widely accepted approach to gathering information about people’s knowledge of NRM (Shindler and Wright 2000; Curtis et al. 2001). In this study, respondents were asked to rate their knowledge for 17 topics relating to NRM in the CCMA region [Figure 12]. Respondents were able to select the best response option from “very sound knowledge (could give a detailed description to others)”, “sound knowledge” (sufficient to act), “some knowledge”, “very little knowledge” and “no knowledge”. A “not applicable” option was also included for instances where knowledge about a specific topic was not relevant to respondents (for example topics related to specific land uses or enterprises). For presentation purposes, the response options have been collapsed into three categories, “sound knowledge” (combining “sound knowledge” and “very sound knowledge”), “some knowledge” and “limited knowledge” (combining “no knowledge” and “very little knowledge”), plus “not applicable” [Figure 12].

Key findings

- The majority of respondents rated their knowledge below sound (sufficient to act/ explain to others) for all topics surveyed.

- The highest rated topics were the benefits of pastures in crop rotations for soil health (45% sufficient to act/ explain to others); legislation related to on-property handling and storage of chemicals (43%); benefits of ground cover on grazing or cropping paddocks for soil health (42%); and ability of vegetation in waterways and gullies to improve water quality (42%).
• Very few respondents said they had sound knowledge of either the location of Aboriginal cultural sites or who to contact for advice about the management of sites on private property (5% and 6% sound knowledge respectively).

• Only 10% of respondents said they had sound knowledge of the major NRM strategies of the CCMA.

• Higher knowledge was linked to increased adoption of CRP.

Survey data provide an important benchmark for self-assessed knowledge on key NRM topics. Some topics included in the survey have not been the focus of substantial investment by the CCMA or other NRM organisations. Other topics, including those related to the benefits of retaining ground cover in grazing or cropping lands, the signs of salinity and the role of vegetation in waterways have been addressed through a number of NRM initiatives. NRM programs that aim to raise landholder knowledge need to consider the range of values identified in the previous section. For example, it will be difficult to motivate landholders with a strong focus on lifestyle values to address soil acidity.

There were significant differences in respondents’ assessment of their knowledge about six NRM topics across the 15 LMU [Appendix 1, Appendix 2 Table E]:

- How to recognise the signs of salinity
- Current market prices paid for farm forestry (e.g. lease payments per hectare)
- How to interpret results for water quality testing
- Legislation about the on-property handling and storage of chemicals
- The ability of vegetation in waterways and gullies to improve water quality
- The benefits of pastures in crop rotation in maintaining soil health.

Survey data highlight the extensive links between landholders’ knowledge and adoption of almost all CRP.

Higher self-assessments of knowledge about how to interpret results from soil testing was linked to higher adoption of soil testing in paddocks; sowing perennial pasture (including lucerne); lime application; rotation cropping with pasture; time controlled or rotational grazing; using minimum tillage practices; and testing water quality. Higher rating of the ability to identify acidic soils in this district was linked to action to address soil acidity; higher ability for how to recognise the signs of salinity was linked to action to address salinity. Higher rating for knowledge of the ability of vegetation in waterways and gullies to improve water quality was linked to action to establish farm forestry; erect fencing to manage stock access to waterways; fencing native bush and grasslands to manage stock access; sowing perennial pasture (including lucerne); rotation cropping with pasture; and using minimum tillage practices [Appendix 3 Table A3-1].

The only exception to the link between knowledge and adoption was for the topic ‘knowledge of organisations or individuals to contact for advice regarding the management of Aboriginal cultural heritage sites on private property’. This finding was not surprising given that the survey did not include CRP linked to the management of Aboriginal cultural heritage sites.
5.5 Attitudes towards natural resource management

A series of 17 statements sought each respondent’s views about their access to information; the roles of different NRM actors; and confidence in CRP [Figure 13]. For each statement respondents were asked to choose a response option from “strongly agree”, “agree”, “not sure”, “disagree” and “strongly disagree”. A “not applicable” option was also included. These response options have been collapsed into three groups plus “not applicable” [Figure 13]. If
you are examining Figure 13 you should note that some topics are expressed in the negative and others in the positive.

**Key findings**

Ten topics explored views about the roles of different NRM actors, including aspects of the right to farm, and landholder and wider community responsibility for NRM.

- Almost all respondents (83%) agreed that landholders should manage their properties in the expectation of drought events. This statement implies that drought is a normal part of the Australian environment and landholders must manage their land and finances accordingly.

- Most respondents were concerned about right to farm issues. Seventy per cent agreed that landholders should have the right to collect rain water on their property and 54% disagreed that farmers should not be concerned about being constrained by new land uses in their district.

- At the same time, most (73%) agreed that landholders have a moral responsibility to minimise harm to native plants and animals and 55% agreed it was reasonable that the wider community expects landholders not to harm plants and animals. About half (50%) expressed a strong commitment to a stewardship ethic when they agreed that reduced production in the short-term is justified where there are long-term benefits to the environment.

- Landholders are increasingly aware that they are being asked to deliver biodiversity outcomes for the wider community and 74% agreed that they should be paid for providing those services.

- A substantial minority (32%) disagreed that local government should be more active in preventing subdivision of farmland for residential use.

- Most (67%) agreed that it was fair that funding is directed to issues identified as priorities in government/ community plans.

- Twenty-seven per cent of respondents disagreed (39% agreed) with the statement that Aboriginal communities and landholders should work together to protect cultural heritage sites on private property.

- Access to information and confidence in recommended practices were positively linked to adoption of CRP, but not a measure of stewardship.

Five survey topics explored aspects of landholder confidence in CRP, including fencing to manage stock access to waterways and wetlands, the impact of clearing native vegetation and de-rocking on biodiversity, and quality assurance programs.

- There was a high level of confidence that fencing to manage stock access is an essential part of work to revegetate waterways (76% agreed) and a majority said that the time and expense of watering stock off-stream/ wetlands is justified (51%).

- Most respondents (54%) agreed that landholders usually benefit from quality assurance measures that require them to adopt CRP.

- Most respondents either disagreed (17%) or were not sure (35%) that the benefits of de-rocking outweigh the environmental costs.

- Almost a third (31%) of all respondents disagreed that clearing native vegetation has substantially reduced the existence and diversity of native plants and animals in their district.

- Most respondents reported that it was difficult to obtain reliable expert advice on either agricultural production (57% disagreed) or environmental (51%) topics.
Figure 13 Attitudes towards natural resource management (N=482)
Corangamite social benchmarking survey 2006

1. Landholders should manage properties in expectation of drought events
   - Agree: 83
   - Not sure: 6
   - Disagree: 3
   - Not applicable: 0

2. Fencing to manage stock access is essential part of work required to reseed waterways
   - Agree: 76
   - Not sure: 12
   - Disagree: 8
   - Not applicable: 4

3. Landholders should be paid for providing environmental services that benefit the wider community
   - Agree: 74
   - Not sure: 17
   - Disagree: 7
   - Not applicable: 2

4. Landholders have moral responsibility to act in ways that minimise harm to native plants & animals
   - Agree: 73
   - Not sure: 13
   - Disagree: 12
   - Not applicable: 2

5. Landholders should have right to collect rain water that falls on their property, even if it reduces stream flows
   - Agree: 69
   - Not sure: 17
   - Disagree: 13
   - Not applicable: 1

6. It is fair that funding is directed to land management issues identified as priorities in government/community plans
   - Agree: 67
   - Not sure: 24
   - Disagree: 7
   - Not applicable: 2

7. It is reasonable that wider community asks landholders to act in ways that will not harm native plants, animals
   - Agree: 54
   - Not sure: 20
   - Disagree: 24
   - Not applicable: 2

8. Landholders usually benefit from quality assurance measures that require them to adopt improved practices
   - Agree: 54
   - Not sure: 32
   - Disagree: 12
   - Not applicable: 2

9. The time expense in watering stock off-stream, off-wetlands is justified by improvements in bank stability, water quality, stock condition
   - Agree: 51
   - Not sure: 29
   - Disagree: 10
   - Not applicable: 10

10. Reduced production in short-term is justified where there are long-term benefits to environment
    - Agree: 50
    - Not sure: 30
    - Disagree: 17
    - Not applicable: 3

11. Local government should be more active in preventing farmland in rural areas being subdivided for residential use
    - Agree: 48
    - Not sure: 20
    - Disagree: 31
    - Not applicable: 1

12. Clearing native veg has substantially reduced existence & diversity of native plants, animals in district
    - Agree: 42
    - Not sure: 22
    - Disagree: 31
    - Not applicable: 6

13. Aboriginal communities & landholders should work together to protect cultural heritage sites on private property
    - Agree: 39
    - Not sure: 27
    - Disagree: 27
    - Not applicable: 7

14. In most cases, benefits of de-rocking outweigh the environmental costs eg. loss of native grasslands
    - Agree: 39
    - Not sure: 35
    - Disagree: 17
    - Not applicable: 9

15. Farmers should not be concerned when new land uses in their area require changes to their practices
    - Agree: 25
    - Not sure: 18
    - Disagree: 54
    - Not applicable: 3

16. It is difficult to obtain reliable expert advice on environmental topics
    - Agree: 21
    - Not sure: 27
    - Disagree: 51
    - Not applicable: 8

17. It is difficult to obtain reliable expert advice on agricultural production topics
    - Agree: 19
    - Not sure: 16
    - Disagree: 57
    - Not applicable: 8
There were some significant differences in respondents’ attitudes towards NRM across the 15 LMU [Appendix 2 Table F] including:

- It is reasonable that the wider community asks landholders to act in ways that will not harm native plants and animals.
- Reduced production in the short-term is justified where there are long-term benefits to the environment.
- In most cases, the benefits of de-rocking outweigh the environmental costs such as the loss of native grasslands.
- Clearing native vegetation has substantially reduced the existence and diversity of native plants and animals in this district.
- Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals.
- Local government should be more active in preventing farmland in rural areas being subdivided for residential use.

For some of these topics the division appears to be between LMU with high and low proportions of farmers.

Data analysis revealed links between respondents’ confidence in CRP and their adoption of CRP [Appendix 3 Table A3-3].

These findings suggest that investment in activities to improve levels of confidence in CRP including field days and demonstrations will enhance uptake of CRP.

Consistent with previous research in Australia (Curtis and DeLacy 1998), a stronger stewardship ethic (as measured by one item from a recognised stewardship scale) was not linked to significantly higher adoption of CRP. Indeed, the adoption of four sustainable agriculture CRP was negatively correlated with a stronger stewardship ethic [Appendix 3 Table A3-3]. There was a trend for farmers to have lower scores on the stewardship item and it seems that farming as an occupation is mediating some of these relationships in that the CRP, where there was a link with stewardship, were all farming related CRP.

### 5.6 Preferred arrangement for involving landholders in NRM programs

Through its RCS, the CCMA is responsible for investing around $15 million per year in NRM throughout the Corangamite region. The survey asked respondents to indicate their interest in a number of arrangements for involving landholders in NRM activities funded by these programs using the following five point scale: “definitely interested”, “strong interest”, “interested”, “some interest”, “not interested”. To simplify presentation these options were grouped into three categories “strong interest” (combining strong interest and definitely interested), “moderate interest” (interested), and “limited interest” (combining not interested and some interest). A “don’t know/ not aware” option was also provided in the survey and has been included in Figure 14.

**Key findings**

- Only a reduction in local government rates elicited strong interest from close to half (47%) of the respondents. A fixed grant incentive scheme administered by the CCMA (40% strong interest) and a tax rebate administered by the Commonwealth (38%) were the next most popular arrangements offered.

- Most respondents expressed limited interest in annual lease payments for land managed by others (77% showed limited interest), access to coordinated unpaid or
voluntary labour for on-ground work (65%), a person who coordinates on-ground work (57%), and non-government organisations (55%).

- Interest in a tender process (19% strong interest) was less than for involvement through the local Landcare group (28%) or a grant administered by a government department (22%).

- The range of options offered attracted strong interest from a maximum of 72% of all respondents. Interestingly, the reduction in rates (47%), a fixed grant incentive scheme administered by the CCMA (FGIS) (15%) and local Landcare group (5%) would engage 67% of all respondents.

- Removing the option of reduced local government rates, the next most preferred option of a fixed grant incentive scheme administered by the CCMA (FGIS) would attract 40% of respondents and 65% of all respondents. Interestingly, the FGIS (40%), a tax rebate (16%) and local Landcare group (4%) would engage 60% of all respondents.

- Interest in a fixed grant incentive scheme administered by the CCMA was the only option where there was a significant difference across the LMU.

Figure 14 Interest in funding arrangements for natural resource management (N=459)
Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Option</th>
<th>Very interested</th>
<th>Moderate interest</th>
<th>Limited interest</th>
<th>Not aware</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reduction in rates levied by local government</td>
<td>47</td>
<td>25</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>2. Fixed Grant Incentive Scheme for on-ground work administered by CCMA</td>
<td>40</td>
<td>26</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>3. Tax rebate administered by the Commonwealth Government</td>
<td>38</td>
<td>24</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>4. Through my local Landcare group</td>
<td>28</td>
<td>22</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>5. Annual payment for environment/biodiversity services</td>
<td>25</td>
<td>20</td>
<td>45</td>
<td>9</td>
</tr>
<tr>
<td>6. Grant scheme administered by a government department</td>
<td>22</td>
<td>25</td>
<td>43</td>
<td>10</td>
</tr>
<tr>
<td>7. Landholders paid for work on property in response to CCMA tender process</td>
<td>19</td>
<td>24</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td>8. Through non-government organisations e.g. GA, VFF</td>
<td>17</td>
<td>19</td>
<td>55</td>
<td>9</td>
</tr>
<tr>
<td>9. A person who coordinates on-ground work on property</td>
<td>16</td>
<td>19</td>
<td>57</td>
<td>9</td>
</tr>
<tr>
<td>10. Coordinated unpaid or voluntary labour to undertake on-ground work on property</td>
<td>13</td>
<td>14</td>
<td>65</td>
<td>8</td>
</tr>
<tr>
<td>11. Annual lease payments for land that managed by others</td>
<td>6</td>
<td>14</td>
<td>77</td>
<td>10</td>
</tr>
</tbody>
</table>
These findings suggest there is no single approach that is likely to appeal to the majority of landholders. That is, a variety of arrangements will need to be offered to meet landholder preferences. It is also clear that diminishing returns set in quickly as the number of options increase. Beyond three options there was little increase in the overall proportion of landholders engaged. Survey data also indicate a preference for direct funding of landholder activities rather than providing coordinators or access to volunteer labour.

The one significant difference across the 15 LMU was the interest in the Fixed Grant Incentive Scheme to support on-ground work that is administered by the CCMA. For example, 43% of respondents in Murdeduke preferred this option compared to 11% in Curdies [Appendix 1, Appendix 2 Table F].

5.7 Sources of information about natural resource management

Respondents were asked to indicate their sources of information about NRM for the CCMA region during the past 12 months using a list of 25 possible sources [Figure 15]. Respondents were then asked to nominate the three most useful information sources they had used. For data presentation we have simply provided the total number of times a source of information was listed as 1, 2 or 3 [Figure 15].

- Newspapers was the most frequently listed source (76%) and was also identified as the most useful source of information by the largest number of respondents (#1 rating).

- Books, magazines, journals; and mailed brochures, leaflets were listed as a source of information by 65% and 60% of respondents respectively, and were both in the top five for the sources identified as the most useful.

- Friends, neighbours, relatives; and Landcare group were the only other sources listed by at least half of the respondents. Landcare group was one of only two sources listed that were rated higher (#2) for usefulness than for use (#5).

- The internet was identified as a source of information by 23% of respondents but had a much higher rating for usefulness (#8) than for use (#17).

- The sources of information were also combined into three ‘supply’ categories: ‘media’ (eg. newspapers, radio, television and the internet); ‘information brokers’ (eg. friends, relatives & neighbours, Landcare group, CCMA and DSE); and ‘other’ (eg. mailed brochures and training courses). Fifty-five per cent of respondents said they used the media, 27% information brokers and 31% used other sources.

- The principal sources of information were similar for newer (<10 years) and longer-term residents. As might be expected newer residents were less likely to report they received information about NRM from the CCMA (newer 28%, longer-term 48%); the VFF (8% newer, 32% longer-term); their Landcare group (40% new, 53% longer-term); DPI (18% newer, 31% longer-term); and field days (21% newer, 37% longer-term). However, newer residents were more likely to report they received information from the internet (newer 42%, 19% longer-term); and universities (13% new, 5% longer-term). Interestingly, these differences are also consistent across smaller (<40 ha) and larger properties and farmer and non-farmer occupation groups.

