

WESTERN CATCHMENT MANAGEMENT AUTHORITY
COMMUNITY TARGET MONITORING:
SOCIAL BENCHMARKING SURVEY

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EXECUTIVE SUMMARY

The primary objective of this project was to benchmark, through a survey of landholders within the Western Catchment, (i) the adoption of sustainable agricultural management practices, (ii) the level of awareness, knowledge, and skills in natural resource management (NRM) and (iii) awareness of the Western CMA.

Two additional surveys were also undertaken which included (i) a survey of urban residents, which was undertaken to assess awareness of the Western CMA and to identify local NRM issues from the perspective of urban residents; and (ii) a survey of stakeholder organisations, which was undertaken to assess awareness of the Western CMA, the relationship between the Western CMA and stakeholder organisations and stakeholder beliefs about landholder engagement in NRM.

Landholder Survey

Using information drawn from key informant interviews with CMA Board Members, staff and other stakeholders, a questionnaire was designed in order to provide baseline information for two key management targets identified in the Western CMA Catchment Action Plan. The two management targets were:

Management Target 1: Sustainable agriculture management practice carried out by 50% of landholders by 2016.

Management Target 12: There is a continual increase in land managers' awareness, knowledge, and skills in NRM and adoption of practices which improve natural resource outcomes.

A telephone survey of landholders was undertaken between February and April 2009, with 381 interviews being completed.

The mean age of landholders was found to be 55 years, with a secondary school education being the highest level of education achieved by the majority of landholders (68%). Landholders had lived on their current properties for an average of 26 years, with 68% intending to pass their property onto the next generation in their family.

Forty-five percent of landholders had more than one property in the district and when multiple properties across each landholder were taken into account, the average property size was 17,806 hectares, which compares to 14,082 hectares for landholders with single properties.

Sheep production (76%) was the most common land use in the region, followed by cattle production (56%), harvesting feral goats (22%) and dryland cropping (17%).

Nineteen percent of landholders indicated they undertook dryland or irrigated cropping on their land with the average area of land under cropping across multiple properties owned by landholders being 1,006 hectares. If single property ownership amongst landholders is examined, the average area of land under cropping was 805 hectares.

No tillage or one pass sowing was the most common cultivation method used in cropping and was used by 51% of landholders on 53% of their cropping land. The most common cropping practice undertaken by landholders within the past two years was stubble retention (78%), crop rotation (61%), soil testing (57%) and selective grazing (50%). The least common practices were precision farming (28%) and controlled traffic (19%).

Ninety-three percent of landholders indicated they had run stock on their property within the last two years. Amongst these landholders the average area grazed for stock across multiple properties was 17,903 hectares. However, when only single property ownership is examined amongst landholders, the average area grazed was 16,000 hectares.

Kangaroos, foxes, pigs, feral goats and rabbits were the most common native and feral animals on properties, with over 80% of landholders indicating they attempted to control these animals.

Ninety-seven percent of landholders indicated they adjusted stocking rates to better manage their pastures and in time of drought the most common methods of managing pastures included reducing stock numbers to a core heard (82%); moving their stock off the property (46%); and moving stock to other locations on their property (36%).

In relation to groundcover in their paddocks, 73% of landholders tried to maintain 'whatever they could', with the average percent of groundcover maintained in paddocks found to be approximately 55%.

Sixty-five percent of landholders indicated they controlled stock access to watering points as part of their management of domestic or feral stock, with the main reason for controlling stock access to watering points being the control of domestic stock movements (74%).

The majority of landholders (66%) reported a problem with invasive native scrub (INS) or woody weeds, with an average of 33% of their property areas being affected. The majority of landholders (55%) indicated they had attempted to control INS or woody weeds on their property in the last two years and this was most commonly done through mechanical (58%) and chemical (53%) methods. Furthermore, 88% of landholders used multiple follow up treatments in the control of INS and woody weeds, with follow up treatments generally using the same method as the initial first treatment.

Twenty percent of landholders were found to have undertaken agriculture, grazing or land management related courses within the last two years and 64% indicated they had later changed their land management practices on the basis of what they learnt at the course.

Thirty-four percent of landholders had a documented or written property management plan or map, with 50% of landholders having developed their property management plan within the last four years. Amongst landholders with property management plans, 47% referred to them either 'always' or 'often', while 29% referred to them only 'occasionally' or 'never'. The three most common components of property management plans were identified natural or man-made watering points (98%); an air photo or satellite imagery (87%); and a description of fencing requirements (82%).

It was estimated that 68% of landholders were aware of the Western CMA, with the highest level of awareness being in the Bourke Local Government area (80%) and lowest in the Central Darling (55%). In addition, 50% of all landholders indicated they had had contact or communication with the CMA in the last 12 months.

When landholders were asked to identify the preferred method through which the CMA should communicate with people in their area, the three most preferred methods were to 'post information through the mail' (78%); use email communication (41%); and hold community meetings (38%).

Forty percent of landholders indicated they would be willing to attend a one day training course on property management held by the CMA, with the average distance landholders would be willing to travel to such a course being 106 kilometres.

Seven attitude statements were used to assess landholder attitudes towards the Western CMA. An analysis of each attitude statement showed that the majority of landholders believed that:

- The CMA was doing a good job supporting land managers to manage natural resources in the region (93%);
- The CMA was responsible for controlling vegetation clearing (72%);
- The CMA was a Government department (93%);
- They knew about the CMA and what it does (90%);
- That the CMA did not only work with landholders (69%);
- They were generally supportive of the CMA and what it does (94%); and that
- The CMA was responsible for water management (68%).

Urban Residents Survey

A telephone survey of 25 urban residents from each of the four towns including Bourke, Brewarrina, Cobar and Wilcannia was undertaken in March 2009. The survey focussed on (i) awareness and understanding of the Western CMA; (ii) environmental issues in the local area; (iii) beliefs about the health of land in their local area; and (iv) participation in activities to address environmental issues.

Across the four town locations, between 11 and 20% of urban residents were found to be aware of the Western CMA, with the majority of residents believing the main activity of the Western CMA was related to water management, including river management and the management or irrigation and water licences.

Residents were asked to identify the most important environmental issues in their local area. While the issues that were identified were often specific to the town location of the resident, the three most commonly reported issues all related to water management, which included the lack of river flows and riparian and river management.

Residents were asked to consider the current and past health of the land around where they lived on a scale from one to ten, with one being very unhealthy and ten being very healthy. With the exception of Brewarrina, the land around Bourke, Cobar and Wilcannia was seen as being healthier now when compared to 10 years ago. In the case of Brewarrina there was essentially no change in the perceived health of the land around this town over the past 10 years.

One-third of urban residents in Bourke (36%) and Brewarrina (32%) had participated in activities to address environmental issues in their local area in the last two years, although the level of participation was much higher in Cobar (76%) and Wilcannia (84%).

Stakeholder Organisations Survey

Telephone interviews with stakeholder organisations were undertaken in April 2009 and included 11 non-Government stakeholder organisations and 10 Government stakeholder organisations.

Amongst non-Government stakeholder organisations the two most common forms of contact with the CMA were 'receiving written information from the CMA' and 'obtaining advice or assistance from CMA staff'. On the other hand, Government stakeholder organisations contacted or communicated with the CMA through a wide range of different processes.

The level of knowledge of the CMA amongst stakeholder organisations was above average. On a 10 point scale, the mean score was 7 amongst non-Government organisations and 7.7 amongst Government organisations.

In addition, the majority of both non-Government and Government stakeholder organisations indicated they had an understanding of the role of the CMA and of the regional NRM processes and programs implemented by the CMA.

Both non-Government and Government stakeholder organisations believed the CMA had been 'somewhat successful' in its progress towards the achievement of NRM targets as identified in the CAP. On a 10 point scale, the mean score was 6.8 amongst non-Government organisations and 6.0 amongst Government organisations.

Amongst non-Government stakeholder organisations, 64% indicated the CMA had provided information, advice or funding to their organisation in the last 12 months and that the type and level of support provided by the CMA had been either 'very good' or 'good'. The most valuable support provided by the CMA was found to be access to technical support and advice and project or strategic planning assistance.

Approximately half of the non-Government stakeholder organisations (55%) believed they would need support or additional support from the CMA in the next 12 months, with the type of support commonly required from the CMA being assistance in obtaining funding and access to technical support and advice.

In relation to decision-making within the Western CMA, the majority of non-Government and Government stakeholder organisations believed that the CMA was inclusive, transparent and adequately informed by different stakeholder organisations.

In relation to the quality of the relationship with the CMA, the majority of non-Government and Government stakeholder organisations believed that the relationship had been effective and had improved over the past two years.

The majority of stakeholder organisations also believed the CMA provided leadership in relation to NRM and had an on-going commitment to maintaining its relationship with their organisation. They also believed stakeholder organisations in the region shared information and that their organisation had the capacity to work in partnership with the CMA.

In relation to landholder engagement, the majority of stakeholder organisations also believed the CMA had been effective in engaging with landholders within the region.

When stakeholder organisations were asked if the partnership between their organisation and the CMA could be improved several non-Government and Government organisations emphasised the need to improve the level of communication and contact between their organisation and the CMA.

Recommendations

It is recommended that the findings from the benchmarking survey be used to review the management action targets which formed the basis for the current benchmarking survey. The findings from this project should enable more specific benchmarking values and targets to be defined for a number of best management practices, actions and other issues as described in this report. The revised targets should form the basis for CMA actions and on-ground activities prior to undertaking the next benchmarking survey.

In monitoring change across time it is recommended that the survey methodology be repeated in two or three years time. Of course any decision to repeat the survey assumes that sufficient time will have elapsed in which on-ground activities and other actions by the Western CMA are likely to have resulted in change.

It is important that the same project methodology be used if the survey is to be repeated in the future and of course the same questions and question wording is again used. If there are significant changes to the project methodology or to the wording of questions, changes in response to questions between the two time periods may be attributable to changes in project methodology rather than the activities and actions of the Western CMA. Within this context questions may be removed and new questions added, however a core set of questions need to be retained in future surveys if changes are to be monitored across time.

A pre-test of the landholder questionnaire and survey methodology was used in the current project to identify issues associated with question wording and the structure of the questionnaire. A pre-test should again be undertaken prior to the implementation of the survey methodology in the future. This is particularly important if any changes to the questionnaire have been made. If there are no changes to the questionnaire, undertaking a pre-test would also enable the interviewers to train and become familiar with the survey methodology and interview procedures prior to the full implementation of the survey.

The current landholder questionnaire, with introductory remarks and discussion, was completed on average in 40 minutes. While this is a long questionnaire to be undertaken as a telephone interview, there were no instances in which landholders complained about the length of the questionnaire. It is most likely the case that while the incentives assisted in obtaining landholder consent to be interviewed, the incentives were more useful in committing landholders to the interview and the interview time. As such if the length of the questionnaire is retained in the future it is recommended that incentives again be used as they were in the current project to 'compensate' landholders for their time and involvement in the interview.

In any future survey it is again recommended that an attempt be made to maximise the sample size. For the landholder survey this would again mean attempting to contact all landholders within the Western CMA catchment. Given the relatively small number of landholders within the Western CMA catchment it is recommended that the CMA, prior to the next survey implement a project to obtain telephone and email information for all landholders. This could be most effectively achieved through working with Local Government Authorities in the Western Catchment in obtaining the consent of landholders for the CMA to retain their contact details.

Finally, in replicating the survey methodology in the future, it is also recommended that key interventions which have occurred in the intervening time period also be identified and described. These interventions can then be used to attribute change in the survey findings.

1 INTRODUCTION

The Western Catchment Management Authority (WCMA) is one of 13 regional NRM bodies in NSW. The CMAs were established in 2004 and each CMA has developed a Catchment Action Plan (CAP) and Investment Strategies to support the management of natural resources and achievement of NRM targets within each region.

This project provides benchmark information in relation to key management targets identified within the Western CMA CAP including the adoption of sustainable agricultural management practices and the level of landholder awareness, knowledge and skills in NRM. On the basis of the benchmarking information collected in this project, future assessments will be able to monitor progress towards the achievement of targets and changes in landholder practices and capacity across time.

2 OBJECTIVES

To manage and improve the natural resources of the Western Catchment, the WCMA has developed a CAP through consultation with the broader community. The CAP identifies a series of catchment (resource condition) targets and management targets across four natural resource management themes which includes: (i) rivers and groundwater, (ii) land and vegetation, (iii) biodiversity and (iv) community. These targets provide the direction for natural resource management and the allocation of future funding in the Western Catchment of NSW over the next 10 years.

In addition to assessing community awareness of the Western CMA, the core objectives of this project were to provide baseline information for two CAP management targets which were:

Management Target 1: Sustainable agriculture management practice carried out by 50% of landholders by 2016.

Management Target 12: There is a continual increase in land managers' awareness, knowledge, and skills in NRM and adoption of practices which improve natural resource outcomes.

The core focus of this project included a survey of landholders within the Western Catchment which would provide baseline information for the assessment and continuous monitoring of Management Targets 1 and 12.

In addition to the survey of landholders, a survey of urban residents was also undertaken in order to assess awareness of the Western CMA and to identify local NRM issues from the perspective of urban residents.

A stakeholder organisations survey was also undertaken in order to assess awareness and knowledge of the Western CMA, the relationship between the Western CMA and stakeholder organisations and stakeholder beliefs about landholder engagement in NRM.

Although the project provides a basis for developing initiatives in relation to engagement, landholder capacity and the adoption of practices which improve NRM outcomes, the project focuses on benchmarking and is not an explanatory study which seeks to identify and explain the underlying causes or determinants of community behaviours or beliefs.

3 METHODOLOGY

The methodology included telephone surveys of landholders, urban residents and organisational stakeholders.

There were three core components to the project methodology which included (i) the design and pre-testing of questionnaires, (ii) the sampling or selection of potential survey respondents and (iii) the implementation of the telephone surveys.

3.1 Questionnaire design

Three separate questionnaires were designed for each of the three survey populations (landholders, urban residents and stakeholder organisations).

Landholder Questionnaires

The questionnaire was based on issues as identified in key informant telephone interviews undertaken with WCMA Board Members (6), staff (12) and other stakeholders (3) involved in the development of best management practices. The objective of the key informant interviews was to identify issues and questions for inclusion in the landholder questionnaire. Appendix A shows the background information and instructions sent to key informants prior to the telephone interview.

On the basis of interviews with key informants an initial draft questionnaire was developed. This questionnaire was then sent to key informants for review and comment. Additional consultations with the Western CMA project steering committee further refined the questionnaire.

An initial draft of the questionnaire was pre-tested on a sample of 30 landholders drawn from different areas within the Western Catchment. The objective of the pre-test was to ensure question wording and question ordering was appropriate and that the responses to questions were meaningful. On the basis of the pre-test minor changes were made to the wording and structure of the questionnaire.

While the intent was to design a questionnaire which could be completed through a 20 minutes telephone interview it was found through the pre-test that the questionnaire was being completed within 30 to 40 minutes. However, as the completion of the telephone interview was based on an incentive, which included either an IGA voucher for \$25 or a donation to the Royal Flying Doctor service, it was decided not to reduce the length of the questionnaire.

The questionnaire (Appendix B) included questions which focussed on:

- Awareness, communication with and beliefs about the Western CMA;
- Land management practices in relation to cropping;
- Land management practices in relation to properties with stock;
- Management of groundcover;
- Management of invasive native scrub (INS) and wood weeds;
- Management of exotic pest plant species;
- Training and course attendance in NRM and the adoption of best management practices; and
- A description of the characteristics of landholders.

Urban Residents Questionnaires

In consultation with the project steering committee, a questionnaire was designed specifically for urban residents within the WCMA region. This was a short questionnaire (Appendix C) which included questions which focussed on:

- Awareness and understanding of the Western CMA;
- The identification of environmental issues in the respondent's local area;
- Beliefs about the health of land in the respondent's local area; and
- Participation in activities to address environmental issues.

The completion of the telephone interview was based on an incentive, which included either an IGA voucher for \$10 or a donation to the Royal Flying Doctor service.

Stakeholder Organisations Questionnaires

Like the urban residents questionnaire, the stakeholder organisations questionnaire was designed in consultation with the project steering committee and was based on a review of questions used in similar surveys of stakeholder organisations undertaken in other CMAs in NSW. The questionnaire (Appendix D), which included separate questions for non-Government and Government stakeholder organisations, focused on:

- The level and type of contact and communication with the Western CMA;
- Knowledge and understanding of the role of the Western CMA;
- Beliefs about the achievement of NRM targets within the region;
- The level of current and future support provided by the Western CMA; and
- Beliefs about decision making, partnerships, leadership and landholder engagement by the Western CMA.

Unlike the landholder and urban residents surveys, no incentive was provided to stakeholder organisations to complete the questionnaire.

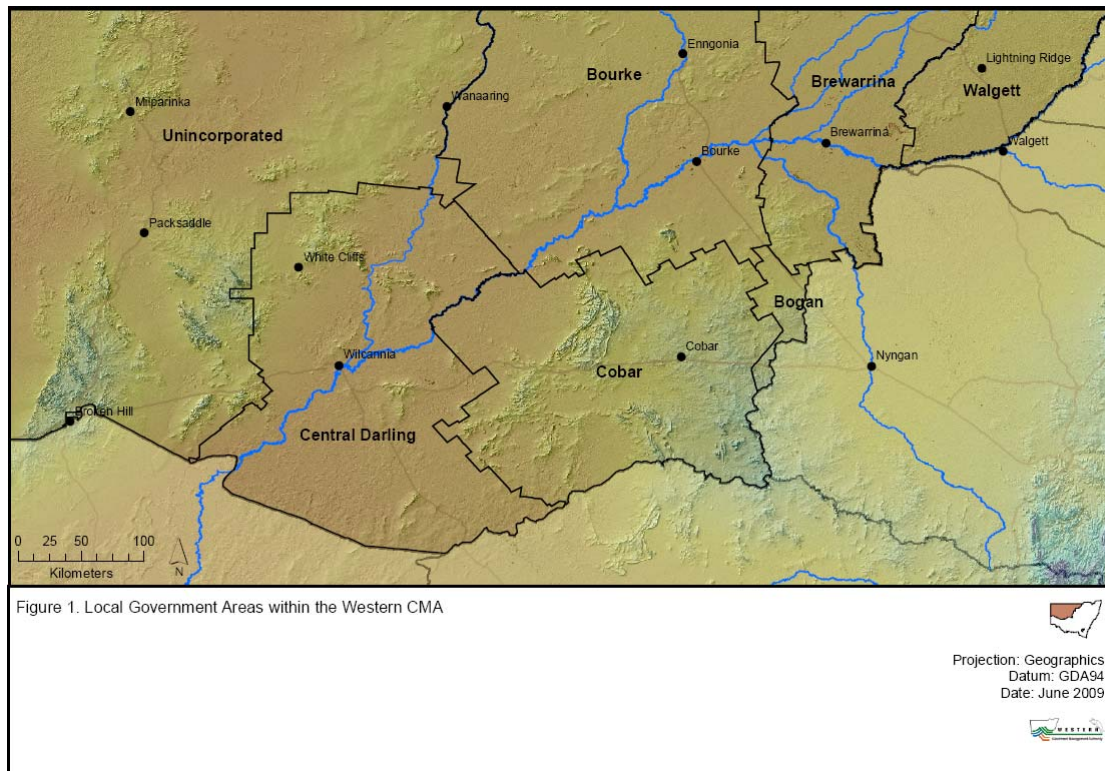
3.2 Survey sampling

Specific sampling strategies were developed in order to survey the three populations of landholders, urban residents and stakeholder organisations.

Landholders

The sampling frame consisted of all rural landholders or property owners in the Western Catchment (Figure 1). No specific sampling strategy was used to select landholders and an attempt was made to contact all landholders within the Western Catchment which was estimated to be between 800 and 1,200¹.

¹ This estimate is based on the best judgment of staff within the Western CMA



Multiple sources were used in compiling a list of telephone numbers for landholders within the Western Catchment. This included the identification of telephone numbers from:

1. Postcodes within the WCMA region based on the last publically available digital listing of telephone numbers (May, 2004);
2. Web based listings of agricultural businesses and stations within the region;
3. The Western CMA contact database of landholders; and
4. Available local telephone directories from throughout the region.

Through this process a total of 1,535 unique telephone numbers were identified, which constituted the sampling frame.

Urban Residents

Given the importance of the landholder survey within this project, only a small sample of 100 urban residents was used. Rather than sampling from all towns within the Western Catchment, a sample of 25 residents was drawn from four urban locations. The four urban locations included:

1. Bourke;
2. Brewarrina;
3. Cobar; and
4. Wilcannia.

Using the last publicly available digital listing of telephone numbers (May, 2004), start and end telephone numbers within each of the four urban locations were identified. Within each of the towns every second telephone number from the start number was systematically called until the quota of 25 telephone numbers had been achieved.

Stakeholder Organisations

Stakeholder organisations and the names and telephone number of individuals within stakeholder organisations were identified by staff within the Western CMA. The final contact list of stakeholder organisations included 22 Government organisations (Local Government, State agencies and departments, educational institutions, neighbouring CMAs etc) and 17 non-Government organisations (Landcare groups; industry and agricultural organisations; conservation and environment groups).

The Western CMA forwarded a letter to each stakeholder organisation prior to the telephone interview informing them of the benchmarking project and inviting them to participate.

The final sample of completed telephone interviews consisted of 11 non-Government and 10 Government organisations.

3.3 Survey implementation

Landholder Surveys

Landholder telephone surveys were undertaken between the 18th February 2009 and 27th April 2009. Prior to undertaking the telephone surveys a flyer was distributed to all households within the Western Catchment informing people of the telephone survey, the objectives of the survey and that further information about the survey could be found on the project website.

From the initial list of 1,535 telephone numbers, 381 interviews were completed with landholders from within the Western Catchment. As shown in Table 1, 22% of all calls were to telephones which were found to be disconnected and a further 21% were answered by answering machines even after repeated attempts to call the telephone number. Only 8% of all telephone calls resulted in a refusal to participate.

Of the 421 interviews that were completed, further analysis at the time of data entry found that an additional 40 landholders who had been interviewed were located outside the Western Catchment. Although the 40 interviews had been completed, they were not included in any further data analysis.

Table 1. Response categories for landholder telephone interviews

Response	Count	Percent
Facsimile	51	3.3
Phone disconnected	335	21.8
No answer	199	13.0
Refusal	121	7.9
Already completed questionnaire	31	2.1
Not a landholder or outside WCMA region	54	3.5
Answering machine	322	21.0
Completed questionnaires	421	27.4
Total calls	1,535	100.0
Identified as outside the WCMA region after interview	40	
Total completed questionnaires within the WCMA region	381	

Note: Facsimile indicates a facsimile signal received;
Phone disconnected also indicates no dial tone;
No answer indicates the phone was not answered after repeated attempts;
Already completed questionnaire indicates that although another unique phone number was used the respondent indicated they had already completed the questionnaire
Answering machine indicates that after repeated attempts the phone was found to be connected to an answering machine.

Source: EBC (2009)

Amongst those landholders who completed the interview, 76% asked that their \$25 incentive be sent as a donation to the Royal Flying Doctor Service, while 24% opted to receive the \$25 IGA voucher.

In addition all landholders were asked if they would like the Western CMA to retain their name and address on the CMA's mailing list. In response 96% of landholders indicated the CMA could retain their name and address.

Urban Residents Survey

The survey of urban residents was undertaken between 13th March and 29th March 2009. Table 2 shows that 348 calls were made in order to obtain the 100 completed interviews. As also shown in Table 2, 33% of calls were made to telephone numbers that were disconnected. This high number is expected as the sampling of urban telephone numbers was made from a start number to an end number and not to specific telephone numbers as derived from a telephone directory listing.

Table 2. Response categories for urban resident telephone interviews

Response	Count	Percent
Facsimile	4	1.1
Phone disconnected	116	33.3
No answer	60	17.2
Refusal	16	4.6
Answering machine	52	14.9
Completed questionnaires	100	28.7
Total calls	348	100.0

Note: Facsimile indicates a facsimile signal received;
Phone disconnected also indicates no dial tone;
No answer indicates the phone was not answered after three attempts;
Answering machine indicates that after three attempts the phone was found to be connected to an answering machine.

Source: EBC (2009)

Amongst the 100 urban residents who participated in the survey, 77% asked that their \$10 incentive be sent as a donation to the Royal Flying Doctor Service, while 23% opted to receive the \$10 IGA voucher.

Seventy-two percent of urban residents indicated the Western CMA could retain their name and address on their mailing list.

Stakeholder Organisations Survey

Telephone interviews with stakeholder organisations were undertaken between 10th April and 1st May 2009. Table 3 shows that 11 of the 17 non-Government stakeholder organisations were interviewed and 10 of 22 Government stakeholder organisations.

Table 3. Response categories for stakeholder organisation telephone interviews

Response	Count	Percent
Non-Government		
Unable to contact	2	11.8
Refusal	1	5.9
Disconnected	1	5.9
Repeated/duplicate number	1	5.9
On holidays	1	5.9
Completed surveys	11	64.7
Total	17	100.0
Government		
Answering machine	4	18.2
Unable to contact	3	13.6
Refusal	2	9.1
On holidays	2	9.1
Unknown person	1	4.5
Completed surveys	10	45.5
Total	22	100.0

Source: EBC (2009)

4 INTERPRETATION OF GRAPHS

Figure 2 shows an example of the type of graph used in the report in presenting the results of analyses.

Figure 2 shows the presentation of results in relation to mean scores. In this example the mean scores for each of the six Local Government areas is symbolised as a 'dot', with the upper and lower whiskers on either side of the mean indicating the 95% confidence interval. The 95% confidence interval indicates that, although we have estimated the population mean on the basis of sample data, we can be 95% confident the population mean is between the upper and lower bounds that have been identified.

In some cases, specifically where the data maybe significantly skewed or there may be extreme scores, the median will be used instead of the mean. In these cases the dot will represent the median score. However the upper and lower whiskers on either side of the median will be represented by the interquartile range in which 50% of the responses can be found.

While the graph in Figure 3 shows the mean scores, a similar interpretation can be used to understand the information presented in graphs which show percentages (bar graphs). However in this case rather than mean scores being presented, the results are based on the percentage of respondents for each of the variables of interest.

In each of the graphics presented in this report, the variable of interest is compared against a number of other explanatory variables in order to further identify important relationships in the data. The range of explanatory variables used in the analysis is explained below:

Local Government Areas: This distinguishes between six Local Government areas within the Western Catchment. Respondents were assigned to each Local Government area on the basis of (i) derived easting and northing references for their property; (ii) the nearest town location to their property (Question 60; Appendix B); and (iii) the distance by road between their property and the nearest town (Question 61; Appendix B). Although the Local Government areas of Broken Hill and Bogan are within the Western Catchment, they were not included as the sample of landholders within these areas was too small for any meaningful analysis.

Number of Properties: This graphic shows the mean scores for landholders with one or two or more properties in the district (Question 3; Appendix B).

Property Size: This provides a comparison of landholders with different property sizes (Question 16; Appendix B). Property size is based on the aggregate of properties an individual may have within the district and does not necessarily reflect individual property sizes. When interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

Type of Production: This graphic shows the differences in means amongst those landholders who use their land for different forms of production (Question 52; Appendix B). Each if the production categories are not independent, meaning for example that a landholder that undertakes cropping and cattle production will appear in both categories.

Years Lived on Property: All respondents were asked to identify how many years they had lived on their current property (Question 55; Appendix B). On the basis of responses to this question, respondents were grouped into five categories. The graphic compares the means across the five

categories. When interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

Number of Previous Generation on Property: This graphic identifies whether landholders had been on their property for one, two, three or more generations (Question 56; Appendix B). The graphic compares the means across the four categories. When interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

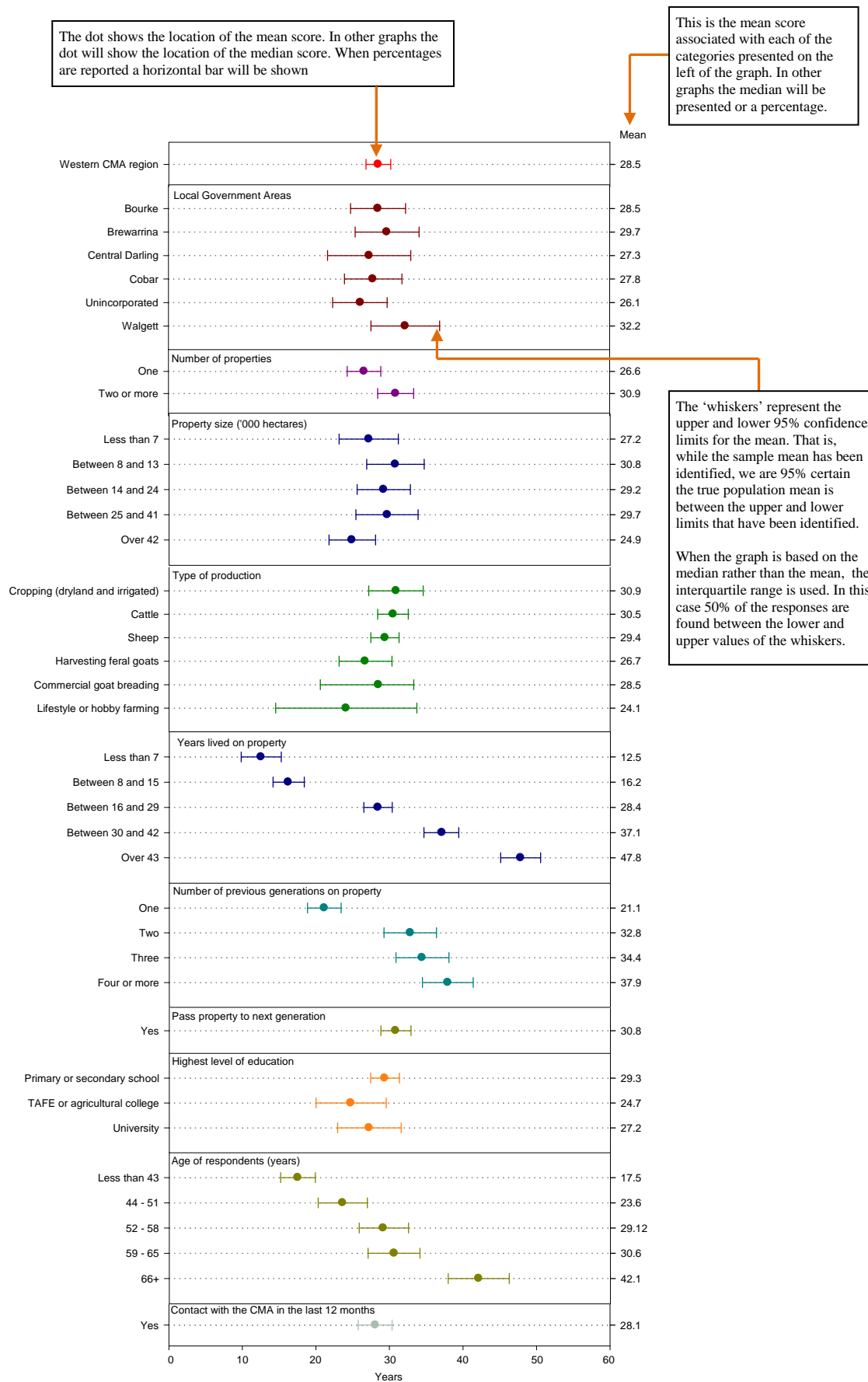
Pass Property onto next Generation: This graphic shows the mean for those landholders who reported an intention to pass their property onto the next generation in their family (Question 57; Appendix B).

Highest Level of Education: The highest level of education of landholders was based on three groupings, including primary and secondary school; TAFE or agricultural college; and University (Question 59; Appendix B).

Age of Respondents: On the basis of the respondents age, five age classes were defined. Like the number of years resident on their current property, when interpreting this variable against the variable of interest, increasing or decreasing linear trends are sought.

As indicated previously, it is important to recognise that this report provides benchmarking information against which landholder practices, attitudes and beliefs can be monitored across time. The analyses and graphics are presented in such a way as to allow future assessments against this benchmarked information. In terms of the direct interpretation of the current findings, it is generally only those stakeholders and CMA staff with detailed local knowledge who will be able to provide the contextual explanations for many of the findings reported in the following graphics.

Figure 2. Example of graph of mean scores



5 LANDHOLDER CHARACTERISTICS

This chapter provides a description and analysis of the characteristics of landholders within the Western Catchment. They are primarily found in questions 52 to 63 of the landholder questionnaire (Appendix B).

Within the sample 62% of landholders who were interviewed were male and 38% female. While this does not necessarily reflect the proportion of male and female landholders, it does indicate the proportion of males and females who were the managers of the property or the proportion who were available able to speak about the management of the property.

The age range of landholders who were interviewed was between 20 and 86 years, with the mean age being 55 years (Table 4). As shown in Table 4, 67% or two-thirds of landholders were aged between 41 and 65 years.

Table 4. Age of respondents

Age (years)	Count	Percent	Cumulative Percent
21 – 25	5	1.4	1.4
26 – 30	5	1.4	2.8
31 – 35	10	2.8	5.6
36 – 40	25	7	12.6
41 – 45	43	12	24.6
46 – 50	48	13.4	38.0
51 – 55	52	14.6	52.6
56 – 60	55	15.4	68.0
61 – 65	43	12	80.0
66 – 70	33	9.2	89.2
71 – 75	21	5.9	95.1
76 – 80	10	2.8	97.9
81 – 85	6	1.7	99.6
86 – 90	1	0.3	100.0
Total landholders	357	100.0	
Mean age of landholders	54.5		

Source: EBC (2009).

As shown in Table 5 the highest level of education achieved by the majority of landholders (68%) was a secondary school education, although 19% also indicated they had achieved a university level of education.

Table 5. “What is the highest level of education that you have? Is it...”

Highest level of education	Count	Percent
Primary school	14	3.7
Secondary school	258	67.7
An agricultural college	14	3.7
A TAFE college	22	5.8
A university	73	19.2
Total landholders	357	100.0

Source: EBC (2009).

Table 6 shows that 80% of landholders believed they had adequate access to the internet on their property. This was commonly the case amongst larger property owners, amongst younger landholders and those landholders who had multiple generations of their family on their property (Figure 3). In terms of Local Government areas landholders in Cobar were least likely to believe they had adequate access to the internet (68%), while those landholders in the Central Darling were most likely to believe they had adequate access to the internet (90%).

Table 6. "Do you have adequate access to the internet on your property?"

Response	Count	Percent
Adequate access	306	80.3
No adequate access	75	19.7
Total landholders	381	100.0

Source: EBC (2009).

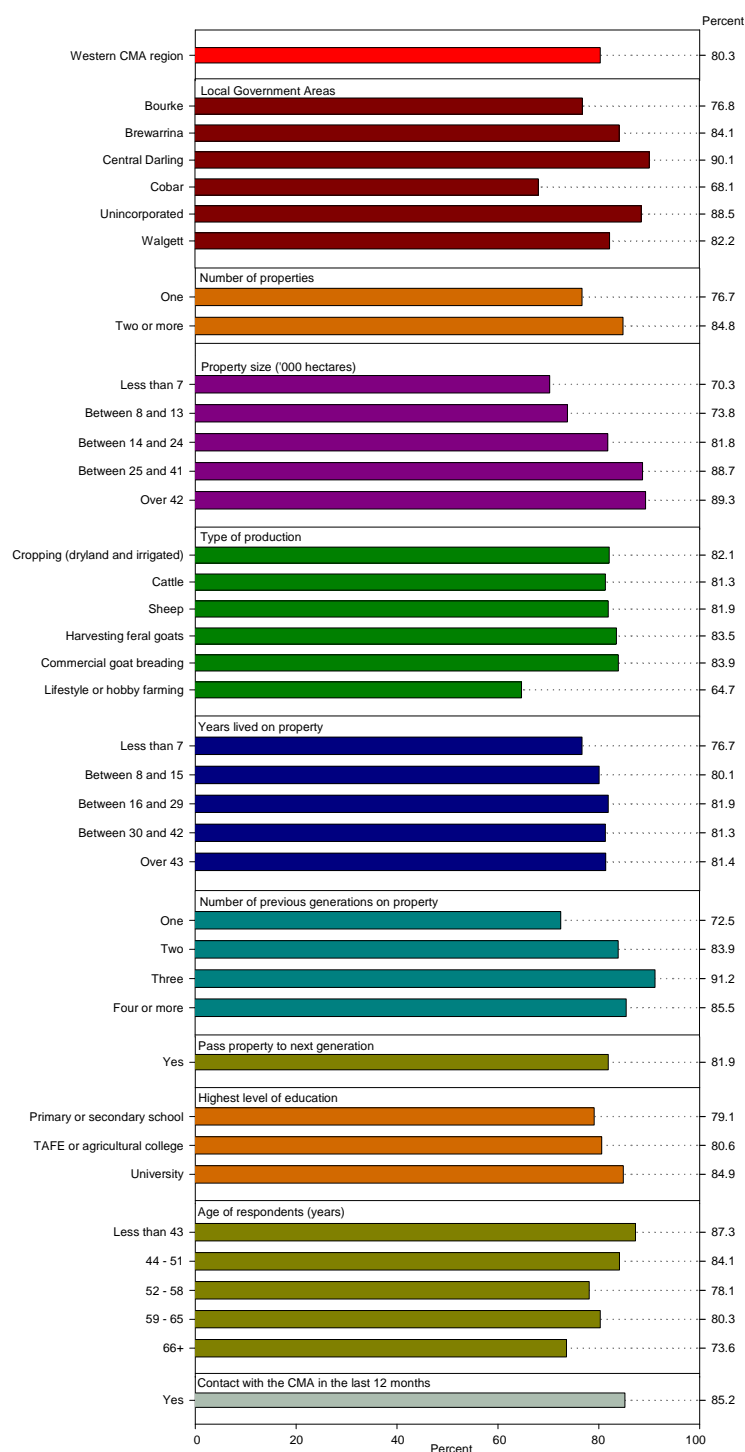


Figure 3. Percent of landholders reporting adequate access to the internet on their property.