- The CCMA was identified as a source of information by 44% of respondents and had a similar rating for use and usefulness (#7).
Figure 15 Sources of information about NRM (n=461)
Corangamite social benchmarking survey 2006

% respondents

1. Newspapers 76
2. Books, magazines, journals 65
3. Mailed brochures, leaflets 60
4. Friends, neighbours, relatives 52
5. Landcare group 51
6. Radio 46
7. Corangamite CMA 44
8. Dept Sustainability & Env (DSE) 35
9. Landcare coordinator 35
10. Field days 34
11. Television 33
12. Bureau of Meteorology 30
13. Dept Primary Industry (DPI) 28
14. Victorian Farmers Federation (VFF) 27
15. Environmental organisations 25
16. Extension officers 23
17. Internet 23
18. Local government 22
19. Workshops, seminars 19
20. Agricultural consultants 15
21. Industry groups 12
22. Your children 10
23. Training courses 10
24. Waterwatch, Fishcare, Saltwatch 8
25. Universities 7

Listed in most useful sources
Used as source of information
There were no significant differences in the sources of information used about NRM across the 15 LMU.

It was possible to identify the principal sources of information for respondents adopting specific CRP. Taking only those CRP where at least one information source was identified by more than 10% of respondents established that: the VFF was identified as an information source by 20% of those sowing perennial pasture; agricultural consultants and industry groups were identified as an information source by 40% of those adopting the application of lime; those adopting time controlled/ rotational grazing identified the VFF (48%), industry groups (35%), agricultural consultants (both 20%) as an information source; VFF (12%) and industry groups (11%) were the most frequently identified sources of information for cropping using minimum tillage practices; extension officers, DPI, universities and Bureau of Meteorology (all 14%) were the most frequently identified sources of information for those controlling pest animals and non-crop weeds; and Waterwatch (54%), agricultural consultants and universities (47%) were the most frequently identified sources of information for testing water quality of main water source for stock and irrigation [Appendix 3 Table A3-4].

5.8 Stage of life and long term plans

Survey respondents were asked to indicate their age at the time of the survey. They were also asked to indicate the years of residence in their local district and the number of years they had owned/ managed their property.

Respondents were also asked to indicate whether the long term plans for their property included family succession; disposal of land through sale, leasing or share farming; and acquisition of more land through purchase, leasing or share farming [Figure 16]. Respondents were asked to indicate the likelihood that they would take up each of the long-term choices offered in the survey. If respondents indicated that their long-term plans involved selling all or a large part of their property they were asked to indicate when this might occur.

These data were then used to explore the extent of future change in owners/ managers and the implications of these changes for the adoption of CRP.

Key findings

- The average age of landholders in the Corangamite region was 55 years.
- The median length of residence was 34 years.
- The median length of property ownership was 22 years.
- Most (66%) respondents indicated that they would continue to live on the property.
- Sixty-three per cent of respondents said ownership of the property would stay in their family. These respondents managed 73% of the land surveyed.
- Twenty-three per cent of respondents indicated that they had plans to expand their property (buy, lease or share-farm additional land). These respondents managed 37% of the land surveyed.
- Thirty-eight per cent of respondents indicated that they would dispose of all or a large part of their property either through sale, leasing or share farming (27% of the land surveyed).
• The median year of property transfer for all properties was 2016 (half of all properties surveyed will change hands in the next decade). This is higher than historical trends based on analysis of property sales data records from the Valuer General. Most property acquisition is expected to be by new settlers rather than existing residents.

• Respondents planning to dispose of their properties were older, had owned their properties for longer, were less likely to be a member of a commodity group and were less likely to have long-term plans involving the family compared to those respondents planning to acquire land.

• Plans to dispose or acquire land were not linked with adoption of CRP.

• Only 17% of respondents had lived in the CCMA region for less than ten years and 19% of respondents had owned/managed their properties for less than ten years.

• Newer residents were younger, owned smaller properties, were less likely to live on the property, were less likely to be farmers, worked fewer hours on-farm/more off-farm, less likely to report an on-property profit and were less likely to have family members interested in taking on the property than longer-established residents.

• Newer residents were more concerned than longer-term residents about habitat loss caused by clearing, intensive industries affecting the quality of the environment, and decline in soil health undermining productive capacity. Longer-term residents were more concerned about the movement of youth out of the district.

• Longer length of residence was linked to significantly increased adoption of most CRP, including some of those related to biodiversity conservation.

• Newer residents were more likely to indicate that their long-term plans include all or some of the property being placed under a conservation covenant.

• Twenty-two per cent of respondents indicated they were going to change enterprise mix to reduce their farm workload.

• Nineteen per cent indicated they planned to reduce their off-property work load, and a further 19% also indicated they planned to seek further off-property work.

• Interest in conservation covenants was expressed by 11% of respondents, who managed 7% of the land surveyed.

Age
The median age of survey respondents in the Corangamite region was 55 years. Twenty per cent of the land surveyed (21,580 ha) was owned by respondents 65 years or over. Age was not related to adoption of CRP (using a linear model). Median age was significantly different by LMU [Appendix 2 Table G].

Long-term plans
Fifteen statements explored respondent’s long-term plans for their property, including family succession; disposal of land through sale, leasing or share farming; and acquisition of more land through purchase, leasing or share farming. These data were expected to contribute to better understanding of the potential for changes in the owners/managers and the implications of these changes for the adoption of CRP. The response options for these statements were “highly likely”, “likely”, “not sure”, “unlikely”, “highly unlikely” and “not applicable”. These response options have been collapsed into four groups – “likely”
(combining “highly likely” and “likely”), “not sure”, and “unlikely” (combining “highly unlikely” and “unlikely”) and “not applicable” [Figure 16].

**I will live on the property**
Most (66%) respondents said they planned to continue to live on their property. This group managed almost 70% or 76,920 ha of the land surveyed. The median age of all survey respondents was 55 years, and for this cohort, the median age was 54 years.

**Figure 16 Long term plans (N=482)**
Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Long term plans</th>
<th>% respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I will live on the property</td>
<td>66 6 22 4</td>
</tr>
<tr>
<td>2. Ownership of the property will stay in the family</td>
<td>63 13 20 4</td>
</tr>
<tr>
<td>3. Someone else in the family will make management decisions</td>
<td>29 10 54 7</td>
</tr>
<tr>
<td>4. Additional land will be purchased, leased or share-farmed</td>
<td>23 16 54 8</td>
</tr>
<tr>
<td>5. The enterprise mix will be changed to reduce my farm load</td>
<td>22 19 48 11</td>
</tr>
<tr>
<td>6. The property will be sold</td>
<td>22 13 61 3</td>
</tr>
<tr>
<td>7. I will reduce the extent of my off-property work</td>
<td>19 9 35 37</td>
</tr>
<tr>
<td>8. I will seek additional off-work property</td>
<td>19 8 53 21</td>
</tr>
<tr>
<td>9. All or most of the property will be leased</td>
<td>12 14 66 7</td>
</tr>
<tr>
<td>10. All or some part of the property will be placed under a conservation covenant</td>
<td>11 13 62 14</td>
</tr>
<tr>
<td>11. The property will be subdivided and a large part of the property sold</td>
<td>9 7 73 12</td>
</tr>
<tr>
<td>12. All or most of the property will be share farmed</td>
<td>8 11 72 10</td>
</tr>
<tr>
<td>13. The property will be subdivided and a small part of the property sold</td>
<td>8 9 70 13</td>
</tr>
<tr>
<td>14. A property manager will be employed to run the property</td>
<td>6 14 76</td>
</tr>
<tr>
<td>15. The property will be sold and another rural property bought</td>
<td>6 9 76 9</td>
</tr>
</tbody>
</table>
Ownership of the property will stay within the family
Most (63%) respondents said they expected ownership of their property would stay within the family. These respondents managed 80,500 ha or 73% of land surveyed. Only 5% of those who said management would stay within the family had a completed family succession plan. Having a completed succession plan was not linked to adoption of CRP.

Additional land will be purchased, leased or share farmed
Twenty-three per cent of respondents said it was likely that their long term plans would involve increasing the land they owned/managed by purchasing, leasing or share-farming additional land [Figure 16]. This group of respondents managed 40,685 ha or 37% of the land surveyed. Those who said they were likely to expand owned significantly larger properties than all other respondents with a median property size of 250 ha (n=96) compared to 90 ha for other respondents (n=324).

Property sales
Twenty-two per cent of respondents said that they were likely to sell the entire property. Eight per cent thought they were likely to subdivide and sell a large part of their property. Combining these groups, 25% of respondents planned to sell (n=118 out of n=467 respondents who answered the question). This group managed 16% of the land surveyed (17,640 ha).

All or most of the property will be leased or share-farmed
Twelve per cent of respondents said that they were likely to lease all or most of their property to someone else and eight per cent said it was likely all or most of the property would be share-farmed. Combining these groups suggested that 14% or 15,920 ha of the land surveyed would be added to the stock of land leased or share-farmed.

The enterprise mix will be changed to reduce my farm workload
Twenty-two per cent of respondents indicated they would change their enterprise mix to reduce their workload. This cohort managed 28% or 30,820 ha of the land surveyed.

All or some part of the property will be covenanted
Eleven per cent of respondents said that all or some of the property would be covenanted. This group managed 7% or 7,360 ha of the land surveyed.

Differences in social and farming attributes of those planning to acquire and dispose
Thirty-eight per cent of respondents planned to sell, lease or share-farm all or a large part of their property. These respondents owned 30,280 ha or 27% of the land surveyed. Respondent’s long-term intentions to acquire or dispose of land have also been mapped by LMU [Figure 17]. There are patterns across the LMU, for example, the three LMU that are more distant from Geelong have larger numbers of respondents indicating they plan to dispose of land. These areas have higher proportions of farmers and it is possible that farmers approaching retirement are intending to sell their properties. Some caution needs to be exercised when interpreting these maps in that the intentions of potential new residents from outside the survey area were not able to be included.

Respondents who indicated they were going to dispose of all or most of their property (through sales, lease or share farm) were significantly different from those planning to acquire land. Those planning to acquire more land operated larger farms, were more likely to be farmers, were younger, more likely to be involved in a commodity group, and more likely to have family members interested in taking on the property [Table 2]. There was a trend, but not statistically significant link, between acquiring land and adoption of most CRP.
Figure 17 Long term plans of respondents: acquire or dispose land by LMU (N=482)
Corangamite social benchmarking survey 2006

Number acquire land (n=105)

Number dispose land (n=175)
### Table 2 Differences between those intending to dispose/ acquire land (N=283)
Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Topic</th>
<th>Dispose (n=178)</th>
<th>Acquire (n=105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (median) *</td>
<td>57 yrs</td>
<td>51 yrs</td>
</tr>
<tr>
<td>Farmers (by occupation)</td>
<td>51%</td>
<td>70%</td>
</tr>
<tr>
<td>Area of land managed (median)</td>
<td>120 ha</td>
<td>290 ha</td>
</tr>
<tr>
<td>Years owned the property (median) *</td>
<td>25 yrs</td>
<td>20 yrs</td>
</tr>
<tr>
<td>Member of a commodity group *</td>
<td>13%</td>
<td>31%</td>
</tr>
<tr>
<td>Involved in local action planning (median level) *</td>
<td>No involvement</td>
<td>Little involvement</td>
</tr>
<tr>
<td>Live on the property *</td>
<td>53%</td>
<td>85%</td>
</tr>
<tr>
<td>Long-term property plan or vision *</td>
<td>72%</td>
<td>90%</td>
</tr>
<tr>
<td>Family interested in taking over property *</td>
<td>28%</td>
<td>68%</td>
</tr>
</tbody>
</table>

* denotes significant difference

### Extent and timing of property owner/ manager changes

For the Corangamite survey we identified three possible ways in which a change in property owner/ manager could occur:

1. Family succession
2. Disposal of all/ large part of the property (sell all or a large part of the property, or lease or share-farm all/ most of the property)
3. Acquisition of property (purchase, share-farm or lease additional land).

Drawing on survey data the research team was able to predict the extent and timing of future changes in property owners/ managers. The approach involved the following steps taken in this order:

1. If property to be sold or subdivided and a large part sold

   Where respondents indicated that it was highly likely or likely that their property would be sold or subdivided and a large part sold, they were asked to indicate the year they thought this sale might occur and it was assumed that this was when the property would be sold (n=148). For those people who indicated they were likely to sell but did not supply a year (n=11), the median year of sale for people of the same age was allocated to them, and if there was not an exact age a tolerance range of four years was used. (Note: two respondents did not supply their age, and are thus allocated the median for all respondents of 55 years, with property transfer assumed to occur on retirement at 65 years). The median year of change of ownership for those likely to sell was 2010 with 7% or 7,660 ha of land to be sold during this time. By 2016, 10% of the area surveyed or 11,250 ha will change hands through property sales.

2. Ownership will stay in family

   For respondents who indicated that they had a family succession plan, property transfer was assumed to occur on retirement for those under 65 (n=19). For those over 65 (n=16) transfer was assumed to occur on death which was calculated using ABS Life-Expectancy
tables (ABS 2004). For those who indicated that they planned to pass the property on in the family and had no succession plan (n=61), transfer was assumed to occur on death as farmers tend to work past retirement age (65 years) with 15% of farmers in farming families being aged 65 years and over in 2001 (ABS 2003). (Note: one male respondent did not provide his age, and was assigned the median age for males of 54 years.)

**Figure 18 Predicted time of change in property ownership by LMU (n=482)**
Corangamite social benchmarking survey 2006

3. For all others, including those saying they will stay on the property

For respondents not planning to sell, it was assumed that transfer would occur on retirement at age 65 years for those under 65 years (n=193) and at death for those over 65 years. For the latter set, ABS Life-Expectancy Tables (ABS 2004) were used to calculate the remaining life expectancy and provide the expected date of property transfer (n=40).

(Note: the median age of 55 years was assigned to those 19 respondents who hadn’t provided their age. It was assumed that these properties would be transferred on retirement at age 65 years. Most of these respondents did not provide their gender, so they were assigned the median age for all respondents, and the four that provided their gender were assigned the median for their gender.)
The median year of transfer for all properties was 2016 [Figure 18], with 52% of the surveyed land to change hands by 2016 (57,600 ha). Further analyses of survey data suggest that most of this turnover will be from new settlers rather than existing residents acquiring property within the CCMA region. For example, only seven per cent of those who had owned their property for less than ten years (new property owners) had lived in their district for more than ten years (longer-term residents). The year of predicted property transfer was not significantly different across LMU.

Given that the median length of residence is 34 years, it seems that the rate of change in property ownership is increasing. Analysis of property sales data held by the Victorian Valuer General that are tagged to Local Government Area (LGA) suggested that one quarter (25%) of rural properties in the CCMA region greater than 10 ha changed hands between 1995 and 2005.

**Differences between newer and longer-term residents**

Assuming that changes in property ownership result in changes in property management, the transfer of 50% of rural properties and 52% of the surveyed land area over the next ten years is likely to have significant implications for NRM in the CCMA region. Survey data allowed us to test the extent that newer and longer-term landholders were different (e.g. occupation, age, long-term plans) and the extent that they adopted CRP at different levels. It is important to acknowledge that these analyses did not include those already living in the region who have recently acquired land (purchased, leased or family succession).

In much of the literature on new settler/ longer-term residents the most common division point has been ten years. That is, residents who have lived in a region for less than ten years are classed as newcomers and those who have been in the area for ten years or more are longer-term residents (Burnley & Murphy 2004; Rudzitis 1999). Other studies have used different thresholds, for example five or seven years (Brown, Dorius & Krannich 2005; Ford 1999). Other researchers have classified those who lived in an area before the major wave of migration as long-term residents and those arriving during or after the wave as newcomers (Hunter, Boardman & Saint Onge 2005). For the Corangamite study we have used ten years as the division between newer and longer-term residents.

**Characteristics of newer and longer-term residents**

Newer and longer-term settlers were significantly different on a range of social and farming variables [Table 3]. Newer residents were younger, owned smaller properties, were less likely to report their property was their principal place of residence, worked longer hours off-farm and less on-farm, were less likely to report an on-property profit, less likely to have plans involving family members, and were less likely to be farmers. Newer residents were more likely to be involved in grape growing but less likely to be involved in the dairy industry.

**Assessment of issues**

Newer residents appeared to be more concerned about environmental issues, while longer-term residents appeared more concerned with social and property-related issues. Longer-term residents were more concerned about regulations and red-tape complicating management and the movement of young people out of the district compared to newer residents. On the other hand, newer residents were more concerned about the loss of habitat caused by clearing, intensive industries affecting the quality of the environment, and decline in soil health undermining productive capacity.