Table 7 shows that landholders had managed land in the Western Division for an average of 29 years. Sixty percent of landholders had managed land in the Western District for up to 30 years, with only 7% having managed land in the district for less than five years.

Table 7. "How many years have you managed land in the Western Division?"

Years	Count	Percent	Cumulative Percent
1 – 5	27	7.2	7.2
6 – 10	41	10.9	18.1
11 – 15	39	10.3	28.4
16 – 20	35	9.3	37.7
21 – 25	22	5.8	43.5
26 – 30	62	16.4	59.9
31 – 35	21	5.6	65.5
36 – 40	51	13.5	79.0
41 – 45	19	5.1	84.1
46 – 50	26	6.9	91.0
51 – 55	11	2.9	93.9
56 – 60	18	4.8	98.7
61 +	5	1.3	100.0
Total landholders	377	100.0	
Mean years managed land in Western Division	28.5		

Source: EBC (2009).

As might be expected and as shown in Figure 4, there were strong relationships between the number of years landholders had managed land in the Western District and the years they had lived on their current property, the number of previous generations that had been on their property and the age of the landholder.

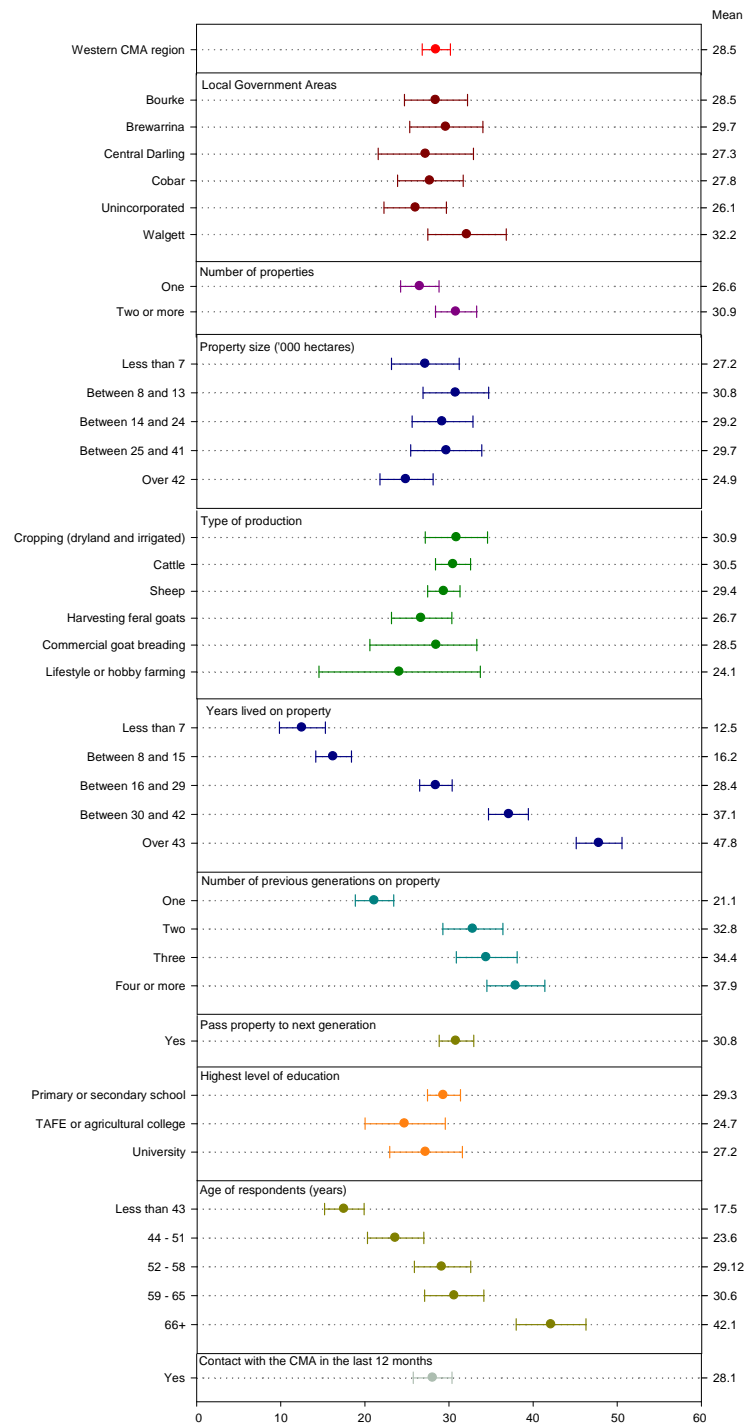


Figure 4. Number of years landholders had managed land in the Western Division

Table 8 shows landholders had lived on their current property for an average of 26 years, with 16% of landholders living on their current property for less than five years.

Table 8. “How many years have you lived on your current property?”

Years	Count	Percent	Cumulative Percent
1 – 5	59	15.5	15.5
6 – 10	54	14.2	29.7
11 – 15	34	8.9	38.6
16 – 20	31	8.1	46.7
21 – 25	24	6.3	53.0
26 – 30	51	13.4	66.4
31 – 35	16	4.2	70.6
36 – 40	31	8.1	78.7
41 – 45	13	3.4	82.1
46 – 50	24	6.3	88.4
51 – 55	9	2.4	90.8
56 – 60	17	4.5	95.3
61 +	17	4.5	100.0
Total landholders	380	100.0	
Mean years lived on current property	25.6		

Source: EBC (2009).

The findings shown in Figure 5 are similar to those shown in Figure 4 where there is a strong relationship between the number of years landholders had been on their property and the number of previous generations that had been on their property and the age of the landholder. As might be expected lifestyle or hobby farmers had been on their current property for only 18 years, which is significantly less than the average of 26 years.

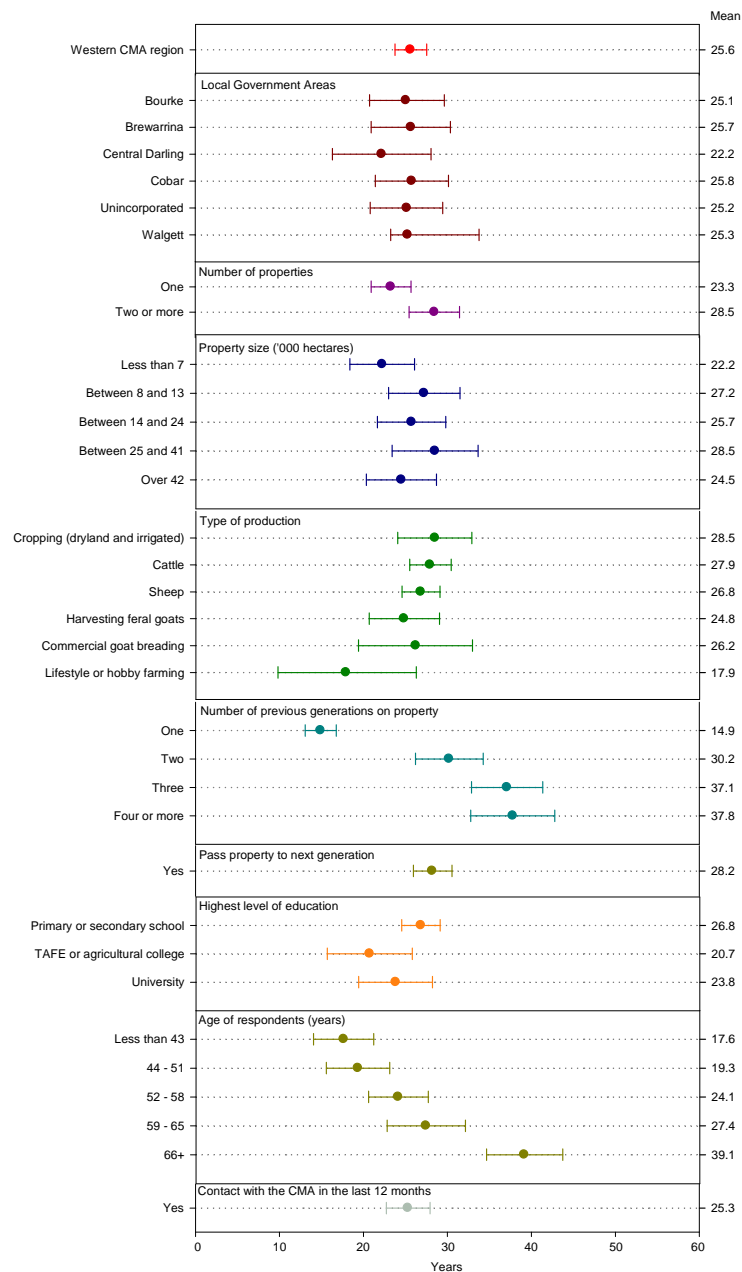


Figure 5. Number of years landholders had lived on their current property

Table 9 shows that while 45% of landholders had one generation of their family on the property, 24% of landholders had had three or more generation of their family on their current property.

Table 9. "How many generations of your family have been on the property?"

Generations	Count	Percent	Cumulative Percent
1	171	44.9	44.9
2	87	22.8	67.7
3	68	17.8	85.5
4	34	8.9	94.4
5	19	5.0	99.4
6	2	0.5	100.0
Total landholders	381	100.0	
Median number of generations	2.0		

Source: EBC (2009).

Table 10 indicates that 68% of landholders intended to pass their property onto the next generation in their family. As shown in Figure 6 this intention was most commonly expressed amongst landholders who had lived on their property for long periods of time and amongst those landholders with previous generations on their property. Interestingly, Figure 6 also shows a decline in this intention up to age 65 after which it again rises.

Table 10. "Is it the intention that the property will pass onto the next generation in your family?"

Response	Count	Percent
Yes	259	68.0
No	108	28.3
Don't know or undecided	14	3.7
Total landholders	381	100.0

Source: EBC (2009).

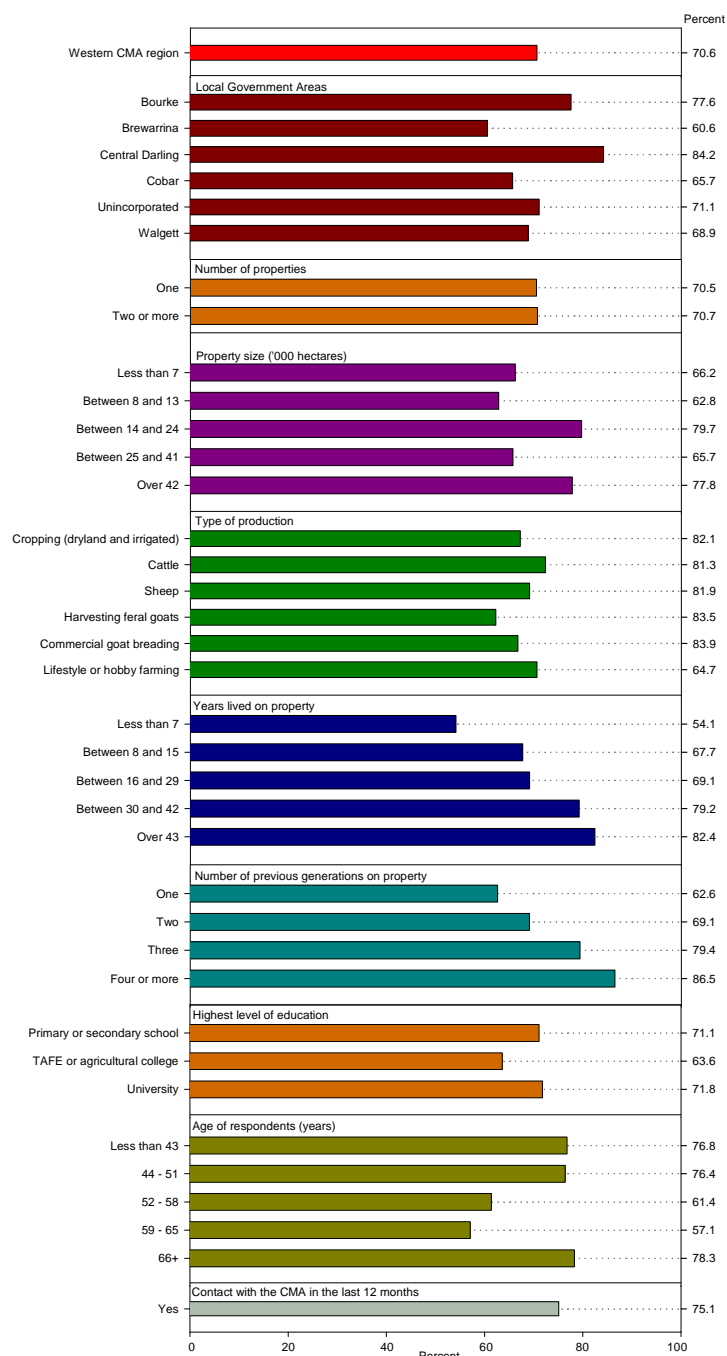


Figure 6. Percent of landholders intending to pass property onto future generations of their family

As shown in Table 11, sheep production (76%) was the most common land use in the Western Catchment followed cattle production (56%). Harvesting feral goats (22%) and dryland cropping (17%) were also common land uses.

Table 11. "What is your property primarily used for?"

Primary use	Count	Percent
Sheep	287	75.5
Cattle	214	56.3
Harvesting feral goats	85	22.4
Dryland cropping	64	16.8
Commercial goat breeding	31	8.2
Lifestyle or hobby farming	17	4.5
Irrigation cropping	7	1.8
Tourism or farm stays	3	0.9
Conservation land use	2	0.6
Indigenous land use	2	0.6
Orchard crops (Stone and/or fruit orchards)	1	0.3
Other (horses, resting land, mining)	7	1.8
Total landholders	380	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.
Responses were prompted.

Source: EBC (2009).

Across each of the Local Government areas (Figure 7) sheep production was consistently the most common activity. However sheep production was highest in the unincorporated area (83%) and lowest in the Bourke Local Government area (64%).

In addition harvesting feral goats was relatively rare in the Walgett Local Government area (5%) although relatively common in the Bourke Local Government area (30%).

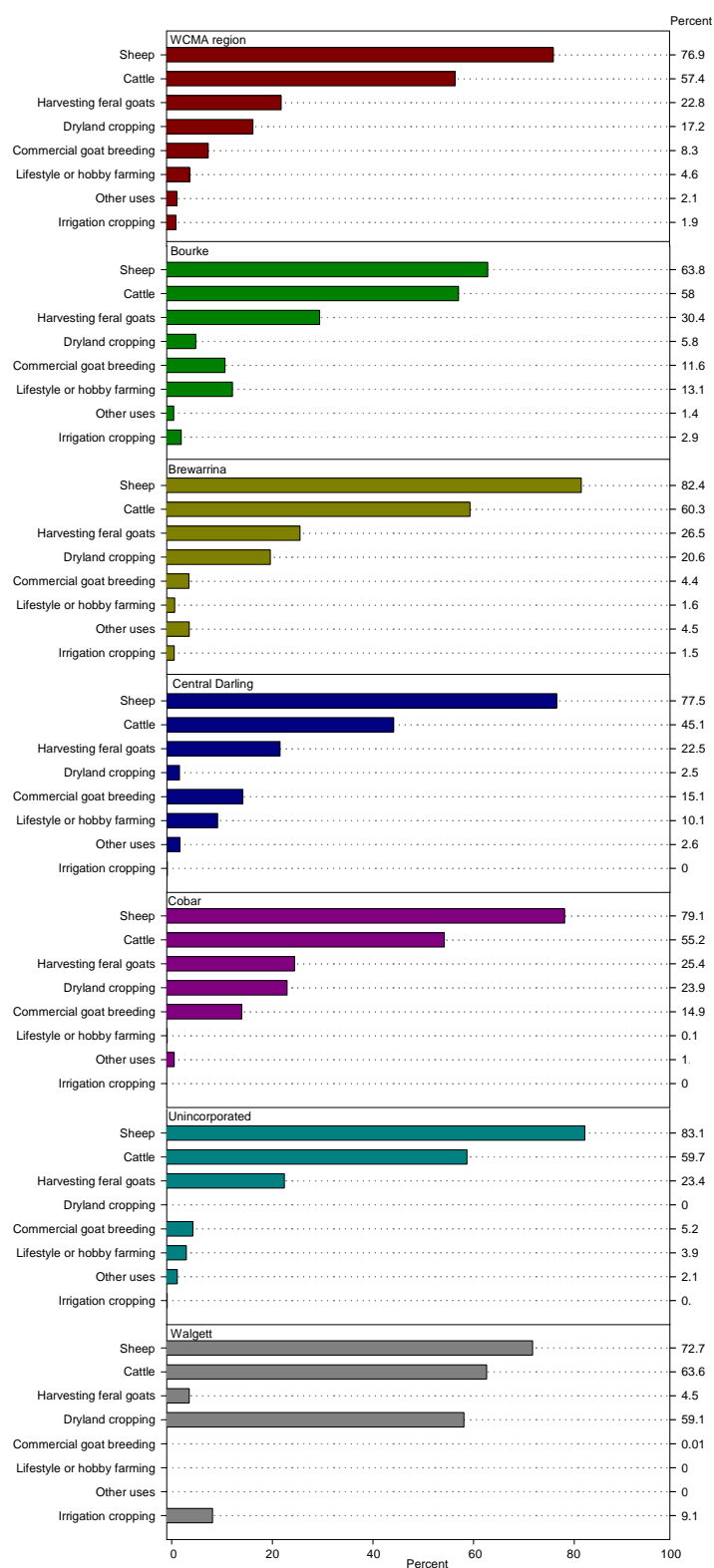


Figure 7. Types of land use on properties

Table 12 shows that a third of landholders (32%) indicated their property's primary use had changed significantly over the past five years. Figure 8 shows that this percentage is relatively stable across the explanatory variables. However it rises to 55% amongst commercial goat breeders, suggesting that commercial goat breeding may have been one of the significant land use changes over the past five years.

Table 12. “Has the property’s primary use changed significantly from five years ago?”

Response	Count	Percent
Changed significantly	123	32.3
Not changed significantly	258	67.7
Total landholders	381	100.0

Source: EBC (2009).

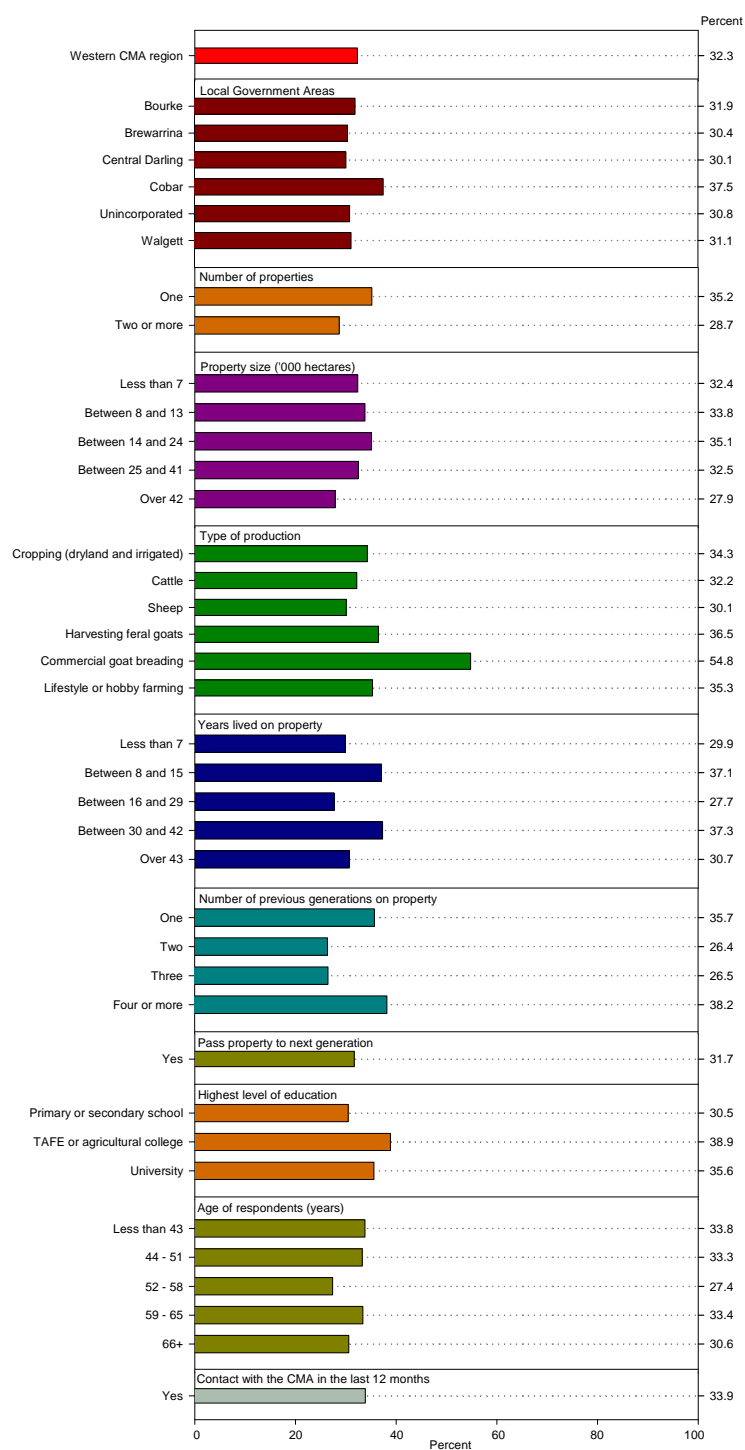


Figure 8. Percent of landholders where property land use has changed significantly in the last five years

Table 13 shows that 45% of landholders indicated they had more than one property in the district. Figure 9 shows this was most common in the Brewarrina Local Government area; amongst larger property owners and amongst those landholders who had lived on their property for over 40 years. Furthermore, ownership of multiple properties was most common amongst those involved in cropping (66%) relative to other land uses.

Table 13. "Do you have more than one property in the district?"

Response	Count	Percent
One property	210	55.1
More than one property	171	44.9
Total landholders	381	100.0

Source: EBC (2009).

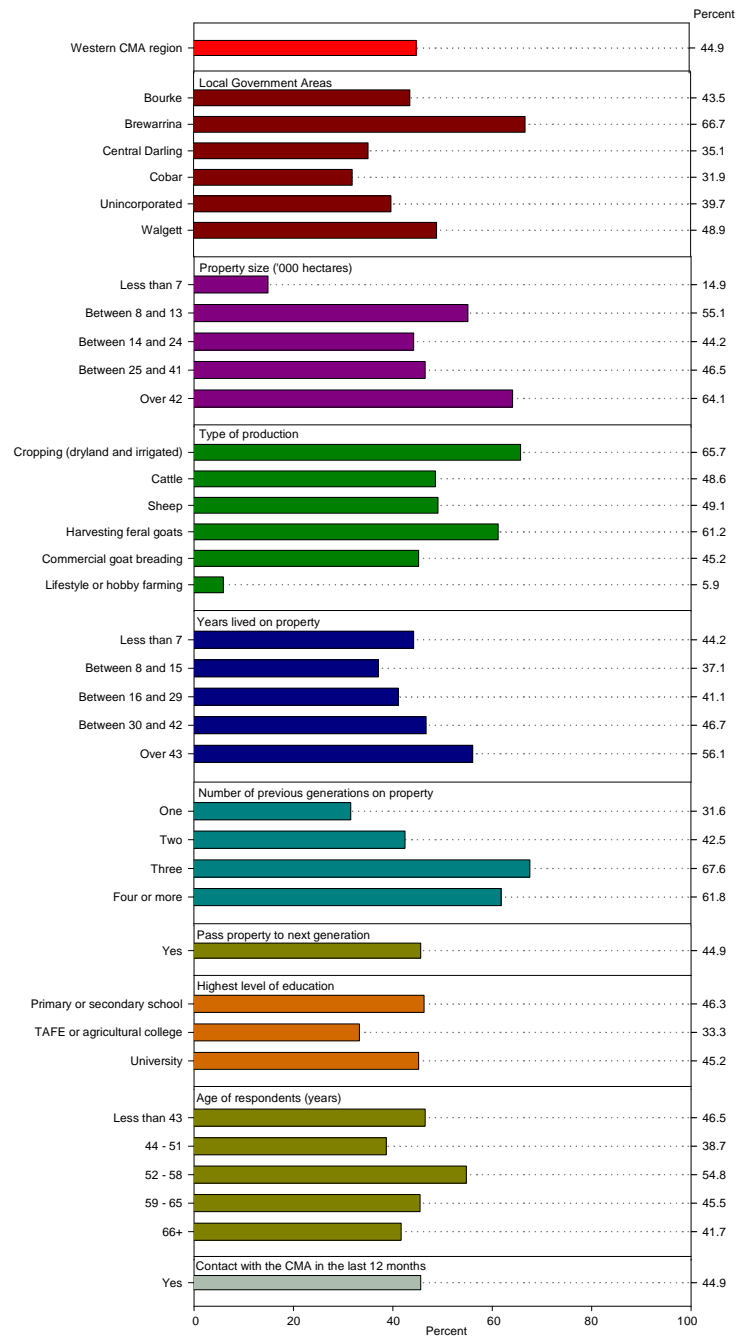


Figure 9. Percent of landholders with more than one property in the district

As indicated in Table 13 many landholders had multiple properties within the district. Table 14 shows that when multiple properties are taken into account the median property size is 17,806 hectares. If only landholders who have one property are examined, the median property size is somewhat smaller at 14,082 hectares.

Table 14. "How large is your property?"

Property size (hectares)	Count	Percent	Cumulative Percent
All properties			
1 – 5,000	55	14.6	14.6
5,001 – 10,000	58	15.3	29.9
10,001 – 15,000	53	14	43.9
15,001 – 20,000	39	10.3	54.2
20,001 – 25,000	36	9.5	63.7
25,001 – 30,000	23	6.1	69.8
30,001 – 35,000	14	3.7	73.5
35,001 – 40,000	11	2.9	76.4
40,001 – 45,000	19	5	81.4
45,001 – 50,000	5	1.3	82.7
50,001 – 55,000	11	2.9	85.6
55,001 – 60,000	6	1.6	87.2
60,001 +	48	12.7	100.0
Total landholders	208	100.0	
Median property size (multiple properties)	17,806		
Single property owners			
1 – 5,000	50	24	24.0
5,001 – 10,000	30	14.4	38.4
10,001 – 15,000	27	13	51.4
15,001 – 20,000	20	9.6	61.0
20,001 – 25,000	22	10.6	71.6
25,001 – 30,000	12	5.8	77.4
30,001 – 35,000	6	2.9	80.3
35,001 – 40,000	8	3.8	84.1
40,001 – 45,000	10	4.8	88.9
45,001 – 50,000	4	1.9	90.8
50,001 – 55,000	6	2.9	93.7
55,001 – 60,000	2	1	94.7
60,001 +	11	5.3	100.0
Total landholders	208	100.0	
Median property size (single property)	14,082		

Source: EBC (2009).

Figure 10 shows significant variation in median property sizes (multiple properties) across Local Government Authorities, with the median property size in the unincorporated area being 45,729 hectares and 8,000 hectares in Walgett.

Similarly those landholders involved in commercial goat breeding are on properties which average 30,000 hectares, while those landholders involved in cropping are on properties which average 12,140 hectares.

Figure 10 also shows that landholders over 59 years of age are generally on relatively smaller properties of less than 14,000 hectares, while those landholders less than 59 years of age are on relatively larger properties which average between 19,000 and 25,000 hectares.

Of further note in relation to Figure 10 is that those landholders who have had contact with the Western CMA within the last 12 months are from relatively smaller properties averaging 9,000 hectares.

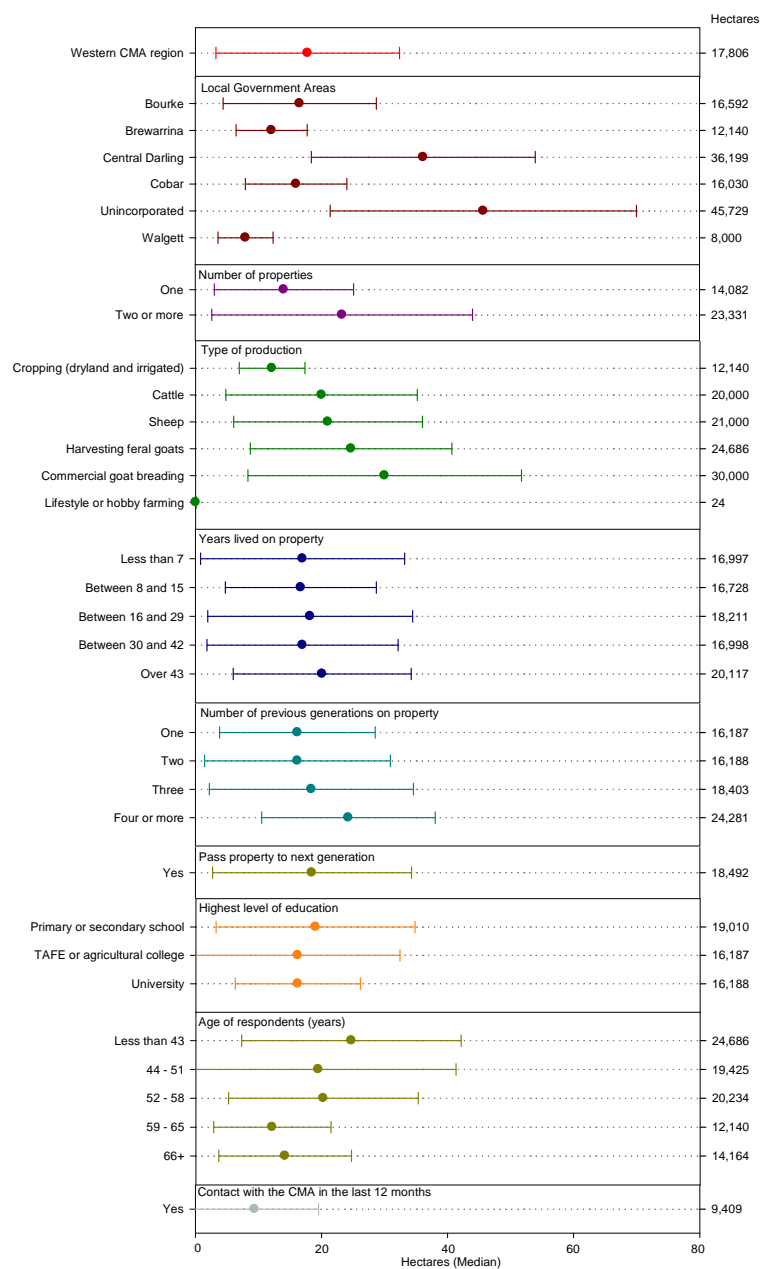


Figure 10. Property size (hectares)

Note: This Figure is based on medians and the interquartile range
The median values are based on multiple property ownership

6 SUSTAINABLE AGRICULTURAL MANAGEMENT PRACTICES

The issues addressed in this Chapter focus on Management Target 1, which states that “sustainable management practices are carried out by 50% of landholders by 2016”. While this management target is a reasonable target developed at the time of the Catchment Action Plan (CAP) for the Western CMA, this benchmarking project will enable far more detailed and refined targets to be developed in relation to different practices in different agricultural contexts.

Management practices have been analysed separately in relation to cropping and grazing.

6.1 Cropping

Nineteen percent of landholders (18.6%) indicated they undertook dryland or irrigated cropping on their land. As shown in Figure 7 cropping activities were primarily undertaken within the Walgett Local Government area, with 59% of landholders in this area undertaking dryland cropping and 9% undertaking irrigated cropping.

Amongst those undertaking cropping activities the median area of land under cropping was 1,006 hectares. However and as indicated in Table 15, the average area under cropping may have been across multiple properties. In contrast, if those landholders undertaking cropping on single properties are examined, the average area under cropping is 805 hectares.

Table 15. “Approximately what area of your property was under cropping?”

Property size (hectares)	Count	Percent	Cumulative Percent
All properties			
1 – 500	24	32.4	32.4
501 – 1,000	13	17.6	50.0
1,001 – 1,500	9	12.2	62.2
1,501 – 2,000	8	10.8	73.0
2,001 – 2,500	8	10.8	83.8
2,501 – 3,000	3	4.1	87.9
3,001 – 3,500	2	2.7	90.5
3,501 – 4,000	1	1.4	91.9
4,001 – 4,500	2	2.8	94.6
4,501 – 5,000	0	0.0	94.6
5,001 +	4	5.4	100.0
Total landholders	74	100.0	
Median hectare property size (multiple properties)	1,006		
Single property owners			
1 – 500	10	41.7	41.7
501 – 1,000	5	20.8	62.5
1,001 – 1,500	2	8.3	70.8
1,501 – 2,000	2	8.3	79.1
2,001 – 2,500	1	4.2	83.3
2,501 – 3,000	0	0	83.3
3,001 – 3,500	0	0	83.3
3,501 – 4,000	1	4.2	87.5
4,001 – 4,500	1	4.2	91.7
4,501 – 5,000	0	0	91.7
5,001 +	2	8.3	100.0
Total landholders	24	100.0	
Median hectare property size (single property)	805		

Source: EBC (2009).

No tillage or one pass sowing was the most common cultivation method used in cropping. This method was used by 51% of landholders on 53% of the land used for cropping (Table 16). Conventional tillage was the least common cultivation method and used by 26% of landholders on 24% of cropping land.

Table 16. “How much of your cropping did you cultivate using...”

Response	Count of landholders	Percent of landholders	Median hectares	Percent of area under cropping
No tillage, using one pass, direct drill with disks or knife points	38	51.4	829.6	52.6
Minimum tillage using one cultivation plus sowing	22	29.7	578.5	23.4
Conventional tillage using 2 or more cultivations prior to sowing	19	25.7	679.9	24.0
Total landholders	74	100.0		100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Median hectares may include multiple properties.

Percentages based on the percent of all landholders undertaking cropping activities.

Source: EBC (2009).

Table 17 and Figure 11 identify several different cropping practices landholders may have undertaken over the past two years. The most common cropping practice undertaken by landholders was stubble retention (78%), while the least common practice was that of controlled traffic (19%).

Table 17. “Have you undertaken any of the following cropping practices in the last two years?”

Response	Count	Percent
Stubble retention	56	77.8
Crop rotation	44	61.1
Soil testing	41	56.9
Selective grazing	36	50.0
Precision farming	20	27.8
Controlled traffic	14	19.4
Total landholders	72	100.0

Note: Percentages based on the percent of all landholders undertaking cropping activities.

This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

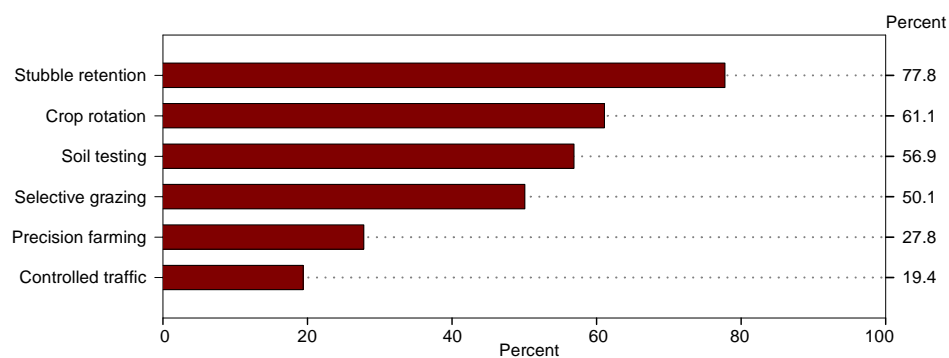


Figure 11. “Have you undertaken any of the following cropping practices in the last two years?”