**Values attached to the property**

There was no significant difference between newer and longer-term residents in valuing their properties for contributing to the environmental health of the district or passing the property on in better condition. Longer-term residents attached higher value to their property for production or social reasons, such as for providing most of the household
### Table 3 New settlers and longer-term residents: significant differences (N=462)

#### **Corangamite social benchmarking survey 2006**

<table>
<thead>
<tr>
<th>Topic</th>
<th>New settlers (&lt;10 years in district) (n=79)</th>
<th>Longer-term residents (&gt;10 years in district) (n=383)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (median) *</td>
<td>50 yrs</td>
<td>55 yrs</td>
</tr>
<tr>
<td>Area land owned (median) *</td>
<td>40 ha</td>
<td>142 ha</td>
</tr>
<tr>
<td>Farmer (by occupation) *</td>
<td>12%</td>
<td>64%</td>
</tr>
<tr>
<td>Principal residence *</td>
<td>58%</td>
<td>83%</td>
</tr>
<tr>
<td>Landcare member</td>
<td>25%</td>
<td>37%</td>
</tr>
<tr>
<td>Hours worked on-property/week (median) *</td>
<td>14 hrs</td>
<td>40 hrs</td>
</tr>
<tr>
<td>On-property profit *</td>
<td>26%</td>
<td>69%</td>
</tr>
<tr>
<td>Family interested in taking over property *</td>
<td>31%</td>
<td>53%</td>
</tr>
<tr>
<td>Part of property under conservation covenant *</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Long term plans involve conservation covenant *</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Concerned about loss of habitat due to clearing *</td>
<td>42%</td>
<td>24%</td>
</tr>
<tr>
<td>Property valued for providing income*</td>
<td>15%</td>
<td>65%</td>
</tr>
<tr>
<td>Property valued for habitat *</td>
<td>55%</td>
<td>40%</td>
</tr>
<tr>
<td>Expressed stewardship value</td>
<td>56%</td>
<td>50%</td>
</tr>
<tr>
<td>Knowledge of how to recognise signs of salinity *</td>
<td>18%</td>
<td>36%</td>
</tr>
<tr>
<td>Dairy as enterprise *</td>
<td>4%</td>
<td>25%</td>
</tr>
<tr>
<td>Grape growing as enterprise *</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Knowledge on-property handling/storage chemicals*</td>
<td>18%</td>
<td>49%</td>
</tr>
<tr>
<td>CRP tree/ shrub planting*</td>
<td>61%</td>
<td>78%</td>
</tr>
<tr>
<td>CRP soil testing paddocks*</td>
<td>42%</td>
<td>57%</td>
</tr>
<tr>
<td>CRP fencing waterways to manage stock access</td>
<td>39%</td>
<td>50%</td>
</tr>
<tr>
<td>CRP fencing native bush to manage stock access</td>
<td>31%</td>
<td>30%</td>
</tr>
<tr>
<td>CRP establishing perennial pastures*</td>
<td>28%</td>
<td>57%</td>
</tr>
<tr>
<td>CRP lime applications*</td>
<td>39%</td>
<td>57%</td>
</tr>
<tr>
<td>CRP cropping using rotation with pasture*</td>
<td>31%</td>
<td>51%</td>
</tr>
<tr>
<td>CRP minimum tillage*</td>
<td>27%</td>
<td>44%</td>
</tr>
<tr>
<td>CRP control pest animals, non-crop weeds</td>
<td>81%</td>
<td>90%</td>
</tr>
<tr>
<td>Internet as source of information *</td>
<td>41%</td>
<td>19%</td>
</tr>
<tr>
<td>Landcare as source of information *</td>
<td>40%</td>
<td>53%</td>
</tr>
</tbody>
</table>

* denotes significant difference
income, providing a sense of accomplishment from building/maintaining a viable business and being part of a rural community. Newer residents placed higher value on their property providing habitat and as a place for recreation. Newer residents were more likely to report that their property was under a conservation covenant and that their long-term plans involved placing all or some part of their property under a conservation covenant [Table 3 provides information for some of these topics].

**Attitudes to NRM**

Newer and longer-term residents expressed similar attitudes towards NRM topics that were included in the survey. For example, both groups felt landholders should manage their properties in expectation of drought events and that fencing to manage stock access is an essential part of the work required to revegetate waterways. There was no significant difference between the two groups on the measure of stewardship included in the survey (that reduced production in the short-term is justified where there are long-term benefits to the environment). Newer residents were more likely to agree with several statements that explored views about the extent that the wider community can expect landholders to act in ways that will protect native plants and animals (or a duty of care to the environment).

**Knowledge**

Longer-term residents reported significantly higher levels of knowledge on a number of topics included in the survey, including how to interpret results from soil tests; how to recognise signs of salinity; ability to identify acidic soils; legislation about the on-property handling and storage of chemicals; the benefits of ground cover for soil health; and the ability of vegetation in waterways to improve water quality. Both groups had little knowledge of CCMA strategies (less than 10%).

**Interest in funding arrangements**

There were no significant differences between newer and longer-term residents in terms of their interest in different NRM related funding arrangements.

**CRP**

There is a clear pattern for longer-term residents to undertake most CRP at significantly higher levels: tree planting; soil testing; establishing perennial pastures; lime applications; cropping using rotation with pasture; and minimum tillage. New settlers ranked higher only on area of farm forestry (this was not significant).

Despite the findings that newer residents have stronger environmental values and attitudes towards conservation of biodiversity, they were not more likely to adopt conservation related CRP included in the survey. This finding runs contrary to our expectations that newer residents would have stronger environmental values/attitudes and be more innovative and be able to invest in on-ground environmental works [Table 3].

**Sources of information**

As explained earlier, the principal sources of information were similar for newer (<10 years) and longer-term residents. As might be expected newer residents were less likely to report they received information about NRM from the CCMA, the VFF, their Landcare group, DPI, and field days. However, newer residents were more likely to report they received information from the internet and universities.
5.9 Involvement in planning processes

Respondents were asked to indicate the extent of their involvement in a number of planning processes. These included whole farm planning, having a long-term plan or vision for improvements to the property, succession planning and local action planning.

Key findings

- Less than half of all respondents were involved in whole farm planning, and 15% had completed or had an on-going whole farm plan.

- More than three quarters (82%) of all respondents said they had a long-term plan or vision for improvements they would like to make on their property and of these respondents, 32% said they were well advanced or had completed implementing these improvements on their property.

- Just under half of the respondents said they had family members interested in taking over the property in the future; however of these only a quarter had begun to plan the property transfer to the next generation.

- Just under half of all respondents said they had been involved in local action planning (e.g. with Landcare, community development or industry associations).

- Involvement in planning processes didn’t vary significantly across LMU.

- Involvement in planning processes was linked to significantly higher adoption of CRP.

Figure 19 Involvement in whole farm planning (N=482)

Corangamite social benchmarking survey 2006

Whole farm planning

The survey asked respondents to indicate if they had developed or were currently developing a written whole farm plan that included a map or other documents that addressed the existing property situation and included future management and development plans. The response options were “completed/ongoing”, “well advanced”, “halfway”, “early stages”, and “not started”.
Less than half of all respondents (41%) were involved in whole farm planning, and only 15% had completed or had an on-going whole farm plan. Respondents who were farmers by occupation and those with larger properties were significantly more likely to be involved in whole farm planning [Figure 19].

There were no significant differences in the proportion of respondents involved in whole farm planning across the 15 LMU.

Involvement in whole farm planning was significantly linked to the adoption of CRP, including: farm forestry; fencing to manage stock access to waterways; native bush/grasslands fenced to manage stock access; soil testing; sowing perennial pasture (including lucerne); lime application; rotation cropping; time controlled or rotational grazing; minimum tillage practices; and testing water quality [Appendix 3 Table A3-5].

**Long-term plan or vision for improvements to property**

Survey respondents were asked about the extent they had a long-term plan or vision for improvements to their property, and if so, how much of that vision they had achieved. Those respondents who said they had a long-term plan or vision were asked to use the following options to rate their performance against this plan: “completed/ongoing”, “well advanced”, “halfway”, “early stages”, and “not started”.

Almost all respondents (82%) to the survey said that they had a long-term plan or vision for improvements to their property. Furthermore, 93% of these respondents said they had made at least some progress towards making these improvements and over a third were well advanced or had completed implementing those improvements [Figure 20].

**Figure 20 Long-term plan or vision for improvements to property (N=375)**
Corangamite social benchmarking survey 2006

There was no significant difference across the LMU in the proportion of respondents who said they had a long-term vision for improving their property.
Respondents who had a vision, or were further advanced in achieving a long-term plan or vision, were significantly more likely to adopt a range of CRP; including trees/shrubs planted; fencing to manage stock access to waterways; native bush and grasslands fenced to manage stock access; soil testing; sowing perennial pasture (including lucerne); lime applications; rotation cropping; time controlled or rotational grazing; and testing water quality [Appendix 3 Table A3-5].

**Succession planning**

Respondents were asked if they had family members interested in taking on the property in the future and were asked to provide a simple yes or no response. Those who said yes, were then asked to indicate the stage of succession plan development. The response options were “completed/ongoing”, “well advanced”, “halfway”, “early stages”, and “not started”.

As noted earlier, 63% of respondents said their long-term plans were likely to involve passing their property on to another family member. As might be expected, a smaller proportion (49%) said they had family members interested in taking on the property in the future. Of these, 46% said they had not started on getting agreement to a succession plan [Figure 21].

**Figure 21 Stage reached in succession planning (N=219)**
Corangamite social benchmarking survey 2006

Respondents who were Landcare members or farmers were significantly more likely to say they had family members interested in taking on the property. Farmers were more likely to have started the process of reaching an agreement to a succession plan.

There were no significant differences in the proportion of respondents involved in succession planning across the 15 LMU.
Respondents who said they had family members interested in taking on the property in the future were significantly more likely to adopt a range of CRP: trees/shrubs planted; fencing to manage stock access to waterways; soil testing; sowing perennial pasture (including lucerne); lime applications; rotation cropping; and time controlled or rotational grazing [Appendix 3 Table A3-5].

Local action planning

The survey asked respondents to indicate their level of involvement in local action planning using examples such as Landcare, community development or industry associations. The possible response options were “no involvement”, “little involvement”, “some involvement”, and “highly involved”.

As was the case with other planning activities, just under half of all respondents (48%) said they were involved in local action planning. A small proportion of these respondents (7%) said they were highly involved in local action planning activities [Figure 22]. Landcare members and farmers were significantly more likely to be engaged in local action planning.

There were no significant differences in the proportion of respondents involved in local action planning across the 15 LMU.

Figure 22 Involvement in local action planning (N=454)
Corangamite social benchmarking survey 2006

Involvement in local action planning was significantly linked to the adoption of CRP, including: farm forestry; fencing to manage stock access to waterways; soil testing; sowing perennial pasture (including lucerne); lime applications; time controlled or rotational grazing; minimum tillage practices; and testing water quality [Appendix 3 Table A3-5].
5.10 Involvement in government programs, Landcare and commodity groups

Respondents were asked to indicate their involvement in government funded programs, Landcare and commodity groups.

Key findings

- Just under a third of respondents said that they had work undertaken on their property in the past five years that was at least partially funded by government programs.
- Over a third of respondents said they were currently a member of a Landcare group.
- Less than a quarter of respondents were a member of a local commodity group.
- Involvement in government programs, commodity groups and Landcare were all linked to significantly higher adoption of most CRP.
- There were no significant differences in the proportion of landholders involved in government funded programs across the CCMA region, but there were differences across the region for participation in Landcare and commodity groups.

Work funded by government

Most (74%) respondents said they had not received government funding to undertake work on their property in the last five years. Respondents who were Landcare members or farmers were significantly more likely to report they had received this type of support.

There was no significant difference across the 15 LMU in the proportion of respondents who said they had undertaken work on their property in the past 5 years that was at least partially funded by government.

| Government funds received in the past five years was significantly linked to higher adoption of all CRP included in the survey [Appendix 3 Table A3-5]. |

Landcare membership

Respondents were asked if they were a member of a local Landcare group and if so, how many activities they had attended in the past 12 months. Thirty-five per cent of survey respondents said that they were a Landcare member. The median number of activities attended in the last 12 months was two activities.

Compared to non-Landcare participants, group members were significantly more likely to operate larger properties (53% of all the land surveyed), be farmers by occupation, report a profit, have owned property for longer, expected a family member to take on the property, be involved in a commodity group and have completed a short-course relevant to property management [Table 4].

There was a significant difference in Landcare membership across the 15 LMU. For example, 15% of all respondents in Hovells were in Landcare compared to 60% in both Aire and Woady Yaloak LMU [Appendix 1, Appendix 2 Table G].
Table 4

Characteristics of Landcare and non-Landcare participants (N=482)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Landcare</th>
<th>Non-Landcare</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation farmer</td>
<td>160</td>
<td>66 %</td>
<td>48 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Completed short course relevant to property management</td>
<td>160</td>
<td>53 %</td>
<td>28 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Hours/ week worked on farm - median</td>
<td>156</td>
<td>50</td>
<td>25</td>
<td>Significant</td>
</tr>
<tr>
<td>Hours/ week volunteer activities - median</td>
<td>150</td>
<td>2</td>
<td>0</td>
<td>Significant</td>
</tr>
<tr>
<td>Property is principal place of residence</td>
<td>155</td>
<td>86 %</td>
<td>73 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Member local commodity group</td>
<td>161</td>
<td>27 %</td>
<td>14 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Employed consultant for on-property management</td>
<td>163</td>
<td>30 %</td>
<td>19 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Work on property funded by government program</td>
<td>164</td>
<td>52 %</td>
<td>13 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Conservation covenant</td>
<td>163</td>
<td>10 %</td>
<td>5 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Property made a net profit</td>
<td>157</td>
<td>75 %</td>
<td>54 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Profit range - median</td>
<td>105</td>
<td>$30,000 to $40,000</td>
<td>$20,000 to $30,000</td>
<td>Significant</td>
</tr>
<tr>
<td>Written whole farm plan stage</td>
<td>155</td>
<td>Early Stages</td>
<td>Not Started</td>
<td>Significant</td>
</tr>
<tr>
<td>Family members interested taking on property</td>
<td>155</td>
<td>57 %</td>
<td>45 %</td>
<td>Significant</td>
</tr>
<tr>
<td>Agreed to a succession plan - median stage</td>
<td>87</td>
<td>Early Stages</td>
<td>Early Stages</td>
<td>Not significant</td>
</tr>
<tr>
<td>Involved in local action planning - median</td>
<td>161</td>
<td>Some Involvement</td>
<td>No Involvement</td>
<td>Significant</td>
</tr>
<tr>
<td>Land owned/managed - median ha</td>
<td>137</td>
<td>265</td>
<td>100</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Landcare membership was linked to significantly higher adoption of all the CRP surveyed with the exception of testing for water quality [Appendix 3 Table A3-5].
Membership of local commodity group

Eighteen per cent of respondents said they were a member of a local commodity group. Respondents in commodity groups were significantly more likely to operate larger properties, be farmers by occupation and to be Landcare members.

There was a significant difference in commodity group membership across the 15 LMU, ranging from 0% in Hovells and Otway Coast to 79% in Murdeduke [Appendix 1, Appendix 2 Table G].

Nine per cent of respondents said they were members of both a Landcare group and a commodity group.

| Membership of a local commodity group was linked to significantly higher adoption of most CRP included in the survey [Appendix 3 Table A3-5]. |

5.11 Property size and farming as an occupation

This section of the report focuses on a number of topics related to property size and occupation, including:

- property size;
- occupational grouping that best describes main area of paid/unpaid work;
- level of on-property and off-property work.

Key findings

- The median property size of landholders surveyed was 130 ha.
- Only 5% of respondents (n=23, N=439) owned/managed properties greater than 1,000 ha and this grouped owned 35% of the properties surveyed.
- One half (53%) of respondents said that they were farmers and this group managed 88% of the total area surveyed.
- A quarter of respondents lease, share-farm or agist land to others and a similar proportion lease, share-farm or agist from others.
- Leasing, share-farming or agisting land is linked to higher adoption of CRP, with those leasing from others more likely to adopt sustainable agriculture CRP and those leasing to others more likely to adopt biodiversity conservation CRP.
- Farming as an occupation was linked to higher adoption of sustainable agriculture CRP, but not to some CRP related to biodiversity conservation.

Property size

Survey respondents were asked to indicate the total area of land that was owned or managed by them or their immediate family in their local district. This area varied widely, ranging from the lower limit of 10 ha up to properties of 4,500 ha. The median property size owned or managed by respondents to the survey was 130 ha. Property size varied significantly across the 15 LMU from a median property size of 40 ha in Otway Coast to 568 ha in Murdeduke [Figure 23, Appendix 1, Appendix 2 Table G].
Twenty-three per cent of respondents owned/managed properties smaller than 40 ha and this group owned/managed 1,960 ha and this represented 1.7% of the area of all properties surveyed. Only 5% of respondents (n=23, N=439) owned/managed properties greater than 1,000 ha (total area owned by this group was 37,700 ha) and this group owned 35% of the area of all properties surveyed.

Respondents who managed larger properties (>40 ha) were significantly more likely to adopt all CRP with the exception of controlling pest animals and non-crop weeds [Appendix 3 Table A3-5].

**Area leased, share-farmed or agisted to or from others**

*Leased from others*
The survey asked respondents to indicate the area of their property that they leased, share-farmed or agisted from others. A quarter of the respondents (26%) said that they leased, share-farmed or agisted property from others (median 67 ha). The area leased was 12% of the total area surveyed (13,950 ha).
**Leased to others**

The survey also asked respondents to indicate if they leased, share-farmed or agisted any part of their property to others. A quarter of the respondents (24%) said they leased, share farmed or agisted property to others. The area leased to others was 15% of the total area surveyed (17,700 ha).