6.2 Grazing management

Ninety-three percent of landholders (93.4%) indicated they had run stock on their property within the last two years. Amongst these landholders the median area grazed for stock across multiple properties was 17,903 hectares. However when only considering single property ownership amongst landholders, the median area grazed was 16,000 hectares (Table 18).

Table 18. "What area of your property is grazed?"

Property size (hectares)	Count	Percent	Cumulative Percent
All properties			
1 – 10,000	108	30.9	30.9
10,001 – 20,000	80	22.8	53.7
20,001 – 30,000	54	15.4	69.1
30,001 – 40,000	25	7.1	76.2
40,001 – 50,000	21	6	82.2
50,001 – 60,000	16	4.6	86.8
60,001 – 70,000	7	2	88.8
70,001 – 80,000	9	2.6	91.4
80,001 – 90,000	9	2.6	94.0
90,001 – 100,000	3	0.6	94.6
100,000+	18	5.1	100.0
Total landholders	350	100.0	
Median hectare property size (multiple properties)	17,903		
Single property owners			
1 – 10,000	70	38	38.0
10,001 – 20,000	38	20.6	58.6
20,001 – 30,000	32	17.4	76.0
30,001 – 40,000	15	8.2	84.2
40,001 – 50,000	11	6	90.2
50,001 – 60,000	8	4.3	94.5
60,001 – 70,000	1	0.5	95.0
70,001 – 80,000	4	2.2	97.2
80,001 – 90,000	1	0.5	97.7
90,001 – 100,000	0	0	97.7
100,000+	4	2.2	100.0
Total landholders	184	100.0	
Median hectare property size (single property)	16,000		

Source: EBC (2009).

Amongst those landholders with grazing properties, Figure 12 shows significant variation in the size of grazing areas on properties across Local Government Areas. For instance, the Unincorporated Area has the largest grazing properties which average 31,187 hectares, while properties with the smallest area for grazing (7,392 hectares) are found in the Walgett Local Government area.

In addition, those properties which undertake commercial goat breeding and the harvesting of feral goats also have the largest area under which grazing occurs (Figure 12). As was also shown in Figure 10, there is also some indication that landholders over 59 years of age had smaller grazing properties when compared to landholders less than 59 years of age.

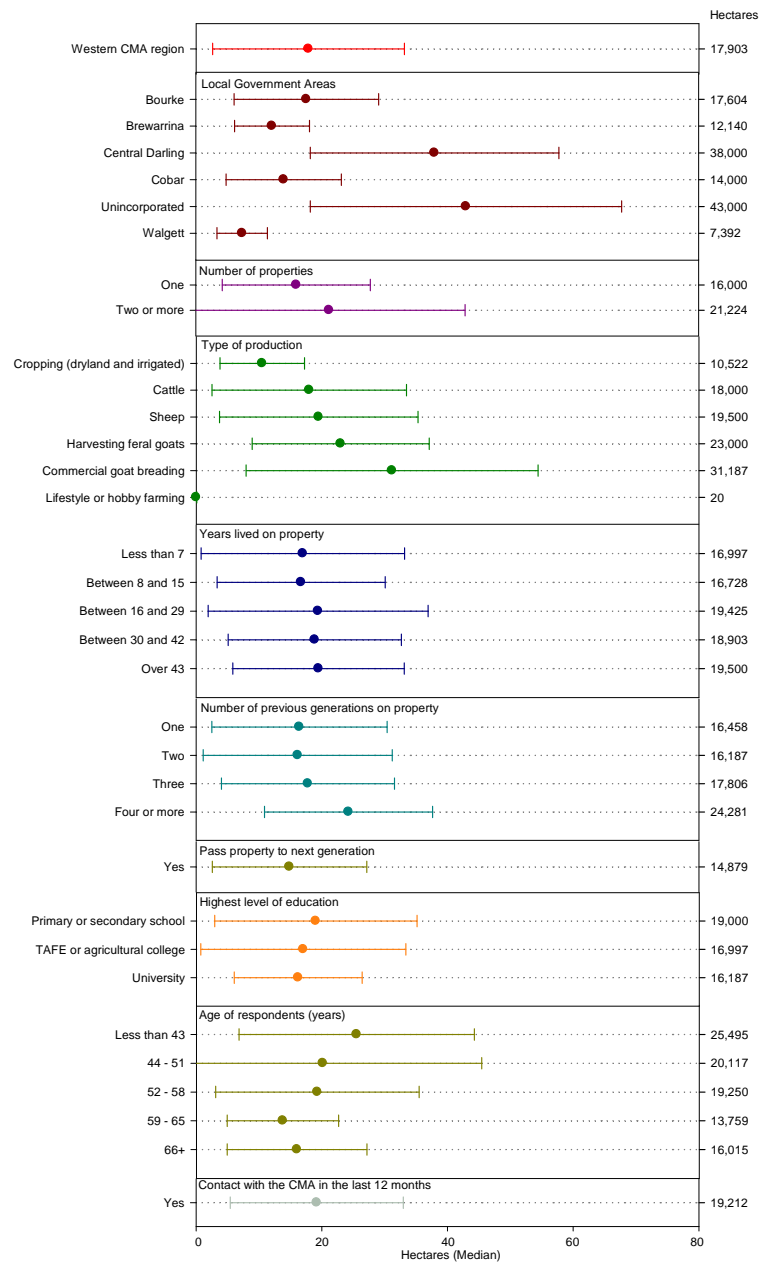


Figure 12. Area (hectares) of property grazed

Note: This Figure is based on medians and the interquartile range
The median values are based on multiple property ownership

6.2.1 Feral and native animal management

Table 19 shows the percentage of landholders who report specific native and feral animals on their properties and the percentage of landholders who reported that they tried to control these animals. As is evident in Table 19, where native and feral animals occur on properties, the majority of landholders also attempt to control these animals. However, unlike most other native and feral animals, in the case of rabbits 21% of landholders who report rabbits on their property do not attempt to control them (Figure 13).

Table 19. “Which of the following native and feral animals do you have on your property?” [and] “Which of these do you try and control?”

Animals	Occurrence on property		Management and control		Percent with no control
	Count	Percent	Count	Percent	
Kangaroos	351	98.6	309	89.0	9.6
Foxes	340	95.5	305	87.9	7.6
Pigs	307	86.2	289	83.3	2.9
Feral Goats	293	82.3	257	74.1	8.2
Rabbits	257	72.2	179	51.6	20.6
Wild dogs	93	26.1	86	24.8	1.3
Donkeys	13	3.7	9	2.6	1.1
Wild horses	5	1.4	4	1.2	0.2
Camels	2	0.6	1	0.3	0.3

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years. This is a multiple response table in which a respondent may be included in multiple rows. Other native and feral animals reported as occurring on properties included Emus (6.4%) and feral cats (5.3%).
Source: EBC (2009).

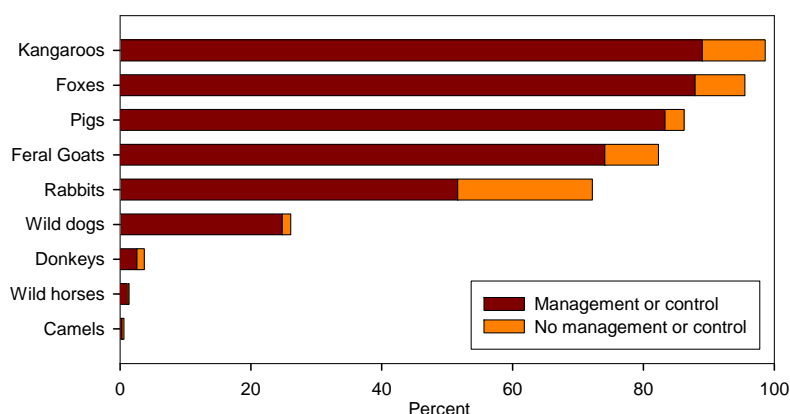


Figure 13. The management and control of feral and native animals on properties

6.2.2 Pasture management

Ninety-seven percent (97.5%) of landholders indicated they adjusted stocking rates to better manage their pastures.

Table 20 and Figure 14 also show that in time of drought the most common way in which landholders manage their pastures is to reduce stock numbers to a core herd (82%). Other relatively common methods through which landholders managed their pastures in time of drought included moving their stock off the property (46%) and moving stock to other locations on their property (36%).

Table 20. “How do you manage your pastures in times of drought? Do you...”

Response	Count	Percent
Reduce numbers to a core herd	291	81.7
Move stock off the property	162	45.5
Move stock elsewhere on the property	127	35.7
Sell your stock outright	107	30.1
Use a temporary drought feedlot	70	19.7
Supplementary or hand feed	24	6.7
Sacrifice key paddocks	21	5.9
Other practices	9	2.5
Total landholders	356	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.
This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

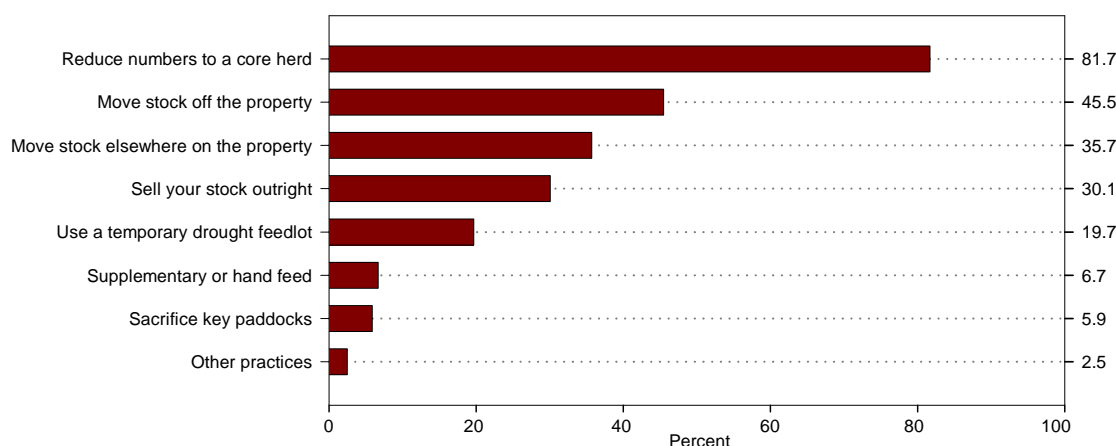


Figure 14. “How do you manage your pastures in times of drought? Do you...”

Table 21 shows that in managing stocking rates, 71% of landholders regularly moved their stock between different paddocks, while only 29% kept them in the same paddock.

Table 21. “In managing your stocking rates do you regularly move your stock between different paddocks or do you tend to keep them in the same paddocks ...”

Response	Count	Percent
Regularly move them	253	71.3
Don't move them	102	28.7
Total landholders	355	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Source: EBC (2009).

Amongst those landholders who regularly moved their stock between different paddocks, the majority of landholders also indicated they rotated their stock on the basis of pasture availability rather than length of time in the paddock (Table 22).

Table 22. “In regularly moving them do you use any of the following methods?”

Response	Count	Percent
Rotational grazing or cell grazing based on length of time in paddock	10	4.0
Rotational grazing based on pasture availability	239	96.4
Total landholders	248	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years and who also indicated they regularly moved their stock (Table 21)

This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

Landholders were asked if they primarily considered stock health or pasture health when making decisions about stock movement. However, and as shown in Table 23, the majority of landholders indicated they considered both stock and pasture health when making decisions about moving stock.

Table 23. “When making decisions about stock movement do you primarily consider stock health or pasture health”

Response	Count	Percent
Stock health	13	5.1
Pasture health	113	44.7
Both stock and pasture health	127	50.2
Total landholders	253	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years and who also indicated they regularly moved their stock (Table 21).

This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

Table 24 shows that 73% of landholders tried to maintain ‘whatever they could’ in relation to groundcover in their paddocks. Amongst those landholders who were able to give a percentage for the groundcover they tried to maintain, the average percent of groundcover maintained in paddocks was 55%.

Table 24. “Ground cover can include any live or dead vegetation, rock or other protective cover that has the capacity to break or stop raindrops making contact with the soil. What percentage of ground cover do you try to maintain in the majority of your paddocks throughout the year?”

Percent	Count	Percent
0 – 10	1	0.3
11 – 20	3	0.8
21 – 30	4	1.0
31 – 40	16	4.2
41 – 50	23	6.0
51 – 60	12	3.2
61 – 70	5	1.3
71 – 80	13	3.4
81 – 90	10	2.6
91 – 100	8	2.1
Total	95	24.9
Whatever I can	278	73.0
Don’t know	8	2.1
Total landholders	381	100.0
Median percent of ground cover maintained	55.0	

Source: EBC (2009).

All landholders were asked to identify the type of key species or perennial pastures they had on their properties. Only 7.9% of all landholders could not identify any key species or perennial pastures and the remaining 92.1% of landholders identified 112 specific species and pasture types.

Table 25 classifies² the species and pastures identified by landholders as perennial grass species, perennial herbage, annual species, shrubs and trees. The three most commonly reported species types were desirable perennial grass species (79%); desirable annual species (53%) and palatable shrubs (50%).

Table 25. "What key species or types of perennial pastures do you have?"

Species and pastures	Count	Percent
Perennial grass species		
Desirable	290	79.0
Intermediate	230	62.7
Undesirable	23	6.3
Perennial herbage		
Desirable	2	0.6
Intermediate	78	21.3
Undesirable	12	3.3
Annual species		
Desirable	194	52.9
Undesirable	10	2.7
Shrubs	8	2.2
Shrubs (palatable)	185	50.4
Trees	18	4.9
Unknown	9	2.5
Total landholders	367	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted

Source: EBC (2009).

6.2.3 Total grazing pressure

Eighty-three percent of landholders indicated that in managing total grazing pressure that they tried to restrict the grazing of feral and native animals (Table 26).

Table 26. "In managing your total grazing pressure do you try to restrict the grazing of feral and native animals?"

Response	Count	Percent
Restrict grazing	294	83.3
Do not restrict grazing	59	16.7
Total landholders	353	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Source: EBC (2009).

However, and in relation to managing total grazing pressure on the land, Table 27 shows that two-thirds of landholders (66%) did not fence their property for the purpose of excluding feral or native animals and that on average only 10% of properties were fenced to control total grazing pressure.

² The classification of species and pasture types was undertaken by Western CMA staff.

Table 27. “What proportion of your property is fenced for the purpose of excluding feral or native animals”

Percent	Count	Percent
0	218	66.3
1 – 10	43	13.1
11 – 20	17	5.2
21 – 30	17	5.2
31 – 40	2	0.6
41 – 50	8	2.4
51 – 60	3	0.9
61 – 70	0	0.0
71 – 80	5	1.5
81 – 90	3	0.9
91 – 100	12	3.7
Total landholders	329	100.0
Mean percent	10.9	

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Source: EBC (2009).

6.2.4 Stock access to watering points

Sixty-five percent of landholders indicated they controlled stock access to watering points as part of their management of domestic or feral stock (Table 28).

Table 28. “Do you manage or control stock access to watering points as part of your management of domestic or feral stock, through for example, fencing off watering points or turning tanks on or off?”

Response	Count	Percent
Manage or control stock access	232	65.2
Do not managed or control stock access	124	34.8
Total landholders	356	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Source: EBC (2009).

Figure 15 shows controlling stock access to watering points was most common on larger properties over 25,000 hectares; on properties which harvested feral goats or undertook commercial goat breeding; amongst landholders who had lived on their current property for a relatively short period of time and amongst landholders less than 51 years of age.

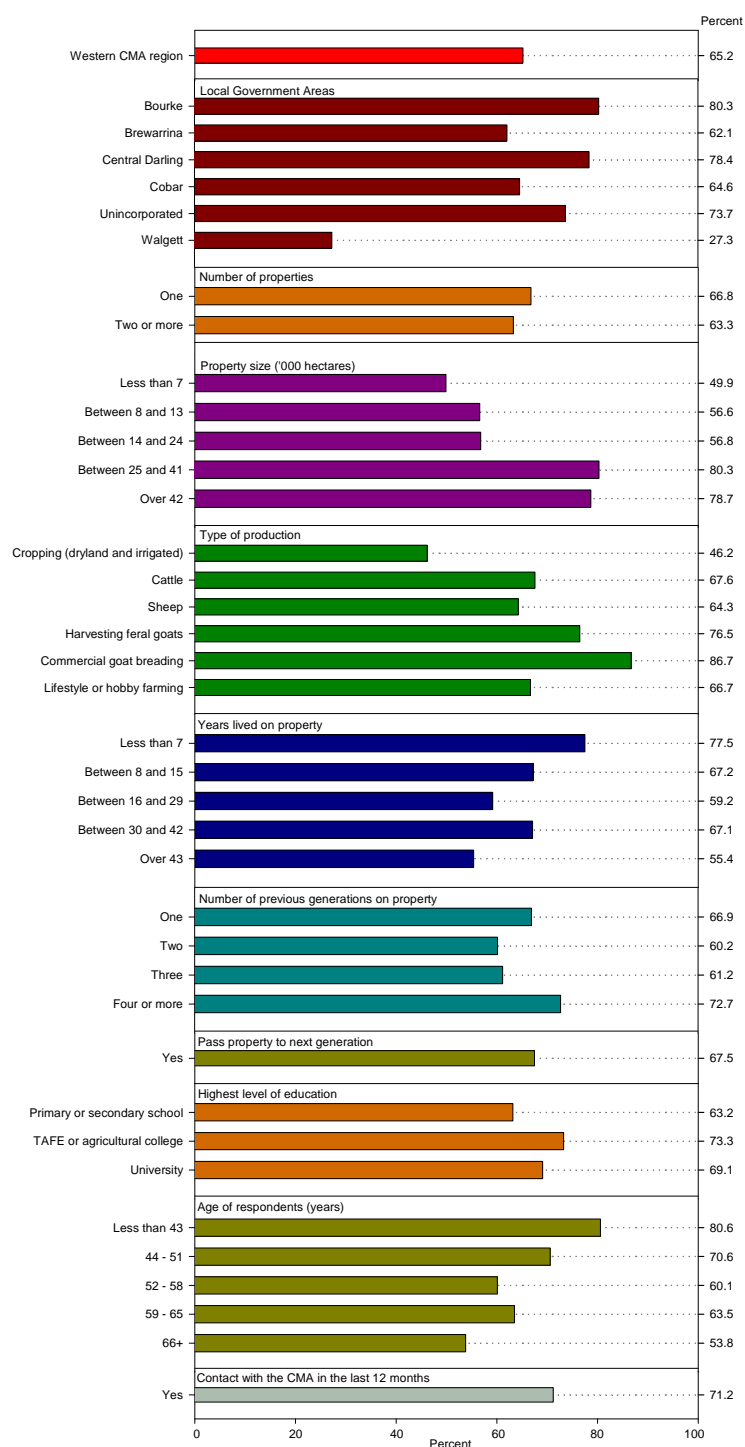


Figure 15. Percent of landholders managing or controlling stock access to watering points

Table 29 and Figure 16 shows that the main reason for controlling stock access to watering points was for the control of domestic stock movements (74%).