After removing the 20 respondents who both leased land out and leased land from others, there were 72 respondents who leased land to others and 75 respondents who leased land from others. These two cohorts are significantly different in that those leasing from others are more likely to be farmers by occupation (82% compared to 30%), operate larger properties (281 ha compared to 68 ha), were younger (52 years compared to 58 years), have family members interested in taking on the property (61% compared to 41%) and be involved in short courses related to property management (49% compared to 29%).

Leasing (and share-farming or agisting) land from others is significantly linked to higher adoption of a number of sustainable agriculture CRP while leasing land to others is significantly linked with higher adoption of CRP related to biodiversity conservation [Appendix 3 Table A3-5].

**Occupation**

Respondents were asked to indicate the occupational grouping that they thought best described their main area of paid/unpaid work in terms of the time and energy they put into that activity. Examples provided in the survey included farmer, teacher, investor or retiree.

Responses to this open-ended question were grouped into five occupational categories: farmer, professional, trades, retired and other. Farmers were the largest occupational grouping and comprised half of all respondents (53%).

Forty-seven per cent of all respondents were not farmers and these respondents owned or managed 14,200 ha (12%) of all land surveyed. However, in some LMU non-farmers owned a majority of the land area (Hovells, 65%, Otway Coast, 75%).

There were significant differences in the proportion of respondents who were farmers across the 15 LMU. For example, 13% of respondents in Otway Coast were farmers compared to 86% in Murdeduke and 88% in Lismore [Table 5, Appendix 1].

Compared to non-farmers, farmers were significantly more likely to operate larger properties, be Landcare members, to report a profit, lived in district longer, expected a family member to take on the property, be involved in a commodity group and have completed a short-course relevant to property management.

Respondents whose primary occupation was farming were significantly more likely to adopt CRP, particularly those related to sustainable agriculture. Indeed, there were only two CRP where farming as an occupation was not significantly linked to higher adoption: farm forestry and fencing native bush or grasslands to manage stock access [Appendix 3 Table A3-5].
Table 5
Occupation by LMU (N=482)

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>N</th>
<th>n</th>
<th>Farmer %</th>
<th>Professional %</th>
<th>Retired %</th>
<th>Trade %</th>
<th>Other %</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>11</td>
<td>10</td>
<td>50</td>
<td>20</td>
<td>30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BELLARINE</td>
<td>17</td>
<td>17</td>
<td>35</td>
<td>12</td>
<td>41</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>CURDIES</td>
<td>57</td>
<td>51</td>
<td>67</td>
<td>10</td>
<td>18</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>GELLIBRAND</td>
<td>24</td>
<td>22</td>
<td>55</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>HOVELLS</td>
<td>13</td>
<td>12</td>
<td>17</td>
<td>58</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>LEIGH</td>
<td>27</td>
<td>26</td>
<td>42</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>LISMORE</td>
<td>26</td>
<td>24</td>
<td>88</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MID BARWON</td>
<td>29</td>
<td>28</td>
<td>46</td>
<td>14</td>
<td>18</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>MOORABOOL</td>
<td>50</td>
<td>46</td>
<td>46</td>
<td>22</td>
<td>9</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>MURDEDUKE</td>
<td>14</td>
<td>14</td>
<td>86</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>OTWAY COAST</td>
<td>17</td>
<td>15</td>
<td>13</td>
<td>20</td>
<td>40</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>STONY RISES</td>
<td>66</td>
<td>64</td>
<td>61</td>
<td>19</td>
<td>6</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>THOMPSONS</td>
<td>40</td>
<td>37</td>
<td>35</td>
<td>22</td>
<td>8</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>UPPER BARWON</td>
<td>48</td>
<td>43</td>
<td>58</td>
<td>19</td>
<td>7</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>WOADY YALOAK</td>
<td>43</td>
<td>40</td>
<td>60</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Overall</td>
<td>482</td>
<td>449</td>
<td>53</td>
<td>16</td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

5.12 Levels of income and property equity

The survey included three questions exploring levels of income and levels of equity in the property. A profit was defined as a situation where the amount of income from the property exceeded all expenses before tax. Respondents who indicated a profit were then asked to select the amount of profit from one of eight ranges. For the purpose of data analysis, each respondent was allocated the mid-point of the chosen dollar interval. These questions were completed by most respondents with responses from 92% of the total sample.

Key findings

- The average on-property income was $25,000 with a third of respondents indicating their profit was over $50,000.
- Most respondents reported they had more than 80% equity in their property.
- Reporting an on-property profit was linked to significantly higher levels of adoption of most CRP.
• Property equity levels were not significantly linked to adoption of CRP.

• There were significant differences in on-property profit across LMU but not for equity levels.

• The number of days of paid off-property work varied across the LMU with the proportion of farmers by occupation. That is, non-farmers worked significantly more days off-property.

On-property income

Survey data indicated that over half of all respondents (61%) made an on-property profit for the 2004/2005 financial year. The median on-property profit for all respondents was approximately $25,000 [Figure 24]. Overall, 34% of respondents exceeded the $50,000 profit threshold considered necessary to sustain a household and invest in a farm’s natural and capital resources (Rendell et al. 1996).

Using a $50,000 threshold there were significant differences between those reporting higher and lower on-property profits. For example, those with profits above $50,000 were significantly more likely to attend short courses; spend more hours per week in on-farm work; be a member of a Landcare group; be a member of a commodity group; have work on their property funded by government; be involved in whole farm planning and be involved in local action planning. Higher profitability was also linked to significantly higher adoption of most CRP, particularly those related to sustainable agriculture, including fencing to manage stock access to waterways; soil testing of paddocks; sowing perennial pasture; applying lime; rotational cropping; time controlled or rotation grazing and minimum tillage practices.

Both the proportion of landholders reporting an on-property profit and the median profit per landholder varied significantly across the 15 LMU [Appendix 1, Appendix 2 Table G]. For example, 38% of respondents in Thompsons reported a profit compared to 100% in Lismore. Respondents in Bellarine, Hovells and Otway Coast reported a median profit of $5,000 compared to a median of $100,000 in Murdeduke.

Figure 24 On-property profit levels (N=260)
Corangamite social benchmarking survey 2006
Respondents reporting an on-property profit were significantly more likely to adopt most CRP, with the exceptions of farm forestry, fencing native bushland and grassland to manage stock access and controlling pest animals and non-crop weeds [Appendix 3 Table A3-5].

**Off-property work**

Forty-nine per cent of survey respondents said they worked at least one day in paid off-property work in the past 12 months (median zero days, mean 83 days). The amount of time worked off-farm varied significantly across the LMU from zero in Bellarine, Curdies, Lismore, Murdeduke, Stony Rises and Upper Barwon to 144 days in Hovells [Appendix 2 Table G]. As might be expected, time spent in paid off-property work was strongly correlated with farming as an occupation. For example, non-farmers spent a median of 165 days in off-property work compared to zero for farmers.

**Level of property equity**

Respondents were asked to indicate the level of equity in their property (including land, machinery, buildings and livestock) and were able to select from five options, each covering a 20% range. Most respondents had high levels of equity with over half (64%) of all respondents indicating 81%-100% equity. One fifth of respondents (20%) had less than 60% equity in their property [Figure 25].

There was no significant difference across the LMU in the level of property equity.

The level of on-property equity was not significantly linked to adoption of CRP.

**Figure 25 Level of property equity (N=409)**

Corangamite social benchmarking survey 2006
5.13 Land use and enterprise mix

Survey respondents were asked to indicate their current and future land uses/enterprise mix by selecting their current land use mix from a list of 17 possible topics. For each topic they were then also asked to indicate their plans for the next five years by selecting from “increase”, “remain the same” or “decrease” the area under each land use over the next five years [Figures 26 & 27].

Key findings

Current land use

- Dryland pasture was reported on 86% of properties while 11% said they had irrigated pasture or crops.
- Amongst the livestock industries, 53% said they had beef cattle, 43% sheep, 21% dairy cattle and 8% other livestock such as goats, deer or horse studs. Intensive livestock industries such as pigs, poultry and feedlot cattle were reported on 5% of properties.
- Broadacre cropping was reported on 26% of properties, raised bed cropping on 6% of properties, and grapes and other horticulture on 6% of properties.
- Farm forestry was reported on 13% of properties.
- Areas of trees planted for NRM were reported on 78% of properties.
- Almost half (47%) reported areas of remnant native vegetation.
- Land under conservation covenants occurred on 8% of properties.
- Four per cent of respondents said they had land managed to protect Aboriginal cultural heritage sites.

Anticipated change in land use

- Most respondents expected they would increase the area of their property under tree planting for NRM (up for 71% of respondents).
- Thirty per cent expected to increase the area under native remnant vegetation such as trees, grasslands, swamps/ wetlands.
- Of the production-based land uses, the area allocated to beef production was the most frequently listed for expansion (27% of respondents).
- Farm forestry was identified for expansion by 13% of respondents.
Figure 26 Land uses and enterprise mix (N=435)
Corangamite social benchmarking survey 2006

1. Dryland pasture 86%
2. Other tree planting (for shade & shelter, habitat, erosion control, recharge control) 76%
3. Beef cattle 53%
4. Native remnant vegetation (e.g. trees, grasslands, swamps, wetlands) 53%
5. Sheep 43%
6. Broadacre cropping 26%
7. Dairying 21%
8. Farm forestry 13%
9. Irrigated pasture/cropping 11%
10. Some part of the property under conservation covenant 8%
11. Other livestock (e.g. goats, deer, horse studs) 8%
12. Raised bed cropping 6%
13. Grapes and other horticulture 6%
14. Farm-based tourism (e.g. farm stays) 6%
15. Intensive livestock (e.g. pigs, poultry, feedlot cattle) 5%
16. Land managed to protect Aboriginal cultural heritage sites 3%

% respondents
**Corangamite region social benchmarking survey 2006**

**Figure 27 Land uses and enterprise mix changes anticipated (N=436)**

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Land Use/Enterprise Type</th>
<th>Up</th>
<th>Same</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Other tree planting (shade &amp; shelter, habitat, erosion control)</td>
<td>71</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>2. Native remnant vegetation (e.g. trees, grasslands, swamps, wetlands)</td>
<td>30</td>
<td>68</td>
<td>3</td>
</tr>
<tr>
<td>3. Beef cattle</td>
<td>27</td>
<td>68</td>
<td>5</td>
</tr>
<tr>
<td>4. Farm forestry</td>
<td>13</td>
<td>82</td>
<td>4</td>
</tr>
<tr>
<td>5. Broadacre cropping</td>
<td>13</td>
<td>81</td>
<td>5</td>
</tr>
<tr>
<td>6. Sheep</td>
<td>12</td>
<td>77</td>
<td>10</td>
</tr>
<tr>
<td>7. Dryland pasture</td>
<td>11</td>
<td>81</td>
<td>7</td>
</tr>
<tr>
<td>8. Farm-based tourism (e.g. farm stays)</td>
<td>11</td>
<td>84</td>
<td>4</td>
</tr>
<tr>
<td>9. Irrigated pasture/cropping</td>
<td>11</td>
<td>85</td>
<td>3</td>
</tr>
<tr>
<td>10. Raised bed cropping</td>
<td>9</td>
<td>86</td>
<td>4</td>
</tr>
<tr>
<td>11. Dairying</td>
<td>8</td>
<td>84</td>
<td>7</td>
</tr>
<tr>
<td>12. Some part of the property under conservation covenant</td>
<td>8</td>
<td>88</td>
<td>3</td>
</tr>
<tr>
<td>13. Other livestock (e.g. goats, deer, horse studs)</td>
<td>8</td>
<td>87</td>
<td>4</td>
</tr>
<tr>
<td>14. Intensive livestock (e.g. pigs, poultry, feedlot cattle)</td>
<td>7</td>
<td>89</td>
<td>3</td>
</tr>
<tr>
<td>15. Grapes and other horticulture</td>
<td>7</td>
<td>88</td>
<td>4</td>
</tr>
<tr>
<td>16. Land managed to protect Aboriginal cultural heritage sites</td>
<td>3</td>
<td>92</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note: The diagram shows the percentage of respondents for each land use/enterprise type. The colors represent the percentage of respondents who anticipate an increase (Up), the same (Same), and a decrease (Down) in each activity.*

Corangamite region social benchmarking survey 2006 58
5.14 Adoption of current recommended practices

Levels of adoption of CRP

Drawing on relevant literature we identified variables that are thought to influence the adoption of CRP for sustainable farming and biodiversity conservation. There are obvious limitations to the type and number of questions that can be included in a mail survey, so only a selection of the possible list of topics was included in the survey. The survey sought information about the adoption of 12 CRP that spanned sustainable agriculture and biodiversity conservation [Table 6]. In our data analysis we were also conscious that some CRP are relevant to all/most landholders (ie, non-specific), while others are more relevant to particular landholders (ie, specific). For this research we identified CRP that are specific to either cropping or livestock grazing. All respondents were included in calculations for the per cent of respondents implementing the non-specific CRP but only those involved in cropping or livestock enterprises were included in calculations for the proportion implementing CRP specific to those enterprises [Table 6].

Adoption of CRP across LMU

Appendix 2 (Table H) provides a summary of the implementation of CRP across the CCMA LMU. Information presented is for the proportion of respondents indicating they had implemented the practice rather than the level of uptake.

Factors affecting adoption of CRP

There were significant positive links between many of the levers at the disposal of the CCMA and adoption of CRP including awareness of issues, knowledge of NRM, participation in Landcare and commodity groups and receipt of government NRM funds in the past five years [Appendix 3]. Other factors linked with the adoption of CRP were less amenable to CCMA investment, but provide critical information for more effectively engaging rural landholders.

- There was a significant positive relationship between awareness of issues and knowledge of NRM topics. A higher rating for the value ‘I’m always learning new things’ was linked to higher adoption of most CRP, including those across biodiversity conservation and sustainable farming.

- Landcare membership was linked to significantly higher adoption of all the CRP surveyed with the exception of testing for water quality. Landcare groups were also identified as the second most useful source of information about NRM (ranked 2 out of 25 sources).

- Completion of a short course relevant to property management in the past five years was significantly linked to higher adoption of most CRP, including those for biodiversity conservation and sustainable farming.

- In this study there were significant links between respondents’ confidence in CRP and their adoption of CRP. Commodity groups provide opportunities for trialling CRP and in this study membership of a local commodity group was inked to significantly higher adoption of most CRP surveyed.

- Having a long-term vision for the management of their property, and involvement in planning from the property to district scale, was linked to higher adoption of most CRP.

- Consistent with previous research in Australia, a stronger stewardship ethic (placing the health of the land above short-term economic gain) was not linked to higher adoption of CRP. Indeed, the adoption of four of the sustainable agriculture CRP in the survey was negatively correlated with a stronger stewardship ethic.
• Respondents who said they had family members interested in taking on the property in the future were significantly more likely to adopt a range of CRP.

• Respondents who said they were a farmer by occupation were significantly more likely to adopt a range of CRP.

• Respondents who reported an on-property profit were significantly more likely to adopt a range of CRP.

• Respondents who said they lived on property were significantly more likely to adopt most CRP.

• Receipt of government funds in the past five years was linked to higher adoption of all CRP listed in the survey.

• Those planning to acquire more land operated larger farms, were more likely to be farmers, and were younger, more likely to be involved in a commodity group, and more likely to have family members interested in taking on the property. There was a trend, but not a statistically significant link, between acquiring land and adoption of most CRP.

• Newer residents were significantly different to longer-term residents in that the longer-term residents were older, owned larger properties, were more likely to be farmers by occupation and be members of Landcare. Contrary to expectation, longer-term residents were significantly more likely to adopt most CRP, including tree and shrub planting.
<table>
<thead>
<tr>
<th>Current recommended practice</th>
<th>% of landholders adopting practice</th>
<th>Median uptake of practice per landholder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of trees, shrubs planted (including direct seeding)</td>
<td>75 %</td>
<td>4 Ha</td>
</tr>
<tr>
<td>Number of paddocks for which have a record of soil test results from past 5 years</td>
<td>55 %</td>
<td>6 paddocks</td>
</tr>
<tr>
<td>Area sown to perennial pasture, lucerne during past 5 years</td>
<td>52 %</td>
<td>40 Ha</td>
</tr>
<tr>
<td>Area with at least one lime application over past 5 years</td>
<td>54 %</td>
<td>50 Ha</td>
</tr>
<tr>
<td>Time spent by you/ others to control pest animals &amp; non-crop weeds in past 12 months</td>
<td>88 %</td>
<td>10 days/year</td>
</tr>
<tr>
<td>Tested water quality of main water source for stock, irrigation purposes on property in last 5 years</td>
<td>27 %</td>
<td>NA</td>
</tr>
<tr>
<td>Area of farm forestry established</td>
<td>17 %</td>
<td>5 Ha</td>
</tr>
<tr>
<td>Area cropped in past 5 years using a rotation with pasture e.g. lucerne</td>
<td>49 %</td>
<td>50 Ha</td>
</tr>
<tr>
<td>Area sown to grass, cropped using minimum tillage practices during past 12 months</td>
<td>42 %</td>
<td>38.5 Ha</td>
</tr>
<tr>
<td>Length of fencing erected to manage stock access to waterways</td>
<td>49 %</td>
<td>3 Km</td>
</tr>
<tr>
<td>Area where used time controlled, rotational grazing in past 12 months</td>
<td>52 %</td>
<td>97.5 Ha</td>
</tr>
<tr>
<td>Area of native bush/grasslands fenced to manage stock access</td>
<td>31 %</td>
<td>5.5 Ha</td>
</tr>
</tbody>
</table>

* analysis only included respondents undertaking enterprises relating to each CRP
5.15 Other social and demographic variables

Gender
Women play an important role in decision-making in farming families but their voice often is not heard (Curtis et al. 1997). Estimates by Elix and Lambert (2000) are that about 30% of Australia’s farm work force is female and that just under 20% of agricultural decision-makers are women. Since the mailing list for this survey was compiled by randomly selecting landholders from lists of rural property owners provided by local councils (see earlier section on methodology) no attempt was made to target women property owners or managers. Of the 456 respondents who indicated their gender, 18% (n=82) were women.