Table 29. “What are your main reasons for controlling stock access to watering points”

Response	Count	Percent
Control domestic stock movements	169	73.8
Trap feral goats	79	34.5
Stock health (e.g., prevent stock deaths in waterholes)	66	28.8
Preserving available pasture	60	26.2
Preserve creeks and river banks	53	23.1
Exclude feral or native animals	46	20.1
Prevent erosion	35	15.3
Total landholders	229	100.0

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted

Source: EBC (2009).

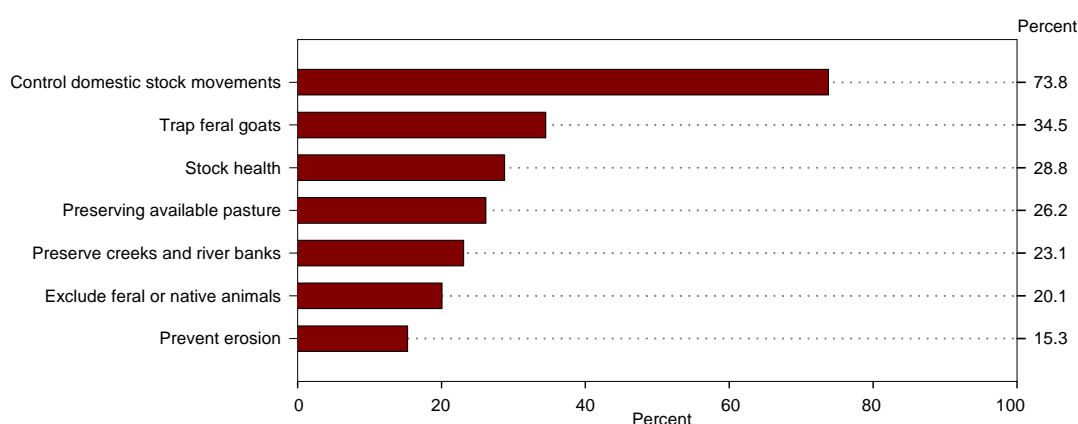


Figure 16. Main reasons for controlling stock access to watering points

6.3 Vegetation management

The management of native vegetation on properties focussed on the management of invasive native scrub (INS) or woody weeds. Several interview questions also addressed whether exotic pest plant species such as Parkinsonia, Mesquite or Prickly Acacia were a problem on properties.

6.3.1 Invasive native scrub or woody weeds

Table 30 shows that two-thirds (66%) of landholders in the Western Catchment reported a problem with invasive native scrub or woody weeds on their property.

Table 30. “Do you have a problem with invasive native scrub or woody weeds on your property?”

Response	Count	Percent
Problem with INS or woody weeds	250	65.6
No problem with INS or woody weeds	131	34.4
Total landholders	381	100.0

Source: EBC (2009).

Figure 17 shows that the problems with INS or woody weeds on properties was relatively high in the Local Government areas of Cobar (89%) and Walgett (78%) and relatively less of a problem in the Central Darling (40%).

In addition Figure 17 shows that INS or woody weeds were more of a problem on properties harvesting feral goats (81%) and undertaking commercial goat breeding (81%) and less of a problem on the smaller lifestyle and hobby farms (18%).

There is also some indication in Figure 17 that the longer the landholder has lived on the property or the greater the number of generations on the property, then the more likely INS or woody weeds were a problem.

Figure 17 also shows that while 66% of landholders report a problem with INS or woody weeds on their property, 78% of landholders who contacted the Western CMA in the last 12 months also had a problem with INS or woody weeds.

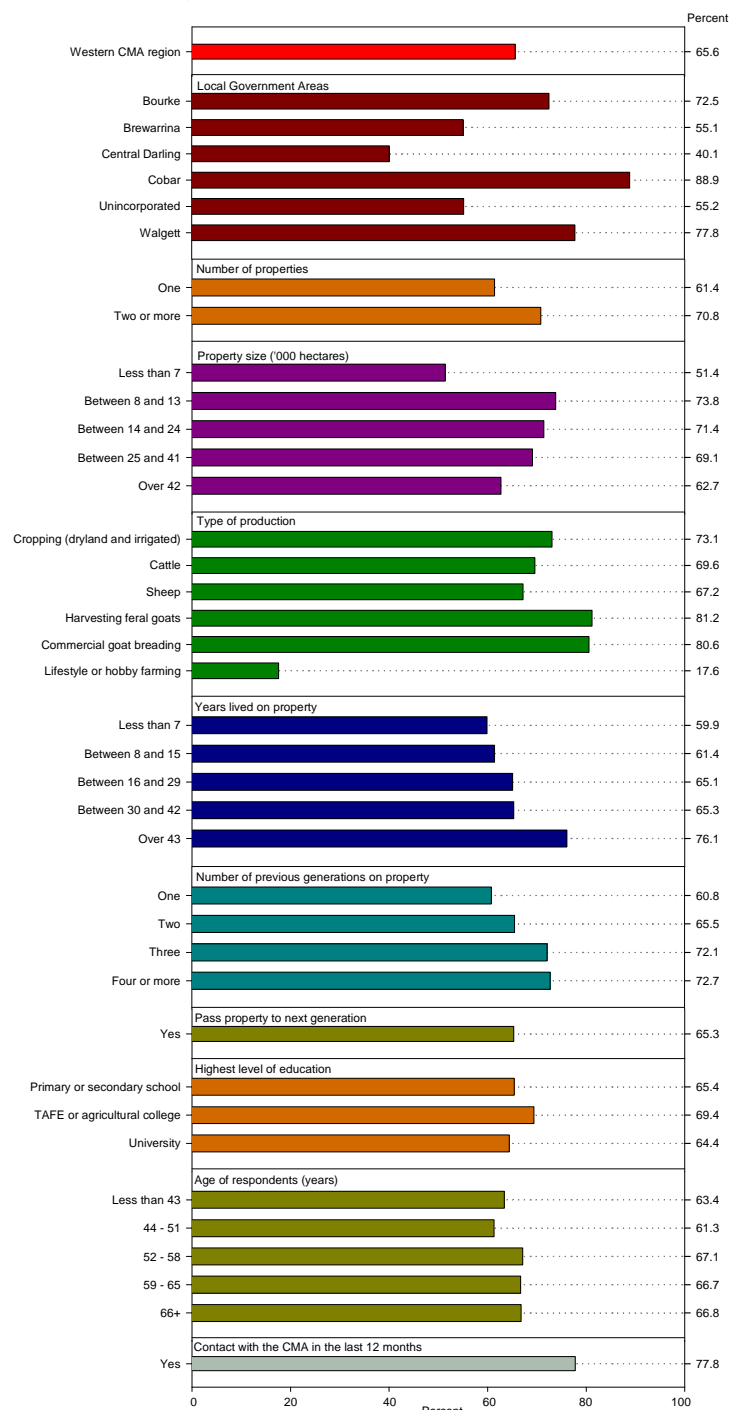


Figure 17. Percent of landholders reporting INS or woody weeds a problem on their property

Table 31 shows that amongst properties with an INS or woody weeds problem, on average 33% of the area of the property was affected by INS or woody weeds.

Table 31. "Over what percentage of your property is invasive native scrub or woody weeds a problem?"

Percent	Count	Percent	Cumulative Percent
0	2	0.8	0.8
1 – 10	43	17.8	18.6
11 – 20	33	13.7	32.3
21 – 30	38	15.8	48.1
31 – 40	19	7.9	56.0
41 – 50	35	14.5	70.5
51 – 60	8	3.3	73.8
61 – 70	9	3.7	77.5
71 – 80	25	10.4	87.9
81 – 90	14	5.8	93.7
91 – 100	15	6.2	100.0
Total landholders	241	100.0	
Median percent	33.0		

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Based on those landholders who reported INS and woody weeds to be a problem on their property (Table 30)

Source: EBC (2009).

As shown in Figure 18, over 50% of the area of properties within the Cobar and Walgett Local Government Areas were affected by INS or woody weeds, compared to 20% in the Central Darling and 21% in the unincorporated area.

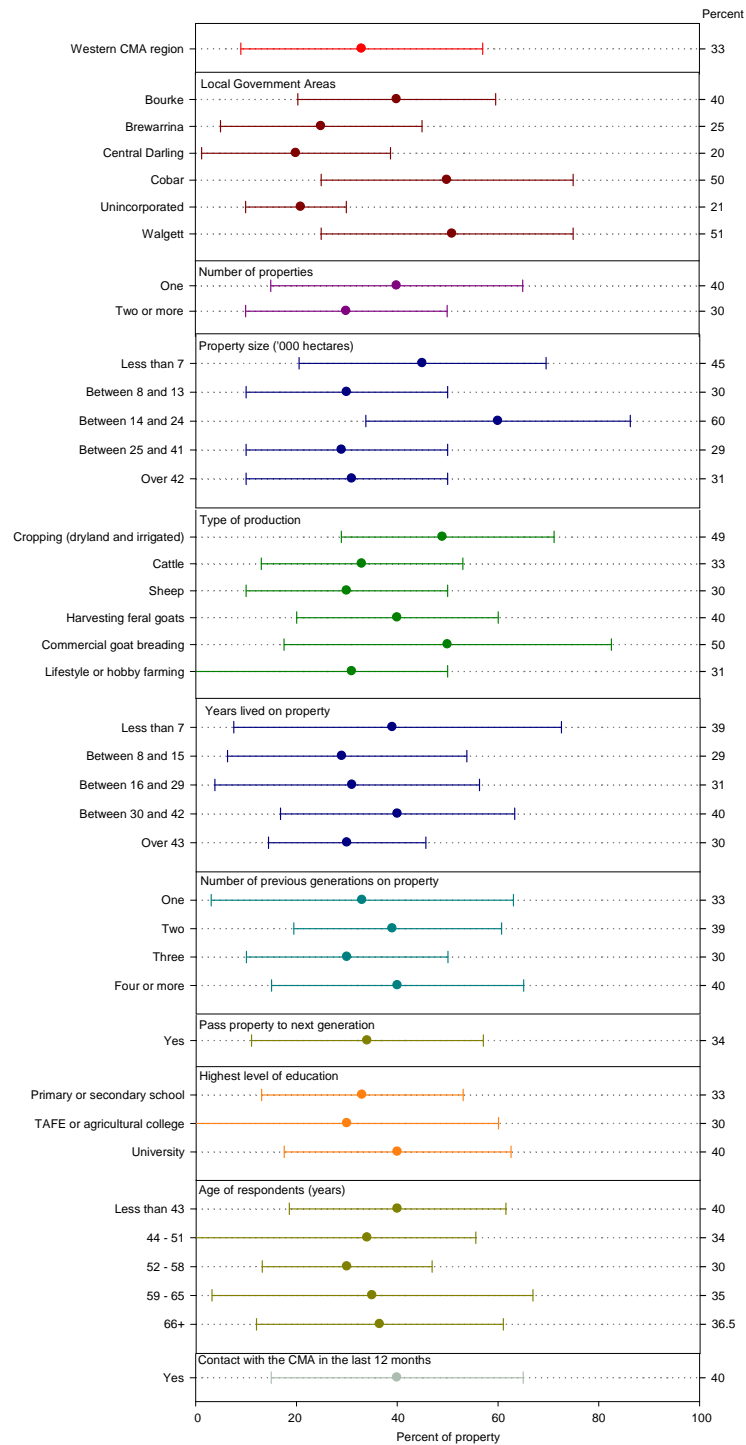


Figure 18. Percent of property areas affected by INS or woody weeds (Median percent)

Table 32 and Figure 19 show that a third (33%) of landholders believed that overstocking in the past was the most common cause of INS or woody weeds on their property. However an additional 17% also believed that government regulations in relation to vegetation clearing and the use of fire was also a significant cause of INS or woody weeds.

Table 32. "What do you think are the main causes of invasive native scrub and woody weeds on your property?"

Response	Count	Percent
Overstocking	67	33.0
Regulations (clearing and fires)	34	16.7
Lack of fire	31	15.3
Natural and seasonal processes	31	15.3
Floods	26	12.8
Lack of rabbits	22	10.8
Drought	20	9.9
Previous owner	12	5.9
Lack of money to control	6	3.0
It comes down the creek	4	2.0
Spread by wildlife	3	1.5
Soil disturbance	2	1.0
Other causes	14	6.9
Total landholders	203	100.0

Note: Based on those landholders who reported INS or woody weeds to be a problem on their property (Table 30)

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted

Source: EBC (2009).

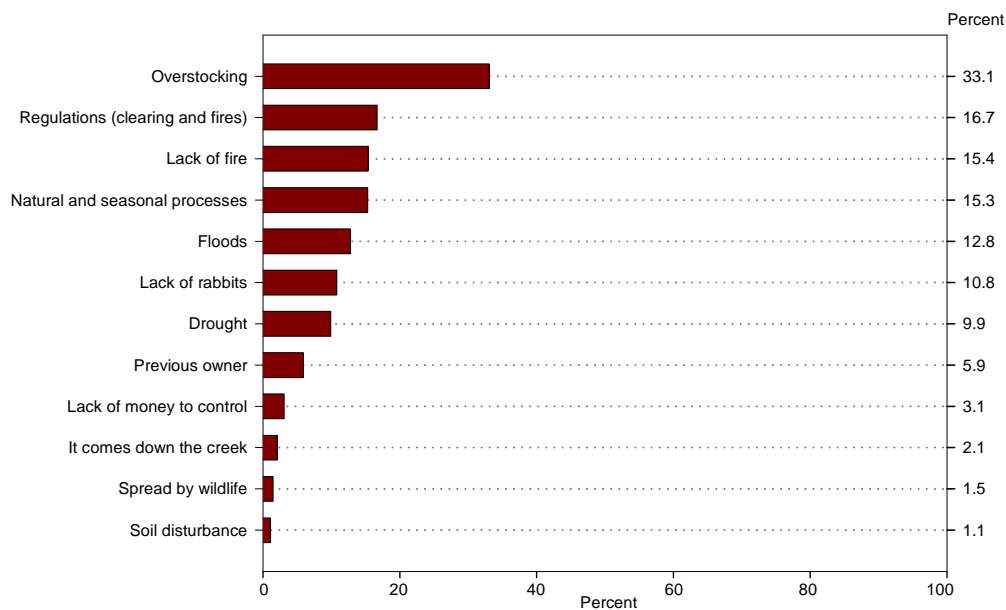


Figure 19. Beliefs about the main causes of INS or woody weeds on properties

Amongst landholders who reported a problem with INS or woody weeds on their property, 55% indicated they had attempted to control the problem within the last two years (Table 33).

Table 33. "In the last two years have you attempted to control invasive native scrub or woody weeds on your property?"

Response	Count	Percent
Attempted to control	138	55.2
Have not attempted to control	112	44.8
Total landholders	250	100.0

Note: Based on those landholders who reported INS and woody weeds to be a problem on their property (Table 30)

Source: EBC (2009).

Figure 20 shows that the highest percentage of landholders attempting to control INS or woody weeds were found in the Cobar Local Government area (67%), with the lowest percent being in the Central Darling (44%).

There was also an indication, as shown in Figure 20, that landholders on relatively smaller properties (less than 24,000 hectares) are more likely to attempt to control INS or woody weeds than landholders on relatively larger properties (over 25,000 hectares).

As is also shown in Figure 20 landholders who are more likely to control INS or woody weeds are also those who had been on their current property for a relatively longer period of time.

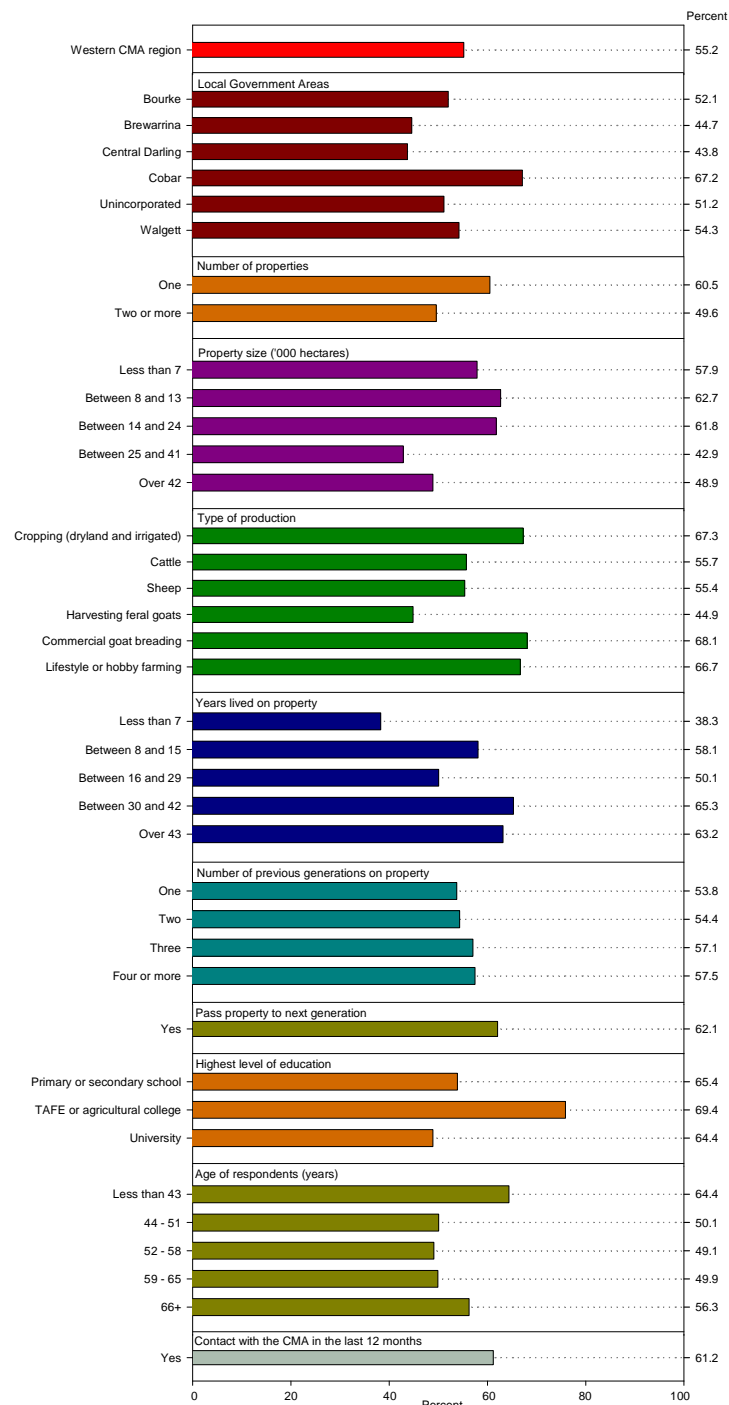


Figure 20. Percent of landholders attempting to control INS or woody weeds on their property

Table 34 and Figure 21 shows that mechanical (58%) and chemical (53%) methods were two of the most commonly used methods to control INS or woody weeds.