Time lived in district
Most respondents to the survey had lived in their local district for the majority of their life with a median of 34 years. Only 17% of the respondents had lived in the area for less than 10 years. There was a significant difference across the LMU in the median years lived in the local district across the 15 LMU [Appendix 2 Table G].

Time owned/ managed current property
Respondents had owned/ managed their current property for a median of 22 years, 12 years less than the median years lived in the district. There was no significant difference in the responses to the median time a property had been owned across the 15 LMU.

Owners who do not live on the property/ absentee owners
Just under a quarter (23%) of respondents said that they did not consider their property to be their principal place of residence. There was a significant difference across the LMU in the percentage of respondents who said that their property was not their principal place of residence [Appendix 1, Appendix 2 Table G]. Those respondents who live on property were significantly more likely to adopt most CRP, including planting trees and shrubs, soil testing, sowing perennial pasture, lime applications, time-controlled or rotational grazing, minimum tillage practices, controlling pest weeds and animals and testing for water quality.

Employment of consultants to provide advice on property management
Twenty-three per cent of respondents said they had employed a consultant to provide advice on some aspect of property management in the past 12 months. There was no significant difference in the responses to employment of a consultant across the 15 LMU.

Completion of a short course relevant to property management
Just over a third of respondents (37%) said they had completed a relevant short course in the past five years. Completing a short-course was significantly linked to higher levels of adoption of most CRP, including those for biodiversity conservation and sustainable farming. Respondents who were farmers by occupation were significantly more likely to have been involved in short courses. There was a significant difference in the proportion of respondents completing a relevant short course across the 15 LMU [Appendix 2 Table G].

Use of rural financial counselling services
Only 6% of respondents had used the services of a rural financial counselling service in the past 12 months. There was no significant difference in the proportion of respondents using a financial counselling service across the 15 LMU.

Time spent attending activities for any types of voluntary groups
The median number of hours spent (during the previous 12 months) attending voluntary group activities was one hour per week.
5.16 Differences across the LMU

The Corangamite region has been divided into 15 LMU. This study highlighted a range of differences in the social and farming context at the LMU scale. These data have been summarised below, and additional detail is provided as LMU profiles in Appendix 1, and a tabular summary in Appendix 2.

Some of the principal differences in the social and farming contexts across the 15 CCMA regional LMU include:
- Property size
- Occupation (proportion of farmers)
- Knowledge of NRM topics
- Values landholders attach to their property
- Attitudes about the roles and responsibilities of NRM actors
- Involvement in short courses
- Proportion of landholders identifying saline affected areas
- Interest in a fixed grant incentive scheme
- Landcare membership
- Membership of a commodity group
- Proportion reporting an on-property profit and level of profit.
6 Discussion of implications for engagement and adoption

Landholder engagement: a discussion of key findings

Landholder adoption of CRP related to sustainable agriculture and biodiversity conservation is complex in that it is affected by a large number of interacting factors that vary across CRP and social and farming contexts. While accurate, this statement provides little comfort for practitioners wanting to enhance the uptake of CRP. To address this need, researchers in the Salinity Cooperative Research Centre (CRC) reviewed existing literature and identified four sets of factors that they suggest provide a useful framework for understanding adoption of sustainable agriculture and biodiversity conservation practices (Pannell et al. 2006):

1. the personal characteristics of the landholder;
2. the social and environmental context in which landholders operate;
3. the nature of the practice; and
4. the process of learning in which the landholder is engaged.

A key point here is that landholders will only adopt practices that are consistent with their goals/ aspirations and if they have the capacity to implement those practices.

In this survey it was only possible to include a limited number of questions that would enable us to explore factors affecting adoption of CRP. Topics were included on the basis that previous research suggested they were important and/ or they were likely to be amenable to CCMA interventions. Even where it is difficult for the CCMA to influence a topic, knowledge can enhance the capacity of the CCMA to effectively engage with landholders. For example, the CCMA has limited influence over on-property profitability but information about the financial capacity of landholders and the extent that profitability affects adoption of CRP can inform decisions about cost-sharing levels so that the CCMA pitches its programs more effectively.

Issues affecting private property rights and trust in government were rated as important issues by over half of the respondents to this survey. These issues were rated more highly than uncertain/ low financial returns limiting investment on property and NRM issues such as dryland salinity. Given that a regional NRM organisation relies heavily on building partnerships with others, particularly private landholders to effect change in resource condition, this finding emphasises the importance of the CCMA taking the time and acquiring the expertise to engage landholders in ways that build trust in the CCMA.

There were significant positive links between many of the key policy levers at the disposal of the CCMA and adoption, including awareness of issues, knowledge of NRM topics, and involvement in short courses. Given the substantial investment in raising awareness and improving knowledge, these findings provide some comfort that NRM investment decisions are soundly based. For example, respondents who said the cost of managing weeds and pest animals was an important issue were more likely to have conducted work to control pest animals and non-crop weeds. Concern about dryland salinity undermining the long-term productive capacity of property was linked to higher adoption of farm forestry. Higher self-assessments of knowledge about interpreting results from soil testing was linked to higher adoption of soil testing in paddocks; sowing perennial pasture (including lucerne); lime application; rotation cropping with pasture; time controlled or rotational grazing; and using minimum tillage practices. Higher rating of the ability to identify acidic soils in this district was linked to action to address soil acidity.

Findings from the survey highlighted considerable concern about the viability of rural communities. Five of the top six issues related to this topic. Socio-economic issues related to the loss of youth, loss of important services, reduced employment opportunities, and the effect of increased areas of plantations on community viability were all rated as important by over a third of respondents and had district level ratings above those for the impact of...
salinity on the productive capacity of properties or water quality, the impact of land clearing on habitat, soil acidity, soil health or water quality.

Most respondents said they valued the benefits of living in a rural community/environment. These findings have important implications for efforts to engage landholders in NRM activities and programs. Firstly, many landholders are unlikely to be interested in activities aimed solely at addressing some of the priority NRM issues identified in the RCS. For example, it will be difficult to motivate landholders with a strong focus on lifestyle values to address soil acidity. Secondly, many will not be motivated by appeals that are couched in terms of CRP enhancing agricultural production. Efforts to engage landholders should include explicit reference to ways CRP will contribute to improved social and economic wellbeing of rural communities. Thirdly, in areas where rural communities are declining, the capacity of landholders to implement coordinated action may be constrained.

Dryland salinity has been an important focus for regional NRM delivery, particularly under the Natural Heritage Trust (NHT) and National Action Plan for Salinity and Water Quality (NAP). This research provides evidence that most landholders can identify, and are prepared to acknowledge, saline affected areas when they occur on their property and that landholder awareness is linked to increased adoption of salinity mitigating CRP. However, most landholders in this survey did not report saline affected areas, and those that identified saline areas reported small areas were affected. Not surprisingly, most respondents expressed low levels of concern about the potential impacts of dryland salinity on the productive capacity of their property/district or water quality in their district. CCMA staff need to be aware that salinity is unlikely to stimulate most landholders to invest in improved NRM. If salt mobilised on a small proportion of properties in the CCMA is a critical issue for the CCMA this will need to be addressed through specific policy initiatives that target those properties and landholders.

Consistent with previous research in Australia (Curtis and DeLacy 1998), a stronger stewardship ethic (as measured by one item from a recognised stewardship scale: placing the health of the land above short-term economic gain) was not linked to higher adoption of CRP. Indeed, the adoption of four of the sustainable agriculture CRP in the survey was negatively correlated with a stronger stewardship ethic. It seems that farming as an occupation is mediating some of these relationships. In this study, farmers were more likely to adopt most CRP but farmers’ scores on the stewardship item were lower than for non-farmers.

There was almost universal support for the value of being able to pass the property on to others in better condition. This statement might have different meanings for different landholders: for some it may mean the physical environment, for others the property infrastructure, and for some the financial position of the property. Nevertheless, this statement appears to have considerable potential as a way to engage most landholders in discussions about sustainability and of promoting adoption of CRP. Evidence of significant positive links between this value and adoption of CRP related to both biodiversity conservation and sustainable agriculture provides additional support for the CCMA to explore the potential of this value to underpin its communication strategies.

Learning is an important motivator for landholder involvement in NRM (Curtis and Van Nouhuys 1999). Other key motivators are related to addressing specific problems/issues, contributing to resolution of wider issues and the need for social interaction. In this study there was a significant positive relationship between higher ratings for the value ‘I’m always learning new things’ and the adoption of most CRP, including those across biodiversity conservation and sustainable farming. CCMA staff need to be aware of the range of motivations for landholders’ participation in programs, explore the needs of specific landholder groups and structure programs accordingly.

Thirty-five per cent of survey respondents said that they were a Landcare member. The median number of activities attended in the last 12 months across the region was two
activities. Contrary to conventional wisdom, but consistent with previous research (Curtis and Van Nouhuys 1999), group members were significantly more likely to operate larger properties (53% of all the land surveyed) and be farmers by occupation. They were also more likely to report a profit, have owned property for longer, expected a family member to take on the property, be involved in a commodity group and have completed a short course relevant to property management. Landcare membership was linked to significantly higher adoption of all the CRP surveyed with the exception of testing for water quality. Landcare participation also appears to be a key ingredient in landholders recognising/acknowledging saline affected areas on their property. In this study, landholders who appear to be unaware of salinity on their property were more likely to operate smaller properties and be less involved in Landcare (21% in Landcare compared to 35% overall). This group worked on farm for a median 40 hours per week (overall median 30 hours), suggesting that it is not the extent of on-property work but Landcare participation that has enhanced landholder ability to recognise/acknowledge salinity affected areas on their property. Landcare groups were also identified as the second most useful source of information about NRM (ranked 2 out of 25 sources). These findings suggest there is an opportunity for the CCMA to invest further in Landcare. For example, the Landcare membership varied significantly across the 15 LMU from a low of 15% of all respondents in Hovells to 60% in both Aire and Woady Yaloak.

In this study there were significant links between respondents’ confidence in CRP and their adoption of CRP. As the literature on adoption emphasises, on-property trials can be a key ingredient in building landholder confidence in CRP. Property-scale trials take some of the risk out of adoption by allowing landholders to adapt practices to suit local conditions and providing opportunities to acquire new knowledge or skills and adapt existing machinery (Pannell et al. 2006). Recent research in Victoria (Curtis and Cooke 2006) suggests there has been a significant reduction in landholder involvement in field days and demonstration/trials conducted by Landcare groups. Commodity groups also provide opportunities for trialling CRP and in this study membership of a local commodity group was linked to significantly higher adoption of most CRP surveyed. CCMA staff are encouraged to consider the extent that programs they lead/support might engage Landcare and commodity groups in field days/demonstrations as a strategy to increase landholder confidence in CRP. As explained above, involvement in short courses related to property management over the past five years was linked to higher adoption of a range of sustainable farming and biodiversity conservation CRP.

Modelling of turnover in landholders using age, intentions to sell/subdivide and life expectancy tables suggest that half of the properties in the CCMA (and over half of the land area) will have a different person making management decisions within 10 years. Conventional wisdom is that significant changes in management occur with changes in managers. Most of the recent property owners in the survey were new settlers (lived in district < 10 years) rather than existing residents, suggesting that most of the new property owners in the future will be new settlers. The survey included questions that enabled exploration of differences between new settlers (17% of those surveyed) and longer-term residents. New settlers are significantly different from those living for longer in their local district in that they operate smaller properties, are younger, less likely to be farmers by occupation, less likely to report an on-property profit, work much longer hours off-property, and are less likely to say they have family interested in taking on the property. Newer residents were more concerned about the impact of land clearing on biodiversity and placed higher value on their property providing habitat. Contrary to expectation, there was no evidence that new owners were more likely to adopt CRP. Indeed, respondents living longer in their local district were more likely to adopt most CRP, particularly those related to sustainable agriculture. However, newer residents indicated they were more likely to have some part of their property under a conservation covenant and have long-term plans that included placing all or some part of their property under a conservation covenant. Newer residents and longer-term residents rely on much the same information sources, but there are some important differences in that newer residents are less likely to use the CCMA, the VFF, DPI and Landcare groups and more likely to use the internet and universities. The
trend to increased property turnover will change the character of landowners and CCMA programs will need to accommodate the different values and capacities of these newer settlers.

Thirty-eight per cent of respondents said their long-term plans included selling all/large part of their property or leasing or share-farming all the property. Twenty-three per cent said they planned to acquire more land. Those planning to acquire more land operated larger farms, were more likely to be farmers, and were younger, more likely to be involved in a commodity group, and more likely to have family members interested in taking on the property. There was a trend, but not statistically significant link, between acquiring land and adoption of most CRP. Again, the absence of significant links between long-term plans to acquire/dispose and adoption of most CRP, should give the CCMA confidence that it can successfully engage both groups of landholders. Additional evidence to support this optimistic view included the finding that while the intention to lease/share-farm/agist land from others is linked to higher adoption of sustainable agriculture CRP, the intention to lease/share-farm/agist land to others is linked with higher adoption of CRP related to biodiversity conservation.

Having a long-term vision for the management of their property, and involvement in planning from the property to district scale, were linked to higher adoption of most CRP. For example, respondents who had a vision, or were further advanced in achieving a long-term plan or vision, were significantly more likely to adopt a range of CRP on their property, including: trees/shrubs planted; fencing to manage stock access to waterways; native bush and grasslands fenced to manage stock access; soil testing; sowing perennial pasture (including lucerne); lime applications; rotation cropping; time controlled or rotational grazing; and testing water quality. Just over half of all respondents were not involved in property planning or local action planning, so there is scope to increase involvement in these processes. Over the past decade efforts to engage landholders in property planning have met considerable resistance. The finding that a large majority of landholders acknowledge they have a long-term vision for their property may provide a way for CCMA staff to engage landholders who have not responded to property planning.

Respondents who said they had family members interested in taking on the property in the future were significantly more likely to adopt a range of CRP including: trees/shrubs planted; fencing to manage stock access to waterways; soil testing; sowing perennial pasture (including lucerne); lime applications; rotation cropping; and time controlled or rotational grazing.

Respondents who said they were farmers by occupation managed over three-quarters of the land surveyed. However, non-farmers comprised almost half of all respondents and in some LMU, managed more than half of the land area. Respondents whose primary occupation was farming were significantly more likely to adopt most CRP, particularly those related to sustainable agriculture. Indeed, there were only two CRP where farming as an occupation was not significantly linked to higher adoption: farm forestry and fencing native bush or grasslands to manage stock access. Farmers have a stronger business focus and may be more dependent on on-farm farm income and therefore may be less likely to adopt non-production focussed CRP. Efforts to engage farmers in biodiversity conservation need to embrace farmer values and probably adopt higher cost-sharing arrangements.

Over half of all respondents made an on-property profit in 2004/2005. In this study those reporting an on-property profit were significantly more likely to adopt sustainable agriculture CRP. However, the adoption of farm forestry, fencing native bushland and grassland to manage stock access, and controlling pest animals and non-crop weeds were not significantly linked to reporting an on-property profit. This finding may reflect the different values of farmers and non-farmers and the influence of government funding for biodiversity conservation programs that has been delivered through Landcare groups where farmers are well represented.
A key finding from this study is that receipt of government funds in the past five years was linked to higher adoption of all CRP listed in the survey. Respondents who were Landcare members or farmers were significantly more likely to report they had received this type of support. There were no significant differences across the LMU for the proportion of respondents receiving government NRM funding over the last 5 years. Almost three quarters of the survey respondents said they had not received NRM funding over the past 5 years. Depending on CCMA priorities and budget constraints, there appears to be an opportunity for the CCMA to broaden the cohort of landholders engaged and increase the scale of CRP adoption.

Ways of doing this would include encouraging new rural residents to join Landcare and commodity groups, or specifically targeting new property owners for inclusion in CCMA programs.

Of the policy instruments canvassed through the survey, the most popular were a reduction in local government rates, a fixed grant incentive scheme administered by the CCMA, and a tax rebate administered by the Commonwealth. None of the options proposed was preferred by half of the respondents and the most preferred mix of options would engage 72% of all respondents, reinforcing the need for the CCMA to develop and pre-test the acceptability of a range of instruments. A key point here is the importance of ensuring that the mix of instruments appeals to the mix of landholders that the CCMA is intending to engage. For example, it would be inefficient to implement a new instrument that largely appealed to the same cohort of landholders as existing instruments. It is also important to recognise that in this study diminishing returns set in quickly as the number of options was increased. That is, there was a very small increase in the overall proportion of landholders engaged if the range of options was extended beyond three choices. Of the options presented in the survey, the only one where there was a difference across the LMU was for a fixed grant scheme to support on-ground work administered by the CCMA. It is unclear what underpins the spatial variation in preference for this option.
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Appendix 1  
LMU profiles
Appendix 1

Aire

Median age: 55 years
Farmer by occupation: 50%
Median length of residence: 43 years
Property not principal residence: 18%
Property size (median): 171 ha
Proportion reported saline affected areas: 18%
Area of salinity (median): 19 ha

% properties likely to change owner next 10 years: 27%
Pass property to family: 60%
Expand property: 0%
Dispose property: 44%

% reporting on-property profit: 60%

On-property income (median): $15,000

Landcare membership: 60%
Commodity group membership: 20%
Proportion with government funded work on property (past 5 years): 33%

3 most common land enterprises:
Dryland pasture – 80%
Beef cattle – 70%
Sheep – 62%

Top 3 district issues:
Cost of managing weeds & pests – 55%
Increasing area of plantations – 45%
Movement of youth away – 45%

Top 3 values attached to property:
An attractive place to live – 91%
Sense of accomplishment – 90%
A place for recreation – 90%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Lime applications – 60%
Soil test paddocks - 56%

Biodiversity agriculture:
Control pests & weeds – 100%
Plant trees, shrubs – 89%
Fence to manage stock access – 67%

NRM topics respondents reported highest knowledge:
Benefits of ground cover - 60%
Retaining native vegetation – 60%
Identify new weeds – 40%

% respondents with remnant vegetation: 78%
Appendix 1

Bellarine

Median age: 59 years
Farmer by occupation: 35%
Median length of residence: 54 years
Property not principal residence: 20%
Property size (median): 80 ha
Proportion reported saline affected areas: 29%
Area of salinity (median): 1 ha
% properties likely to change owner next 10 years: 41%
Pass property to family: 67%
Expand property: 6%
Dispose property: 53%
% reporting on-property profit: 50%
On-property income (median): $5,000
Landcare membership: 24%
Commodity group membership: 12%
Proportion with government funded work on property (past 5 years): 18%

3 most common land enterprises:
Dryland pasture – 77%
Beef cattle – 57%
Sheep – 45%

Top 3 district issues:
Land prices – 53%
Cost of managing weeds & pests – 47%
Dryland salinity reducing productive capacity - 29%

Top 3 values attached to property:
Represents sound investment – 88%
An attractive place to live – 82%
Pass on property in better condition - 81%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Perennial pasture – 62%
Minimum tillage - 50%

Biodiversity agriculture:
Control pests & weeds – 94%
Plant trees, shrubs – 87%
Fence to manage stock access – 47%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 40%
Vegetation in waterways & gullies – 33%
Legislation storing chemicals – 27%

% respondents with remnant vegetation: 33%
Appendix 1

Curdies

Median age: 53 years
Farmer by occupation: 67%
Median length of residence: 40 years
Property not principal residence: 22%
Property size (median): 116 ha
Proportion reported saline affected areas: 19%
Area of salinity (median): 2 ha
% properties likely to change owner next 10 years: 21%
Pass property to family: 69%
Expand property: 19%
Dispose property: 52%
% reporting on-property profit: 82%
On-property income (median): $35,000
Landcare membership: 23%
Commodity group membership: 2%
Proportion with government funded work on property (past 5 years): 23%

3 most common land enterprises:
Dryland pasture – 98%
Dairy – 73%
Beef cattle – 40%

Top 3 district issues:
Movement of youth away – 77%
Loss of important services – 70%
Land prices – 63%

Top 3 values attached to property:
Freedom of working for myself - 83%
Sense of accomplishment - 79%
Attractive place to live - 77%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Rotational grazing – 73%
Lime applications - 63%

Biodiversity agriculture:
Control pests & weeds – 94%
Plant trees, shrubs – 75%
Fence to manage stock access – 55%

NRM topics respondents reported highest knowledge:
Vegetation in waterways & gullies – 49%
Legislation storing chemicals – 49%
Cropping using pasture rotation - 45%

% respondents with remnant vegetation: 43%
Appendix 1

Gellibrand

Median age: 54 years
Farmer by occupation: 55%
Median length of residence: 20 years
Property not principal residence: 29%
Property size (median): 123 ha
Proportion reported saline affected areas: 10%
Area of salinity (median): 5 ha
% properties likely to change owner next 10 years: 17%
Pass property to family: 70%
Expand property: 13%
Dispose property: 36%
% reporting on-property profit: 59%
On-property income (median): $30,000
Landcare membership: 18%
Commodity group membership: 9%
Proportion with government funded work on property (past 5 years): 24%

3 most common land enterprises:
Dryland pasture – 81%
Beef cattle – 57%
Dairy – 43%

Top 3 district issues:
Increasing area of plantations – 59%
Reduced employment opportunities - 59%
Cost of managing weeds & pests - 55%

Top 3 values attached to property:
Lifestyle - 95%
Freedom of working for myself - 73%
Attractive place to live - 73%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Rotational grazing – 57%
Soil test paddocks - 45%

Biodiversity agriculture:
Control pests & weeds – 100%
Fence to manage stock access – 68%
Fence native bush/ grasslands – 67%

NRM topics respondents reported highest knowledge:
Vegetation in waterways & gullies – 68%
Identify new weeds - 64%
Benefits of ground cover - 50%

% respondents with remnant vegetation: 76%
Appendix 1

Hovells

Median age: 52 years
Farmer by occupation: 17%
Median length of residence: 42 years
Property not principal residence: 58%
Property size (median): 48 ha
Proportion reported saline affected areas: 0%

Area of salinity (median): 0 ha
% properties likely to change owner next 10 years: 23%
Pass property to family: 54%
Expand property: 9%
Dispose property: 50%

% reporting on-property profit: 50%
On-property income (median): $5,000

Landcare membership: 15%
Commodity group membership: 0%
Proportion with government funded work on property (past 5 years): 8%

3 most common land enterprises:
Dryland pasture – 82%
Sheep - 55%
Broadacre cropping - 36%

Top 3 district issues:
Cost of managing weeds & pests - 50%
Intensive industries affecting environment (eg piggeries, poultry) – 42%
Nutrient, chemical run-off affecting water quality – 33%

Top 3 values attached to property:
Pass on property in better condition - 58%
Asset to fund retirement - 54%
Provides a welcome break - 54%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Soil test paddocks - 50%
Rotational grazing – 33%

Biodiversity agriculture:
Control pests & weeds – 83%
Plant trees, shrubs - 67%
Fence native bush/ grasslands – 42%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 42%
Benefits of ground cover - 42%
Identify new weeds - 33%

% respondents with remnant vegetation: 36%
Appendix 1

Leigh

Median age: 55 years
Farmer by occupation: 42%
Median length of residence: 25 years
Property not principal residence: 32%
Property size (median): 80 ha
Proportion reported saline affected areas: 19%
Area of salinity (median): 3 ha
% properties likely to change owner next 10 years: 11%
Pass property to family: 69%
Expand property: 28%
Dispose property: 26%
% reporting on-property profit: 44%
On-property income (median): $25,000
Landcare membership: 37%
Commodity group membership: 26%
Proportion with government funded work on property (past 5 years): 26%

3 most common land enterprises:
Dryland pasture – 71%
Sheep - 54%
Beef cattle - 52%

Top 3 district issues:
Cost of managing weeds & pests – 52%
Loss of important services - 41%
Land prices - 41%

Top 3 values attached to property:
Provides lifestyle I want - 93%
Attractive place to live - 81%
Pass on property in better condition - 74%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Lime applications – 71%
Soil test paddocks - 58%

Biodiversity agriculture:
Control pests & weeds – 87%
Plant trees, shrubs - 70%
Fence to manage stock access – 48%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 56%
Vegetation in waterways & gullies – 52%
Benefits of ground cover - 52%

% respondents with remnant vegetation: 44%
Appendix 1

Lismore

Median age: 53 years
Farmer by occupation: 88%
Median length of residence: 47 years
Property not principal residence: 13%
Property size (median): 422 ha
Proportion reported saline affected areas: 39%

Area of salinity (median): 8 ha
% properties likely to change owner next 10 years: 38%
Pass property to family: 75%
Expand property: 44%
Dispose property: 61%

% reporting on-property profit: 100%
On-property income (median): $15,000

Landcare membership: 56%
Commodity group membership: 32%
Proportion with government funded work on property (past 5 years): 40%

3 most common land enterprises:
Dryland pasture – 96%
Sheep - 82%
Beef cattle - 65%

Top 3 district issues:
Movement of youth away - 87%
Loss of important services - 87%
Reduced employment opportunities - 87%

Top 3 values attached to property:
Provides most of household income - 96%
Freedom of working for myself - 87%
Being part of rural community - 87%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Soil test paddocks - 82%
Lime applications – 74%

Biodiversity agriculture:
Control pests & weeds – 91%
Plant trees, shrubs - 87%
Fence to manage stock access – 57%

NRM topics respondents reported highest knowledge:
Legislation for storing chemicals – 52%
Benefits of ground cover - 48%
Interpret results from soil tests – 48%

% respondents with remnant vegetation: 43%
Appendix 1

Mid Barwon

Median age: 57 years

Farmer by occupation: 46%

Median length of residence: 20 years
Property not principal residence: 14%

Property size (median): 147 ha

Proportion reported saline affected areas: 30%

Area of salinity (median): 10 ha

% properties likely to change owner next 10 years: 14%
Pass property to family: 59%
Expand property: 25%
Dispose property: 25%

% reporting on-property profit: 54%

On-property income (median): $25,000

Landcare membership: 31%

Commodity group membership: 34%

Proportion with government funded work on property (past 5 years): 14%

3 most common land enterprises:
Dryland pasture – 82%
Sheep - 52%
Beef cattle - 50%

Top 3 district issues:
Cost of managing weeds & pests - 68%
Land prices - 57%
Soil acidity - 36%

Top 3 values attached to property:
Lifestyle - 93%
Attractive place to live - 89%
Great place to raise family - 79%

3 most commonly adopted CRP

Sustainable agriculture:
Test water quality – 100%
Minimum tillage - 46%
Perennial pasture – 46%

Biodiversity agriculture:
Plant trees, shrubs - 85%
Control pests & weeds – 81%
Fence to manage stock access – 37%

NRM topics respondents reported highest knowledge:
Legislation for storing chemicals – 50%
Cropping using pasture rotation - 46%
Recognise signs of salinity – 46%

% respondents with remnant vegetation: 50%
Appendix 1

Moorabool

Median age: 58 years
Farmer by occupation: 46%
Median length of residence: 24 years
Property not principal residence: 26%
Property size (median): 67 ha
Proportion reported saline affected areas: 11%
Area of salinity (median): 2 ha
% properties likely to change owner next 10 years: 12%
Pass property to family: 70%
Expand property: 19%
Dispose property: 32%

% reporting on-property profit: 49%
On-property income (median): $15,000
Landcare membership: 27%
Commodity group membership: 10%
Proportion with government funded work on property (past 5 years): 17%

3 most common land enterprises:
Dryland pasture – 74%
Beef cattle - 55%
Sheep - 52%

Top 3 district issues:
Cost of managing weeds & pests - 71%
Land prices - 59%
Movement of youth away - 57%

Top 3 values attached to property:
Lifestyle - 86%
Attractive place to live - 80%
Pass on property in better condition - 70%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Lime applications - 57%
Perennial pasture – 49%

Biodiversity agriculture:
Control pests & weeds – 87%
Plant trees, shrubs - 81%
Fence to manage stock access – 36%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 56%
Benefits of ground cover – 38%
Legislation for storing chemicals – 38%

% respondents with remnant vegetation: 53%
Appendix 1

Murdeduke

Median age: 51 years
Farmer by occupation: 86%
Median length of residence: 47 years
Property not principal residence: 23%
Property size (median): 568 ha
Proportion reported saline affected areas: 46%
Area of salinity (median): 15 ha
% properties likely to change owner next 10 years: 21%
Pass property to family: 85%
Expand property: 21%
Dispose property: 36%
% reporting on-property profit: 62%
On-property income (median): $90,000
Landcare membership: 50%
Commodity group membership: 79%
Proportion with government funded work on property (past 5 years): 29%

3 most common land enterprises:
Broadacre – 92%
Dryland pasture – 92%
Sheep - 77%

Top 3 district issues:
Movement of youth away - 79%
Cost of managing weeds & pests - 64%
Loss of important services - 64%

Top 3 values attached to property:
Sense of accomplishment - 100%
Always learning new things - 93%
Freedom of working for myself - 86%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Minimum tillage - 69%
Rotation cropping with pasture – 69%

Biodiversity agriculture:
Control pests & weeds – 85%
Plant trees, shrubs - 69%
Fence to manage stock access – 62%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 85%
Benefits of ground cover – 79%
Vegetation in waterways & gullies - 77%

% respondents with remnant vegetation: 77%
Appendix 1

Otway Coast

Median age: 62 years
Farmer by occupation: 13%
Median length of residence: 25 years
Property not principal residence: 50%
Property size (median): 40 ha
Proportion reported saline affected areas: 7%
Area of salinity (median): 3 ha
% properties likely to change owner next 10 years: 12%
Pass property to family: 56%
Expand property: 13%
Dispose property: 27%
% reporting on-property profit: 40%
On-property income (median): $5,000
Landcare membership: 53%
Commodity group membership: 0%
Proportion with government funded work on property (past 5 years): 40%

3 most common land enterprises:
Dryland pasture – 38%
Beef cattle – 31%
Sheep - 31%

Top 3 district issues:
Cost of managing weeds & pests - 62%
Loss of habitat due to clearing native vegetation - 50%
Lack of awareness of Aboriginal cultural heritage sites - 40%

Top 3 values attached to property:
Attractive place to live - 88%
Property contributes to environmental health - 88%
Provides lifestyle I want - 81%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Rotational grazing - 29%
Farm forestry - 21%

Biodiversity agriculture:
Control pests & weeds – 80%
Plant trees, shrubs - 67%
Fence to manage stock access – 38%

NRM topics respondents reported highest knowledge:
Vegetation in waterways & gullies - 60%
Retaining native vegetation - 47%
Benefits of ground cover – 40%

% respondents with remnant vegetation: 73%
Appendix 1

Stoney Rises

Median age: 54 years
Farmer by occupation: 61%
Median length of residence: 48 years
Property not principal residence: 14%
Property size (median): 206 ha
Proportion reported saline affected areas: 38%
Area of salinity (median): 5 ha
% properties likely to change owner next 10 years: 35%
Pass property to family: 56%
Expand property: 31%
Dispose property: 50%
% reporting on-property profit: 70%
On-property income (median): $45,000
Landcare membership: 27%
Commodity group membership: 14%
Proportion with government funded work on property (past 5 years): 29%

3 most common land enterprises:
Dryland pasture – 94%
Beef cattle – 70%
Dairy - 50%

Top 3 district issues:
Movement of youth away – 60%
Land prices – 57%
Cost of managing weeds & pests - 48%

Top 3 values attached to property:
Represents sound investment - 79%
Pass on property in better condition - 78%
Sense of accomplishment - 77%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Rotational grazing - 65%
Soil test paddocks - 59%

Biodiversity agriculture:
Control pests & weeds – 89%
Plant trees, shrubs - 62%
Fence to manage stock access – 40%

NRM topics respondents reported highest knowledge:
Legislation storing chemicals - 49%
Cropping using pasture rotation - 44%
Benefits of ground cover - 44%

% respondents with remnant vegetation: 51%
Appendix 1

Thompsons

Median age: 51 years
Farmer by occupation: 35%
Median length of residence: 20 years
Property not principal residence: 14%
Property size (median): 53 ha
Proportion reported saline affected areas: 35%
Area of salinity (median): 4 ha
% properties likely to change owner next 10 years: 42%
Pass property to family: 54%
Expand property: 26%
Dispose property: 50%
% reporting on-property profit: 38%
On-property income (median): $15,000
Landcare membership: 21%
Commodity group membership: 18%
Proportion with government funded work on property (past 5 years): 16%

3 most common land enterprises:
Dryland pasture – 82%
Beef cattle – 60%
Sheep - 48%

Top 3 district issues:
Cost of managing weeds & pests - 60%
Land prices – 60%
Loss of habitat due to clearing native vegetation – 40%