Table 34. “Which of the following methods do you use to control invasive native scrub or woody weeds?”

Response	Count	Percent
Mechanical methods (blade ploughing, grubbing, chaining)	79	57.7
Chemicals	72	52.6
Controlling stock rates and total amount of grazing	39	28.5
Grazing goats	36	26.3
Fire	25	18.2
Cultivation such as cropping	16	11.7
Total landholders	137	100.0

Note: Based on those landholders who reported INS and woody weeds to be a problem on their property (Table 30)

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted

Source: EBC (2009).

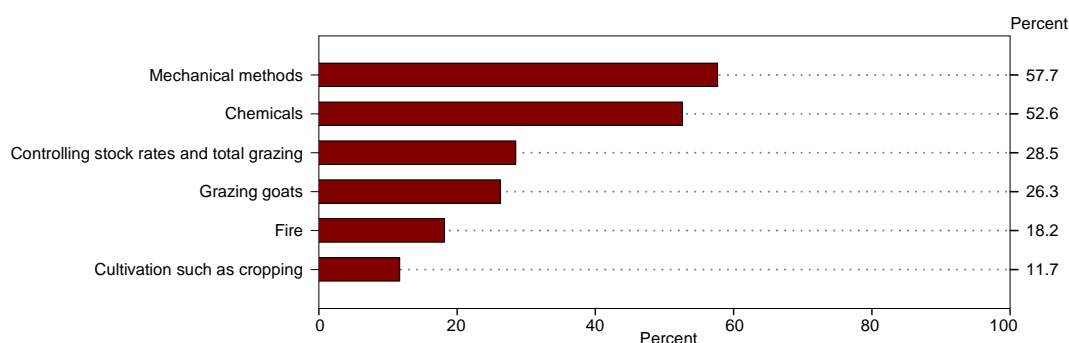


Figure 21. Percent of landholders using different methods to control INS or woody weeds on their property

The majority of landholders as shown in Table 35 used multiple follow up treatments to control INS or woody weeds (88%). Amongst those landholders who indicated they only used one treatment, the most commonly reported reasons for doing so were “that it was all that was needed”; that they lacked funds for additional treatments, or that they had only just commenced the control of INS or woody weeds.

Table 35. “Do you control invasive native scrub with one treatment or multiple follow up treatments?”

Response	Count	Percent
One treatment	16	11.6
Multiple follow up treatments	122	88.4
Total landholders	138	100.0

Note: Based on those landholders who reported they had attempted to control INS and woody weeds on their property

(Table 33).

Source: EBC (2009).

The following table (Table 36) is based only on those landholders who reported using more than one treatment for the control of INS or woody weeds. This table compares the method of control used in the first treatment with the method of control that is used in follow up treatments. An inspection of the diagonal entry in Table 36 shows that the method used in the first treatment is generally the same method that is used in follow up treatments. For example, 94% of landholders who used chemicals in the first treatment also used chemicals in follow up treatments for INS and woody weeds.

Table 36. A comparison of initial and follow up treatments for the control of INS or woody weeds

First treatment	Follow up treatments						Total
	Fire	Chemicals	Cultivation	Mechanical	Grazing goats	Controlling stocking rates	
Fire	95.7	52.2	26.1	47.8	17.4	13.0	100.0
Chemicals	18.2	93.9	12.1	50.0	19.7	22.7	100.0
Cultivation	35.3	52.9	94.1	52.9	11.8	23.5	100.0
Mechanical	17.8	50.7	12.3	90.4	20.5	24.7	100.0
Grazing goats	15.2	39.4	12.1	48.5	87.9	27.3	100.0
Controlling stock rates	13.5	43.2	16.2	51.4	24.3	86.5	100.0

Note: Values are row percentages

Based on those landholders who reported they had attempted to control INS or woody weeds on their property (Table 33).

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were prompted

Source: EBC (2009).

6.3.2 Exotic pest plant species

Table 37 shows that only 8% of landholders reported a problem with exotic pest plant species such as Parkinsonia, Mesquite or Prickly Acacia on their property.

Table 37. "Do you have a problem with exotic pest plant species such as Parkinsonia, Mesquite or Prickly Acacia on your property?"

Response	Count	Percent
Problem with exotic pest species	32	8.4
No problem exotic pest species	348	91.6
Total landholders	380	100.0

Source: EBC (2009).

As shown in Table 38, amongst those landholders reporting a problem with exotic pest plant species an average of 2% of their property area was affected by this problem.

Table 38. "Over what percentage of your property are exotic pest plant species a problem?"

Percentage of property	Count	Percent
0.1	2	8.3
1	6	25.0
2	7	29.2
4	1	4.2
5	2	8.3
7	1	4.2
10	1	4.2
15	1	4.2
20	1	4.2
30	1	4.2
50	1	4.2
Total landholders	24	100.0
Median percent	2.0	

Note: Percentages based on the percent of all landholders who ran stock on their properties within the last two years.

Based on those landholders who reported exotic pest plant species to be a problem on their property (Table 37).

Source: EBC (2009).

The two most common causes landholders reported for exotic plants species on their property were the spreading of seeds (24%) and previous land management practices (19%) on their property (Table 39).

Table 39. "What do you think are the main causes of exotic pest plant species on your property?"

Responses	Count	Percent
Seeds spreading	5	23.8
Previous land management practices	4	19.0
Birds	2	9.5
Activities of miners	2	9.5
Poor management by National Parks	1	4.8
Stock and vehicle movement	1	4.8
Drought	1	4.8
Floods	1	4.8
Overstocking	1	4.8
Native animal movement	1	4.8
Lack of funds to control pest plants	1	4.8
Pigs	1	4.8
Total landholders	21	100.0

Note: Based on those landholders who reported exotic pest plant species to be a problem on their property (Table 37).

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted

Source: EBC (2009).

7 LANDHOLDER CAPACITY

The issues addressed in this Chapter focus on Management Target 12, which states that “there is a continual increase in land managers’ awareness, knowledge, and skills in NRM and adoption of practices which improve natural resource outcomes.” While there is considerable overlap with Management Target 1 as reported in the previous Chapter, including specifically the adoption of practices which improve natural resource outcomes, it should be possible to refine this target and provide a more focused benchmark on the basis of information presented in this Chapter.

Landholder capacity has been assessed in relation to participation in courses and training and the adoption and use of property management plans.

7.1 Courses and training

Table 40 shows that within the last two years 20% of landholders had undertaken agriculture, grazing or land management related courses.

Table 40. “Have you undertaken any agriculture, grazing or land management related courses in the last two years”

Response	Count	Percent
Undertaken courses	75	19.7
Have not undertaken courses	305	80.3
Total landholders	380	100.0

Note: Chemical courses and courses associated with agricultural occupational health and safety have been excluded.

Source: EBC (2009).

Figure 22 shows that landholders within the Cobar (25%) and Unincorporated (27%) Local Government areas are more likely to have participated in courses and training than landholders from other Local Government areas within the Western Catchment.

In addition Figure 22 also shows the younger the landholder the more likely they are to have participated in courses and training over the past two years. For example, 30% of landholders less than 43 years of age participated in course and training within the last two years compared to only 13% of landholders over 66 years of age.

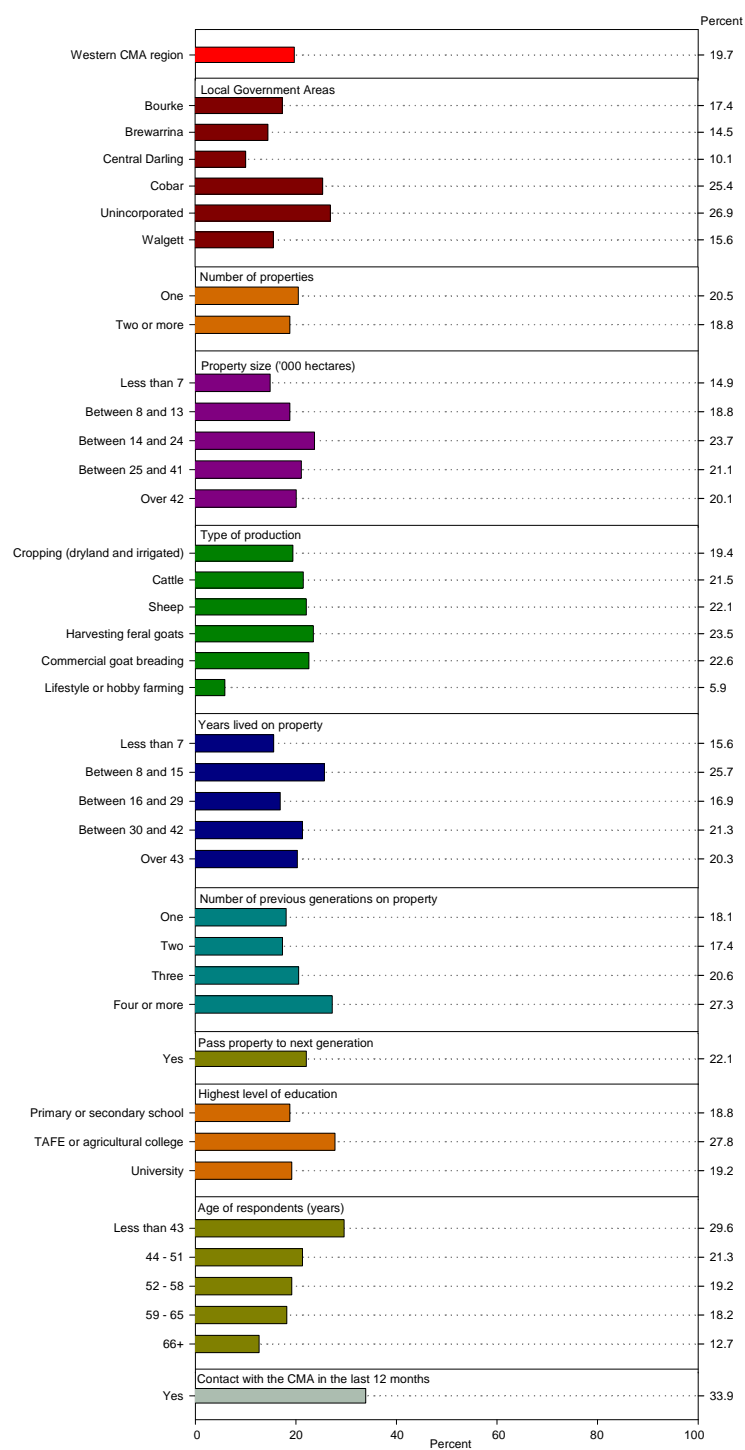


Figure 22. Percent of landholders undertaking agriculture, grazing or land management related courses in the last two years

Table 41 shows that the most common course undertaken over the past two years was ‘Grazing for Profit’(37%), followed by attendance at the Western CMA’s Sustainable Grazing Forum (18%) and courses on Holistic Resource Management (16%).

Table 41. “What courses have you undertaken?”

Responses	Count	Percent
Grazing for Profit	27	36.5
Western CMA Sustainable Grazing Forum	13	17.6
Holistic Resource Management	12	16.2
Whole Farm Planning	7	9.5
Pasture to Pocket	6	8.1
Tactical Grazing Management	5	6.8
Other courses		
Water management	9	12.2
Stock and livestock management	8	10.8
Pasture, grazing and ground cover management	7	9.5
Environmental and conservation courses	4	5.4
Other courses	7	8.1
Total landholders	74	100.0

Note: Based on those landholders who reported they had undertaken an agriculture, grazing or land management related course in the last two years (Table 40)

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted.

Source: EBC (2009).

Table 42 shows that of those landholders who attended a course within the last two years, 64% later changed their land management practices on the basis of what they learnt at the course.

Table 42. “Did you change any of your land management practices as a result of what you learnt from the course?”

Response	Count	Percent
Yes, changed practices	46	63.9
No, did not change practices	26	36.1
Total landholders	72	100.0

Note: Based on those landholders who reported they had undertaken an agriculture, grazing or land management related course in the last two years (Table 40)

Source: EBC (2009)

The reason for not changing their land management practices after attendance at a course is shown in Table 43. Thirty percent of landholders indicated they didn’t change their practices as they were already undertaking the practice or that seasonal conditions prevented the new practice being implemented.

Table 43. “Why didn’t you change your land management practices?”

Response	Count	Percent
Already undertaking the practice	4	15.4
Seasonal conditions prevent implementation	4	15.4
No need to implement practice	3	11.5
Nothing new learnt	2	7.7
In process of implementing practice	1	3.8
Intend to implement practice	1	3.8
Lack of funds	1	3.8
Course only provided greater awareness	1	3.8
No specific reason	9	34.6
Total landholders	26	100.0

Note: Based on those landholders who reported they did not change their land management practices after attending a course (Table 42).

Responses were unprompted.

Source: EBC (2009)

7.2 Property management plans

Table 44 and Figure 23 show that 34% of landholders had a documented or written property management plan or map.

Table 44. "Do you have a documented or written property management plan or map?"

Response	Count	Percent
Has property management plan or map	128	33.6
No property management plan or map	253	66.4
Total landholders	381	100.0

Source: EBC (2009).

Property management plans as shown in Figure 23 were relatively more common amongst:

- Landholders in the Brewarrina (44%) and Cobar (40%) Local Government areas;
- Amongst landholders with two or more properties (40%);
- Amongst those landholders harvesting (49%) or breeding feral goats (55%);
- Amongst landholders with three or more previous generations on their property (40%);
- Amongst landholders with a university level education (48%); and
- Amongst relatively younger landholders who were less than 43 years of age.

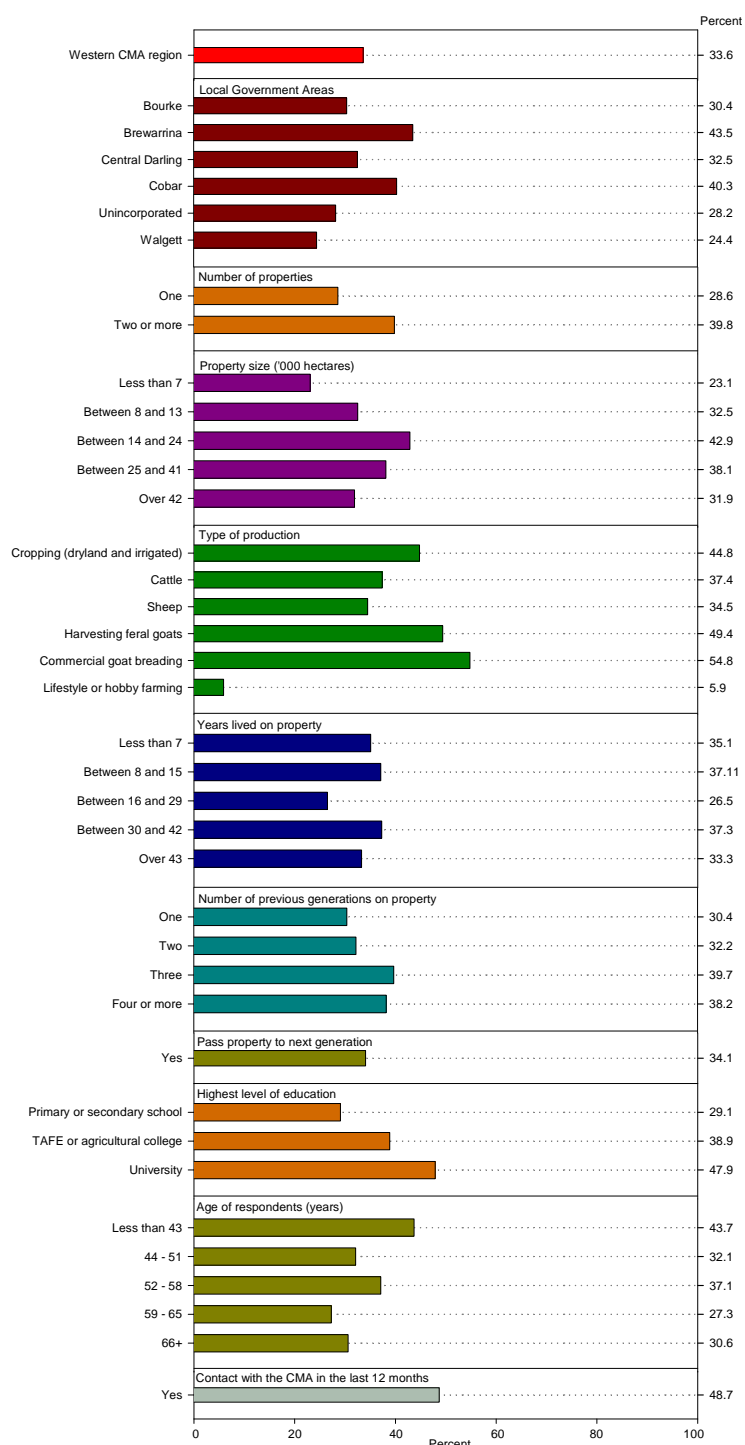


Figure 23. Percent of landholders with a documented or written property management plan or map

As shown in Table 45, 50% of property management plans were developed less than four years ago.

Table 45. “How many years ago was the property management plan developed?”

Years	Count	Percent	Cumulative Percent
1 – 2	30	27	27.0
3 – 4	26	23.4	50.4
5 – 6	17	15.3	65.7
7 – 8	3	2.7	68.4
9 – 10	13	11.7	80.1
11 – 12	2	1.8	81.9
13 – 14	3	2.7	84.6
15 – 16	7	6.3	90.9
17 – 18	2	1.8	92.7
19 – 20	3	2.7	95.4
21 +	5	4.5	100.0
Total landholders	111	100.0	
Median years	4.0		

Note: Percentages based on the those landholders who indicated they had a documented or written property management plan or map (Table 44).

Source: EBC (2009).

Table 46 and Figure 24 show that 47% of landholders who had property management plans referred to them either ‘always’ or ‘often’, while 29% referred to their property management plans only ‘occasionally’ or ‘never’.