Top 3 values attached to property:
Attractive place to live - 90%
Lifestyle - 85%
Great place to raise family - 72%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Soil test paddocks - 67%
Perennial pasture – 56%

Biodiversity agriculture:
Control pests & weeds - 89%
Plant trees, shrubs - 84%
Fence to manage stock access – 41%

NRM topics respondents reported highest knowledge:
Recognise signs of salinity – 41%
Vegetation in waterways & gullies – 33%
Retaining native vegetation – 33%

% respondents with remnant vegetation: 56%
Appendix 1

Upper Barwon

Median age: 56 years
Farmer by occupation: 58%
Median length of residence: 40 years
Property not principal residence: 30%
Property size (median): 186 ha
Proportion reported saline affected areas: 26%
Area of salinity (median): 3 ha
% properties likely to change owner next 10 years: 12%
Pass property to family: 70%
Expand property: 22%
Dispose property: 33%
% reporting on-property profit: 66%
On-property income (median): $35,000
Landcare membership: 49%
Commodity group membership: 16%
Proportion with government funded work on property (past 5 years): 41%

3 most common land enterprises:
Dryland pasture – 91%
Beef cattle – 70%
Sheep – 41%

Top 3 district issues:
Land prices – 65%
Cost of managing weeds & pests - 63%
Loss of important services - 37%

Top 3 values attached to property:
Attractive place to live - 82%
Lifestyle - 80%
Freedom of working for myself - 74%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Lime applications – 64%
Soil test paddocks - 63%

Biodiversity agriculture:
Control pests & weeds – 89%
Plant trees, shrubs - 73%
Fence to manage stock access – 45%

NRM topics respondents reported highest knowledge:
Vegetation in waterways & gullies – 49%
Cropping using pasture rotation - 47%
Benefits of ground cover - 47%

% respondents with remnant vegetation: 43%
Appendix 1

Woady Yaloak

Median age: 52 years
Farmer by occupation: 60%
Median length of residence: 41 years
Property not principal residence: 20%
Property size (median): 364 ha
Proportion reported saline affected areas: 30%
Area of salinity (median): 6 ha
% properties likely to change owner next 10 years: 14%
Pass property to family: 75%
Expand property: 27%
Dispose property: 32%
% reporting on-property profit: 61%
On-property income (median): $55,000
Landcare membership: 60%
Commodity group membership: 33%
Proportion with government funded work on property (past 5 years): 33%

3 most common land enterprises:
Dryland pasture – 92%
Sheep – 73%
Broadacre cropping - 52%

Top 3 district issues:
Movement of youth away - 63%
Loss of important services - 61%
Cost of managing weeds & pests - 54%

Top 3 values attached to property:
Lifestyle - 81%
Attractive place to live - 76%
Freedom of working for myself - 71%

3 most commonly adopted CRP
Sustainable agriculture:
Test water quality – 100%
Lime applications – 55%
Minimum tillage - 49%

Biodiversity agriculture:
Control pests & weeds – 78%
Plant trees, shrubs - 74%
Fence to manage stock access – 37%

NRM topics respondents reported highest knowledge:
Cropping using pasture rotation - 45%
Legislation storing chemicals – 45%
Vegetation in waterways & gullies – 42%

% respondents with remnant vegetation: 62%
Appendix 2

Significant differences by LMU
Appendix 2

Table A

Importance of issues in the district - significant differences across LMU: % respondents rating value important/very important (N=482)

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>Reduced employment opportunities in local district</th>
<th>Decline of small towns in local district</th>
<th>Loss of important services in local district (e.g. health, banks, schools)</th>
<th>Movement of young people out of local district</th>
<th>Increasing areas of plantations affecting community viability in local district</th>
<th>Lack of awareness about Aboriginal cultural heritage sites in local district</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>11</td>
<td>40 %</td>
<td>33 %</td>
<td>20 %</td>
<td>50 %</td>
<td>56 %</td>
<td>10 %</td>
</tr>
<tr>
<td>BELLARINE</td>
<td>17</td>
<td>36 %</td>
<td>23 %</td>
<td>45 %</td>
<td>50 %</td>
<td>15 %</td>
<td>14 %</td>
</tr>
<tr>
<td>CURDIES</td>
<td>57</td>
<td>47 %</td>
<td>56 %</td>
<td>71 %</td>
<td>78 %</td>
<td>57 %</td>
<td>2 %</td>
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<tr>
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<td>57 %</td>
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<td>0</td>
<td>0</td>
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<tr>
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<td>27</td>
<td>48 %</td>
<td>36 %</td>
<td>52 %</td>
<td>41 %</td>
<td>22 %</td>
<td>10 %</td>
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<tr>
<td>LISMORE</td>
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<td>87 %</td>
<td>78 %</td>
<td>87 %</td>
<td>87 %</td>
<td>45 %</td>
<td>26 %</td>
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<td>27 %</td>
<td>40 %</td>
<td>25 %</td>
<td>13 %</td>
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<tr>
<td>MOORABOOL</td>
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<td>35 %</td>
<td>43 %</td>
<td>50 %</td>
<td>62 %</td>
<td>43 %</td>
<td>19 %</td>
</tr>
<tr>
<td>MURDEDUKE</td>
<td>14</td>
<td>46 %</td>
<td>75 %</td>
<td>64 %</td>
<td>79 %</td>
<td>21 %</td>
<td>8 %</td>
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<tr>
<td>OTWAY COAST</td>
<td>17</td>
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<td>38 %</td>
<td>33 %</td>
<td>33 %</td>
<td>46 %</td>
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<td>66</td>
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<td>47 %</td>
<td>46 %</td>
<td>60 %</td>
<td>37 %</td>
<td>8 %</td>
</tr>
<tr>
<td>THOMPSONS</td>
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<td>24 %</td>
<td>30 %</td>
<td>26 %</td>
<td>7 %</td>
<td>13 %</td>
</tr>
<tr>
<td>UPPER BARWON</td>
<td>48</td>
<td>27 %</td>
<td>17 %</td>
<td>38 %</td>
<td>35 %</td>
<td>31 %</td>
<td>3 %</td>
</tr>
<tr>
<td>WOODY YALOAK</td>
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<td>57 %</td>
<td>66 %</td>
<td>68 %</td>
<td>35 %</td>
<td>15 %</td>
</tr>
<tr>
<td>Overall</td>
<td>482</td>
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<td>42 %</td>
<td>51 %</td>
<td>55 %</td>
<td>35 %</td>
<td>12 %</td>
</tr>
</tbody>
</table>


Appendix 2

Table B

Importance of issues affecting property - significant differences across LMU: % respondents rating value important/very important (N=482)

Corangamite social benchmarking survey 2006

| LMU          | n  | Dryland salinity undermining productive capacity | Reduced technical advice from government | Uncertain/ low returns limiting investment in long-term health of property |
|--------------|----|--------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------
| AIRE         | 11 | 0                                                | 33 %                                     | 43 %                                                                          |
| BELMARINE    | 17 | 0                                                | 29 %                                     | 67 %                                                                          |
| CURDIES      | 57 | 9 %                                              | 4 %                                      | 47 %                                                                          |
| GELLIBRAND   | 24 | 13 %                                             | 24 %                                     | 35 %                                                                          |
| HOVELLS      | 13 | 13 %                                             | 0                                        | 55 %                                                                          |
| LEIGH        | 27 | 4 %                                              | 9 %                                      | 30 %                                                                          |
| LISMORE      | 26 | 14 %                                             | 11 %                                     | 53 %                                                                          |
| MID BARWON   | 29 | 30 %                                             | 17 %                                     | 32 %                                                                          |
| MOORABOOL    | 50 | 13 %                                             | 12 %                                     | 40 %                                                                          |
| MURDEDUKE    | 14 | 23 %                                             | 46 %                                     | 64 %                                                                          |
| OTWAY COAST  | 17 | 14 %                                             | 10 %                                     | 30 %                                                                          |
| STONY RISES  | 66 | 23 %                                             | 18 %                                     | 47 %                                                                          |
| THOMPSONS    | 40 | 6 %                                              | 11 %                                     | 41 %                                                                          |
| UPPER BARWON | 48 | 10 %                                             | 15 %                                     | 45 %                                                                          |
| WOADY YALOAK | 43 | 24 %                                             | 26 %                                     | 78 %                                                                          |
| Overall      | 482| 14 %                                             | 16 %                                     | 47 %                                                                          |
### Appendix 2

#### Table C

**Saline affected areas by LMU: % respondents rating value important/very important (N=482)**

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>Median salinity (ha)</th>
<th>Total salinity (ha)</th>
<th>% area saline</th>
<th>% properties with salinity</th>
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</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>11</td>
<td>19</td>
<td>37</td>
<td>2.4 %</td>
<td>18 %</td>
</tr>
<tr>
<td>BELARINE</td>
<td>17</td>
<td>1</td>
<td>5</td>
<td>0.3 %</td>
<td>29 %</td>
</tr>
<tr>
<td>CURDIES</td>
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<td>2</td>
<td>194</td>
<td>3.4 %</td>
<td>19 %</td>
</tr>
<tr>
<td>GELLIBRAND</td>
<td>24</td>
<td>5</td>
<td>10</td>
<td>0.3 %</td>
<td>10 %</td>
</tr>
<tr>
<td>HOVELLS</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LEIGH</td>
<td>27</td>
<td>3</td>
<td>17</td>
<td>0.5 %</td>
<td>19 %</td>
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<tr>
<td>LISMORE</td>
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<td>MID BARWON</td>
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<td>0.5 %</td>
<td>7 %</td>
</tr>
<tr>
<td>STONY RISES</td>
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<td>1.6 %</td>
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<tr>
<td>WOADY YALOAK</td>
<td>43</td>
<td>6</td>
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<td>Overall</td>
<td>482</td>
<td>4</td>
<td>2,160</td>
<td>1.9 %</td>
<td>25 %</td>
</tr>
</tbody>
</table>
Appendix 2
Table D

Values attached to property by LMU: % respondents rating value important/very important (N=482)

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>Provides most of the household income</th>
<th>Tax effective way to build an asset</th>
<th>Native vegetation on my property provides habitat for native animals</th>
<th>A place for recreation</th>
<th>Sense of accomplishment from build/ maintain a viable business</th>
<th>Rural land represents a sound long-term investment</th>
<th>To preserve tradition as the property has been in family for long time</th>
<th>My property contributes to environmental health of district</th>
<th>The freedom of working for myself</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>11</td>
<td>70 %</td>
<td>50 %</td>
<td>70 %</td>
<td>90 %</td>
<td>100 %</td>
<td>80 %</td>
<td>57 %</td>
<td>70 %</td>
<td>100 %</td>
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<tr>
<td>BELLARINE</td>
<td>17</td>
<td>46 %</td>
<td>15 %</td>
<td>29 %</td>
<td>53 %</td>
<td>62 %</td>
<td>53 %</td>
<td>75 %</td>
<td>79 %</td>
<td>57 %</td>
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<tr>
<td>CURDIES</td>
<td>57</td>
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<td>47 %</td>
<td>41 %</td>
<td>32 %</td>
<td>80 %</td>
<td>62 %</td>
<td>57 %</td>
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<td>30 %</td>
<td>52 %</td>
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<td>75 %</td>
<td>55 %</td>
<td>36 %</td>
<td>50 %</td>
<td>84 %</td>
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<td>HOVELLS</td>
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<td>8 %</td>
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<td>36 %</td>
<td>27 %</td>
<td>27 %</td>
<td>22 %</td>
<td>25 %</td>
<td>38 %</td>
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<td>LEIGH</td>
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<td>71 %</td>
<td>72 %</td>
<td>52 %</td>
<td>47 %</td>
<td>60 %</td>
<td>79 %</td>
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<tr>
<td>LISMORE</td>
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<td>96 %</td>
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<td>32 %</td>
<td>29 %</td>
<td>83 %</td>
<td>87 %</td>
<td>50 %</td>
<td>29 %</td>
<td>91 %</td>
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<td>MID BARWON</td>
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<td>30 %</td>
<td>46 %</td>
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<td>74 %</td>
<td>68 %</td>
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<tr>
<td>MOORABOOL</td>
<td>50</td>
<td>45 %</td>
<td>36 %</td>
<td>50 %</td>
<td>55 %</td>
<td>61 %</td>
<td>58 %</td>
<td>44 %</td>
<td>53 %</td>
<td>68 %</td>
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<td>MURDEDUKE</td>
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<td>23 %</td>
<td>15 %</td>
<td>54 %</td>
<td>100 %</td>
<td>86 %</td>
<td>64 %</td>
<td>50 %</td>
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<td>31 %</td>
<td>43 %</td>
<td>51 %</td>
<td>55 %</td>
<td>56 %</td>
<td>18 %</td>
<td>41 %</td>
<td>62 %</td>
</tr>
<tr>
<td>UPPER BARWON</td>
<td>48</td>
<td>57 %</td>
<td>37 %</td>
<td>34 %</td>
<td>43 %</td>
<td>75 %</td>
<td>63 %</td>
<td>53 %</td>
<td>58 %</td>
<td>89 %</td>
</tr>
<tr>
<td>WOADY YALOAK</td>
<td>43</td>
<td>63 %</td>
<td>46 %</td>
<td>46 %</td>
<td>48 %</td>
<td>77 %</td>
<td>64 %</td>
<td>64 %</td>
<td>49 %</td>
<td>86 %</td>
</tr>
<tr>
<td>Overall</td>
<td>482</td>
<td>57 %</td>
<td>39 %</td>
<td>44 %</td>
<td>48 %</td>
<td>72 %</td>
<td>64 %</td>
<td>49 %</td>
<td>52 %</td>
<td>79 %</td>
</tr>
</tbody>
</table>
### Appendix 2

**Table E**

**Knowledge of NRM topics - significant differences across LMU: % respondents rating value important/very important (N=482)**

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>How to recognise the signs of salinity</th>
<th>Current market prices paid for farm forestry (e.g. lease payments per ha)</th>
<th>How to interpret results for water quality testing</th>
<th>Legislation about the on-property handling and storage of chemicals</th>
<th>The ability of vegetation in waterways and gullies to improve water quality</th>
<th>The benefits of pastures in crop rotation in maintaining soil health</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
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<td>9 %</td>
<td>0</td>
<td>13 %</td>
<td>40 %</td>
<td>40 %</td>
<td>25 %</td>
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<tr>
<td>BELLARINE</td>
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<td>14 %</td>
<td>15 %</td>
<td>15 %</td>
<td>29 %</td>
<td>33 %</td>
<td>40 %</td>
</tr>
<tr>
<td>CURDIES</td>
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<td>49 %</td>
<td>50 %</td>
<td>46 %</td>
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<td>29 %</td>
<td>32 %</td>
<td>14 %</td>
<td>33 %</td>
<td>68 %</td>
<td>43 %</td>
</tr>
<tr>
<td>HOVELLS</td>
<td>13</td>
<td>33 %</td>
<td>9 %</td>
<td>17 %</td>
<td>33 %</td>
<td>27 %</td>
<td>45 %</td>
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<td>LEIGH</td>
<td>27</td>
<td>44 %</td>
<td>4 %</td>
<td>37 %</td>
<td>54 %</td>
<td>54 %</td>
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<tr>
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<td>28 %</td>
<td>52 %</td>
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<td>38 %</td>
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<td>12 %</td>
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<td>48 %</td>
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<td>36 %</td>
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<td>36 %</td>
<td>14 %</td>
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<td>77 %</td>
<td>85 %</td>
</tr>
<tr>
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<td>21 %</td>
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<td>31 %</td>
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<td>26 %</td>
<td>50 %</td>
<td>27 %</td>
<td>47 %</td>
</tr>
<tr>
<td>THOMPSONS</td>
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<td>33 %</td>
<td>30 %</td>
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<td>48</td>
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<td>41 %</td>
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<td>47 %</td>
</tr>
<tr>
<td>WOODY YALOAK</td>
<td>43</td>
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<td>14 %</td>
<td>18 %</td>
<td>45 %</td>
<td>43 %</td>
<td>46 %</td>
</tr>
<tr>
<td>Overall</td>
<td>482</td>
<td>33 %</td>
<td>16 %</td>
<td>19 %</td>
<td>43 %</td>
<td>43 %</td>
<td>47 %</td>
</tr>
</tbody>
</table>
Appendix 2

Table F

Attitudes to NRM - significant differences across LMU: % respondents rating value important/very important (N=482)

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>It is reasonable that the wider community asks landholders to act in ways that will not harm native plants, animals</th>
<th>Reduced production in short-term is justified where there are long-term benefits to environment</th>
<th>In most cases, the benefits of de-rocking outweigh environmental costs such as loss of native grasslands</th>
<th>Clearing native vegetation has substantially reduced existence, diversity of native plants, animals in district</th>
<th>Landholders have moral responsibility to act in ways that minimise harm to native plants, animals</th>
<th>Local govt should be more active in preventing farmland in rural areas being subdivided for residential use</th>
<th>Ways forward: grant scheme administered by a govt department</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>11</td>
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<td>64 %</td>
<td>50 %</td>
<td>42 %</td>
<td>79 %</td>
<td>47 %</td>
<td>50 %</td>
</tr>
<tr>
<td>CURDIES</td>
<td>57</td>
<td>43 %</td>
<td>40 %</td>
<td>56 %</td>
<td>38 %</td>
<td>67 %</td>
<td>42 %</td>
<td>47 %</td>
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<td>50 %</td>
<td>25 %</td>
<td>59 %</td>
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<td>50 %</td>
<td>50 %</td>
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<tr>
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<td>18 %</td>
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<td>56 %</td>
<td>85 %</td>
<td>65 %</td>
<td>65 %</td>
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<td>64 %</td>
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<td>71 %</td>
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<td>43 %</td>
</tr>
<tr>
<td>OTWAY COAST</td>
<td>17</td>
<td>86 %</td>
<td>79 %</td>
<td>22 %</td>
<td>60 %</td>
<td>87 %</td>
<td>60 %</td>
<td>60 %</td>
</tr>
<tr>
<td>STONY RISES</td>
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<td>28 %</td>
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<td>61 %</td>
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<td>58 %</td>
<td>69 %</td>
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<td>UPPER BARWON</td>
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<td>45 %</td>
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<td>46 %</td>
<td>79 %</td>
<td>53 %</td>
<td>53 %</td>
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<tr>
<td>WOADY YALOAK</td>
<td>43</td>
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<td>46 %</td>
<td>41 %</td>
<td>32 %</td>
<td>58 %</td>
<td>56 %</td>
<td>56 %</td>
</tr>
<tr>
<td>Overall</td>
<td>482</td>
<td>55 %</td>
<td>51 %</td>
<td>42 %</td>
<td>44 %</td>
<td>74 %</td>
<td>49 %</td>
<td>49 %</td>
</tr>
</tbody>
</table>
## Appendix 2

### Table G

Social & farming variables - significant differences by LMU (N=464)

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>n</th>
<th>Age (median)</th>
<th>Property size (median ha)</th>
<th>Landcare participation</th>
<th>Member local commodity group</th>
<th>On-property profit</th>
<th>Profit Range (median)</th>
<th>Days off-property work (median)</th>
<th>Completed short course</th>
<th>Years resident in district (median)</th>
<th>Absentee owners</th>
</tr>
</thead>
<tbody>
<tr>
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<td>10</td>
<td>55</td>
<td>171</td>
<td>60 %</td>
<td>20 %</td>
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<td>$10,000 to $20,000</td>
<td>5</td>
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<td>43</td>
<td>18 %</td>
</tr>
<tr>
<td>BELLARINE</td>
<td>17</td>
<td>59</td>
<td>80</td>
<td>24 %</td>
<td>12 %</td>
<td>50 %</td>
<td>Less than $10,000</td>
<td>0</td>
<td>24 %</td>
<td>54</td>
<td>20 %</td>
</tr>
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<td>29 %</td>
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<tr>
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<td>9 %</td>
<td>59 %</td>
<td>$30,000 to $40,000</td>
<td>30</td>
<td>29 %</td>
<td>20</td>
<td>29 %</td>
</tr>
<tr>
<td>HOVELLS</td>
<td>13</td>
<td>52</td>
<td>48</td>
<td>15 %</td>
<td>0</td>
<td>50 %</td>
<td>Less than $10,000</td>
<td>144</td>
<td>15 %</td>
<td>42</td>
<td>58 %</td>
</tr>
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<td>27</td>
<td>55</td>
<td>80</td>
<td>37 %</td>
<td>26 %</td>
<td>44 %</td>
<td>$20,000 to $30,000</td>
<td>2</td>
<td>28 %</td>
<td>25</td>
<td>32 %</td>
</tr>
<tr>
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<td>422</td>
<td>56 %</td>
<td>32 %</td>
<td>100 %</td>
<td>$10,000 to $20,000</td>
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</tr>
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<td>34 %</td>
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<td>$20,000 to $30,000</td>
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<td>32 %</td>
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<td>14 %</td>
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<td>67</td>
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<td>10 %</td>
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<td>$10,000 to $20,000</td>
<td>45</td>
<td>40 %</td>
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<td>79 %</td>
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<td>Above $100,000</td>
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<td>23 %</td>
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<td>OTWAY COAST</td>
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<td>48</td>
<td>14 %</td>
</tr>
<tr>
<td>THOMPSONS</td>
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<td>18 %</td>
<td>38 %</td>
<td>$10,000 to $20,000</td>
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<td>30 %</td>
</tr>
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<td>20 %</td>
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<tr>
<td>Overall</td>
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<td>18 %</td>
<td>61 %</td>
<td>$20,000 to $30,000</td>
<td>0</td>
<td>36 %</td>
<td>34</td>
<td>23 %</td>
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</tbody>
</table>
## Appendix 2

### Table H

**Proportion of respondents undertaking CRP by LMU (N=482)**

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>LMU</th>
<th>Area of trees, shrubs planted (including direct seeding)</th>
<th>Area of farm forestry established</th>
<th>Length of fencing erected to manage stock access to waterways</th>
<th>Area of native bush/grasslands fenced to manage stock access</th>
<th>Number of paddocks for which a record of soil test results from past 5 years</th>
<th>Area sown to perennial pasture, lucerne during past 5 years</th>
<th>Area with at least one lime application over past 5 years</th>
<th>Area cropped in past 5 years using a rotation of pasture e.g. lucerne with pasture e.g. lucerne</th>
<th>Area where used time controlled, rotational grazing in past 12 months</th>
<th>Time spent by you/others to control pest animals &amp; non-crop weeds in past 12 months</th>
<th>Tested water quality of main water source for stock, irrigation purposes on property in last 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRE</td>
<td>89 %</td>
<td>22 %</td>
<td>75 %</td>
<td>29 %</td>
<td>56 %</td>
<td>40 %</td>
<td>60 %</td>
<td>63 %</td>
<td>33 %</td>
<td>25 %</td>
<td>100 %</td>
</tr>
<tr>
<td>BELLARINE</td>
<td>87 %</td>
<td>19 %</td>
<td>54 %</td>
<td>23 %</td>
<td>47 %</td>
<td>63 %</td>
<td>50 %</td>
<td>64 %</td>
<td>38 %</td>
<td>64 %</td>
<td>94 %</td>
</tr>
<tr>
<td>CURDIES</td>
<td>75 %</td>
<td>18 %</td>
<td>53 %</td>
<td>46 %</td>
<td>60 %</td>
<td>62 %</td>
<td>63 %</td>
<td>54 %</td>
<td>76 %</td>
<td>43 %</td>
<td>94 %</td>
</tr>
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<td>82 %</td>
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<td>45 %</td>
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<td>31 %</td>
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<td>100 %</td>
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<td>25 %</td>
<td>33 %</td>
<td>33 %</td>
<td>43 %</td>
<td>22 %</td>
<td>83 %</td>
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<td>58 %</td>
<td>42 %</td>
<td>71 %</td>
<td>39 %</td>
<td>53 %</td>
<td>38 %</td>
<td>87 %</td>
</tr>
<tr>
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<td>57 %</td>
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<td>74 %</td>
<td>74 %</td>
<td>61 %</td>
<td>30 %</td>
<td>65 %</td>
<td>91 %</td>
</tr>
<tr>
<td>MID BARWON</td>
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<td>39 %</td>
<td>25 %</td>
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<td>46 %</td>
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<td>38 %</td>
<td>29 %</td>
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<td>81 %</td>
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<td>39 %</td>
<td>30 %</td>
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<td>49 %</td>
<td>57 %</td>
<td>51 %</td>
<td>54 %</td>
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<td>87 %</td>
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<td>15 %</td>
<td>67 %</td>
<td>36 %</td>
<td>55 %</td>
<td>62 %</td>
<td>54 %</td>
<td>69 %</td>
<td>33 %</td>
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<td>85 %</td>
</tr>
<tr>
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<td>7 %</td>
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</tr>
<tr>
<td>STONY RISES</td>
<td>62 %</td>
<td>6 %</td>
<td>40 %</td>
<td>23 %</td>
<td>59 %</td>
<td>59 %</td>
<td>46 %</td>
<td>48 %</td>
<td>67 %</td>
<td>35 %</td>
<td>89 %</td>
</tr>
<tr>
<td>THOMPSONS</td>
<td>84 %</td>
<td>29 %</td>
<td>44 %</td>
<td>30 %</td>
<td>67 %</td>
<td>56 %</td>
<td>53 %</td>
<td>48 %</td>
<td>55 %</td>
<td>23 %</td>
<td>89 %</td>
</tr>
<tr>
<td>UPPER BARWON</td>
<td>73 %</td>
<td>22 %</td>
<td>45 %</td>
<td>26 %</td>
<td>63 %</td>
<td>62 %</td>
<td>64 %</td>
<td>48 %</td>
<td>49 %</td>
<td>44 %</td>
<td>89 %</td>
</tr>
<tr>
<td>WOADY YALOAK</td>
<td>74 %</td>
<td>20 %</td>
<td>42 %</td>
<td>14 %</td>
<td>46 %</td>
<td>45 %</td>
<td>55 %</td>
<td>45 %</td>
<td>30 %</td>
<td>53 %</td>
<td>78 %</td>
</tr>
<tr>
<td>Overall</td>
<td>75 %</td>
<td>17 %</td>
<td>48 %</td>
<td>31 %</td>
<td>55 %</td>
<td>52 %</td>
<td>54 %</td>
<td>49 %</td>
<td>52 %</td>
<td>42 %</td>
<td>88 %</td>
</tr>
</tbody>
</table>

* Analysis only included respondents undertaking enterprises relating to each CRP.
Appendix 3  Adoption of CRP
### Appendix 3 Table A3-1

**Knowledge of NRM where there are significant links to the adoption of CRP (N=482)**

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Knowledge topic</th>
<th>Area of trees, shrubs planted (including direct seeding)</th>
<th>Area of farm forestry established</th>
<th>Length of fencing erected to manage stock access to waterways</th>
<th>Area of native bush/forest fenced to manage stock access</th>
<th>Number of paddocks for which a record of soil test results from past 5 years</th>
<th>Area sown to perennial pasture, lucerne during past 5 years</th>
<th>Area with at least one lime application over past 5 years</th>
<th>Area cropped in past 5 years using a rotation with lucerne</th>
<th>Area where used time controlled rotational grazing in past 12 months</th>
<th>Area sown to grass, crops using minimum tillage practices during past 12 months</th>
<th>Time spent by you/others to control pest animals &amp; non-crop weeds in past 12 months</th>
<th>Tested water quality of main water source for stock, irrigation purposes in past 5 years</th>
<th>Current recommended practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to interpret results from soil testing</td>
<td>POS</td>
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<tr>
<td>How to recognise the signs of salinity</td>
<td>POS</td>
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<tr>
<td>Ability to identify acidic soils in this district</td>
<td>POS</td>
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<tr>
<td>Current market prices paid for farm forestry (e.g. lease payments per hectare)</td>
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<tr>
<td>How to interpret results for water quality testing</td>
<td>POS</td>
<td>POS</td>
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<tr>
<td>The benefits of retaining or improving the condition of native vegetation</td>
<td>POS</td>
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<tr>
<td>The processes leading to soil acidification in the district</td>
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<tr>
<td>The benefits of ground cover on grazing or cropping paddocks to maintain or improve soil health</td>
<td>POS</td>
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<tr>
<td>The ability of vegetation in waterways and gullies to improve water quality</td>
<td>POS</td>
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<td>POS</td>
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<tr>
<td>The benefits of pastures in crop rotation in maintaining soil health</td>
<td>POS</td>
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<tr>
<td>How to identify new or emerging weed species</td>
<td>POS</td>
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<tr>
<td>Areas on property where plants are showing signs of salinity</td>
<td>POS</td>
<td>POS</td>
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<td>POS</td>
<td>POS</td>
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</tr>
</tbody>
</table>

* POS = significant positive relationship, NEG = significant negative relationship

** Only includes relationships with CRP for knowledge topics which can be expected to affect CRP
Appendix 3 Table A3-2  
Values respondents attached to their property where there are significant links to the adoption of CRP (N=482)  
Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Knowledge topic</th>
<th>Current recommended practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides most of the household income</td>
<td>POS POS POS POS POS POS POS</td>
</tr>
<tr>
<td>Being able to pass the property on to others in better condition</td>
<td>POS POS POS POS POS POS POS</td>
</tr>
<tr>
<td>Tax effective way to build an asset</td>
<td>POS POS POS POS POS POS POS</td>
</tr>
<tr>
<td>Native vegetation on my property provides habitat for native animals</td>
<td>NEG</td>
</tr>
<tr>
<td>I’m always learning new things</td>
<td>POS POS POS POS POS POS POS</td>
</tr>
<tr>
<td>A place for recreation</td>
<td>POS NEG</td>
</tr>
<tr>
<td>Sense of accomplishment from building/maintaining a viable business</td>
<td>POS POS POS POS POS POS POS</td>
</tr>
<tr>
<td>Being part of a rural community</td>
<td>POS POS POS</td>
</tr>
<tr>
<td>Work on the property is the only job I’ve ever done</td>
<td>POS POS</td>
</tr>
<tr>
<td>Provides the lifestyle that I want</td>
<td>POS</td>
</tr>
<tr>
<td>Rural land represents a sound long-term investment</td>
<td>POS POS POS POS POS POS</td>
</tr>
<tr>
<td>Work on a property is a welcome break from my normal occupation</td>
<td>NEG NEG NEG NEG NEG</td>
</tr>
<tr>
<td>Sense of accomplishment from producing food or fibre for others</td>
<td>POS POS POS</td>
</tr>
<tr>
<td>Being able to build a business that employs other family members</td>
<td>POS POS POS POS POS</td>
</tr>
<tr>
<td>This is a great place to raise a family</td>
<td>POS</td>
</tr>
<tr>
<td>The freedom of working for myself</td>
<td>NEG POS POS POS POS POS POS</td>
</tr>
</tbody>
</table>

* POS = significant positive relationship, NEG = significant negative relationship
### Appendix 3 Table A3-3

**Confidence in CRP views about NRM where there are significant links to the adoption of CRP (N=482)**

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Knowledge topic</th>
<th>Current recommended practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fencing to manage stock access is an essential part of the work required to revegetate waterways</td>
<td>POS</td>
</tr>
<tr>
<td>The time, expense involved in watering stock off-stream and/or off-wetlands is justified by improvements in bank stability, water quality or stock condition</td>
<td>POS</td>
</tr>
<tr>
<td>Reduced production in the short-term is justified where there are long-term benefits to the environment</td>
<td>NEG  NEG  NEG  NEG  NEG</td>
</tr>
<tr>
<td>Clearing native vegetation has substantially reduced the existence and diversity of native plants and animals in this district</td>
<td>NEG  NEG  NEG  NEG  NEG</td>
</tr>
<tr>
<td>Landholders have a moral responsibility to act in ways that minimise harm to native plants and animals</td>
<td>POS  NEG  NEG</td>
</tr>
</tbody>
</table>

* POS = significant positive relationship, NEG = significant negative relationship
## Appendix 3 Table A3-4

### Sources of information and the adoption of CRP: % adopting CRP who listed each source (N=461)

Corangamite social benchmarking survey 2006

<table>
<thead>
<tr>
<th>Topic</th>
<th>Current recommended practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area with at least one lime application over past 5 years</td>
</tr>
<tr>
<td>Victorian Farmers Federation</td>
<td>30 %</td>
</tr>
<tr>
<td>Bureau of Meteorology</td>
<td>9 %</td>
</tr>
<tr>
<td>Extension officers</td>
<td>40 %</td>
</tr>
<tr>
<td>Dept Primary Industry</td>
<td>14 %</td>
</tr>
<tr>
<td>Waterwatch/Fishcare/Saltwatch</td>
<td>13 %</td>
</tr>
<tr>
<td>Industry groups</td>
<td>40 %</td>
</tr>
<tr>
<td>Agricultural consultants</td>
<td>40 %</td>
</tr>
<tr>
<td>Universities</td>
<td>11 %</td>
</tr>
</tbody>
</table>
### Appendix 3 Table A3-5

<table>
<thead>
<tr>
<th>Topic</th>
<th>Trees, shrubs planted (including direct seeding)</th>
<th>Area of farm forestry established</th>
<th>Fencing erected to manage stock access to waterways</th>
<th>Native bush/grasslands fenced to manage stock access</th>
<th>Paddocks for which a record of stock movement exists</th>
<th>Area sown to perennial pasture (including lucerne) in past 5 years</th>
<th>Area cropped in past 5 years using a rotation with pasture</th>
<th>Area where use of lime over past 5 years</th>
<th>Area cropped in past 12 months using minimum tillage practices</th>
<th>Time spent by you/others to control pest animals &amp; non-crop weeds in past 12 months</th>
<th>Tested water quality of main water source for stock, irrigation purposes on property in last 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS</td>
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* POS = significant positive relationship; NEG = significant negative relationship