Table 46. “How often do you refer to your property management plan when making decisions? Would it be...?”

Response	Count	Percent
Always	18	14.5
Often	40	32.3
Sometimes	30	24.2
Occasionally	33	26.6
Never	3	2.4
Total landholders	124	100.0

Note: Percentages based on the those landholders who indicated they had a documented or written property management plan or map (Table 44).

Source: EBC (2009).

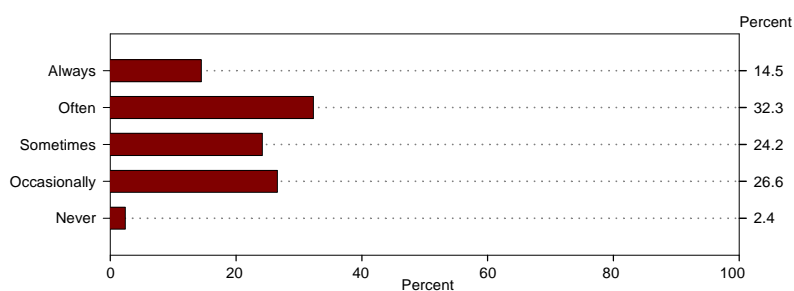


Figure 24. Frequency of referring to property management plans in decision making

Table 47 and Figure 25 show the three most common components of landholder's property management plans were identified natural or manmade watering points (98%); air photo or satellite imagery mapping (87%); and information on fencing requirements (82%).

Table 47. "Which of the following is included in your documented property management plan? Does it include a description or map of..."

Response	Count	Percent
Natural or manmade watering points	125	97.7
An air photo or satellite imagery mapping	111	86.7
Fencing requirements	105	82.0
Soil or land types	89	69.5
Vegetation types	87	68.0
Stock or crop management	83	64.8
Future plans or developments	77	60.2
Pest plants or areas of invasive native scrub	54	42.2
Conservation or sanctuary areas	29	22.7
Total landholders	124	100.0

Note: Percentages based on the those landholders who indicated they had a documented or written property management plan or map (Table 44).

Responses were prompted.

Source: EBC (2009).

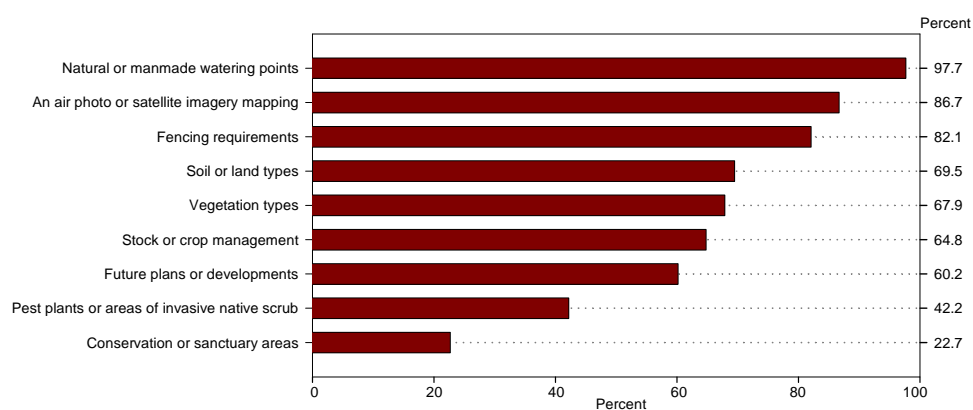


Figure 25. Components of property management plans

8 LANDHOLDER AWARENESS OF THE WESTERN CMA

Table 48 indicates the level of awareness of the Western CMA amongst landholders. This table includes both unadjusted and adjusted percentages. The unadjusted percentage is based on all the responses from landholders when they were asked if they had heard of the Western CMA.

The adjusted percentage is based on changes to landholders responses based on what they believed the main activity of the Western CMA to be. For instance if they could not describe the main activity of the Western CMA or referred to the main activity of the Western CMA being only water management their responses were changed from 'having heard of the Western CMA' to having 'not heard of the Western CMA'.

It is the adjusted percentages which best represent the level of awareness of the Western CMA amongst landholders and as shown in Table 48, 68% of landholders were found to be aware of the Western CMA.

Table 48. "Had you heard about the Western Catchment Management Authority or CMA prior to this phone call and prior to receiving information in the mail about this survey?"

Response	Count	Percent
Unadjusted		
Heard of the Western CMA	328	87.0
Had not heard of the Western CMA	49	13.0
Adjusted		
Heard of the Western CMA	258	67.7
Had not heard of the Western CMA	123	32.2
Total landholders	381	100.0

Note: Unadjusted responses includes all responses obtained from landholders in the survey. The adjusted responses are based on changes to landholders responses based on what they believed the main activity of the Western CMA to be. For instance if they could not describe the main activity of the Western CMA or referred to the main activity of the Western CMA being only water management their responses were changed from 'having heard of the Western CMA' to having 'not heard of the Western CMA'.

Source: EBC (2009).

Using the adjusted percentage, Figure 26 shows the level of awareness of the Western CMA across each of the explanatory variables.

As shown in Figure 26, awareness of the Western CMA was highest in the Bourke Local Government area (80%) and lowest in the Central Darling (55%).

In addition there was a clear relationship between property size and awareness of the Western CMA, with landholders who had relatively larger properties more aware of the CMA than landholders on smaller properties.

There is also some indication that awareness of the Western CMA may also be related to the age of the landholder, with relatively younger landholders (less than 43 years of age) generally more aware of the CMA than older landholders (Figure 26).

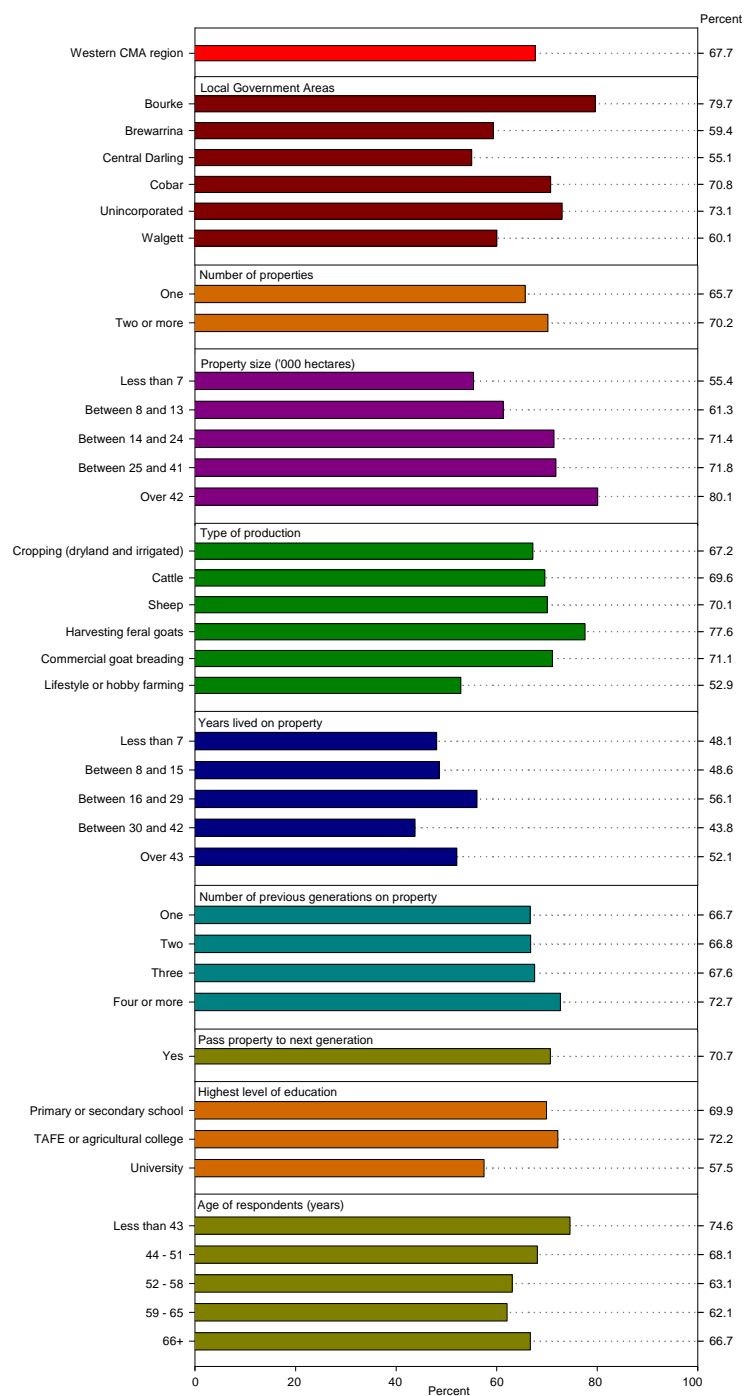


Figure 26. Percent of landholders who had heard of the Western CMA (adjusted)

On indicating they had heard of the Western CMA, landholders were asked what they believed the CMA's main activity was. As shown in Table 49 and Figure 27, 42% of landholders indicated the main activity of the CMA to be associated with land or property management. However and as shown in Table 49, 27% of landholders identified the main activity of the CMA as being associated with water, river or wetland management.

Table 49. "What do you think is the main activity undertaken by the Western CMA?"

Response	Count	Percent
Land or property management	125	41.7
Water, river or wetland management	82	27.3
Assist landholders and promote practice change	45	15.0
Provide funding and grants	39	13.0
Addressing specific NRM issues (i.e., pests, weeds etc)	27	9.0
Environmental management	22	7.3
Catchment management	10	3.3
Education (general)	6	2.0
Conservation	5	1.7
Other	22	7.3
Total landholders	300	100.0

Note: Percentages based on the those landholders who indicated they had heard of the Western CMA (Table 48).

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted and have been classified into theme area as shown in the Table 49.

Source: EBC (2009).

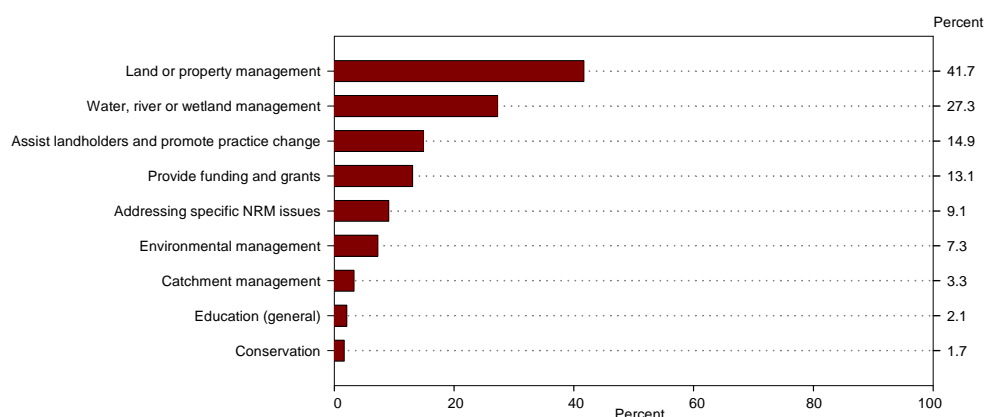


Figure 27. Beliefs about the main activity of the Western CMA amongst landholders

Table 50 shows that 50% of all landholders indicated they had had contact or communication with the CMA in the last 12 months.

Table 50. "Have you had any contact or communication with the CMA in the last 12 months?"

Response	Count	Percent
Had contact with the CMA	189	50.0
Had no contact with the CMA	189	50.0
Total landholders	378	100.0

Source: EBC (2009).

As shown in Figure 28, contact or communication with the CMA amongst landholders was highest amongst:

- Landholders with less than 7,000 hectare properties (65%);
- Lifestyle or hobby farmers (77%); and
- Older relatively to younger property owners.

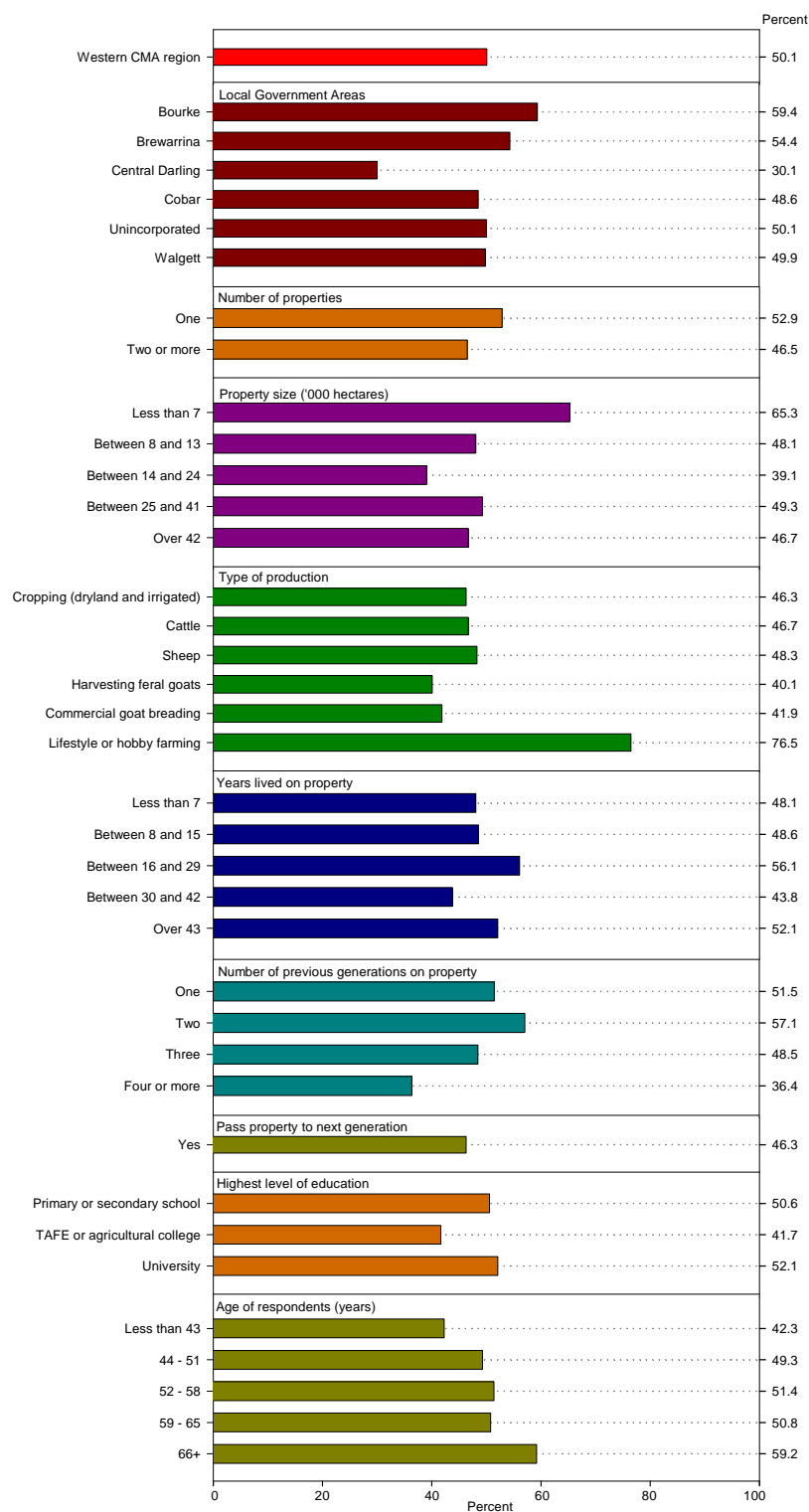


Figure 28. Percent of landholders who have had contact with the Western CMA in the last 12 months

Table 51 and Figure 29 show the two most commonly reported types of contact landholders had with the Western CMA were applying for funding from the CMA (56%) and implementing CMA projects on their property (44%).

Table 51. Type of contact with the Western CMA

Response	Count	Percent
Applying for funding from the CMA	106	56.1
Implementing a project on my property	84	44.4
Contacting the CMA office for general advice	54	28.6
A CMA staff member visited my property	45	23.8
The CMA has attended a meeting of a group I'm involved with	17	9.0
Visiting a CMA office	16	8.5
Developing a property management plan	12	6.3
Attended a course or field day organised by the CMA	10	5.3
Attended a course or field day that another organisation was running	10	5.3
Developing a property vegetation plan	10	5.3
Other types of contact	9	4.8
Total landholders	378	100.0

Note: Percentages based on the those landholders who indicated they had contact with the Western CMA (Table 50).

This is a multiple response table in which a respondent may be included in multiple rows.

Responses were prompted.

Source: EBC (2009).

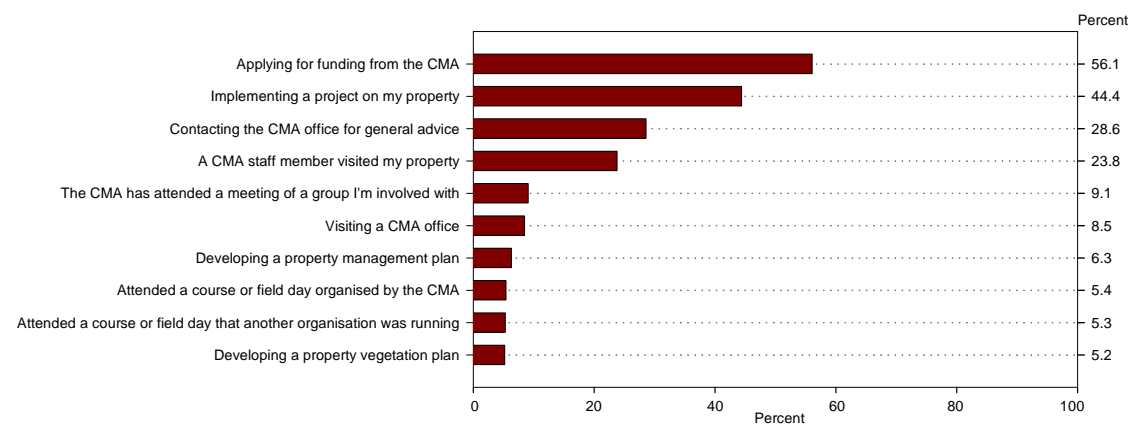


Figure 29. Type of contact landholders had with the Western CMA

Seven statements were used to assess landholder attitudes towards the Western CMA (Table 52). An analysis of each attitude statement showed that the majority of landholders believed that:

- The CMA was doing a good job supporting land managers to manage natural resources in this region (93%).
- The CMA was responsible for controlling vegetation clearing (72%)
- The CMA was a Government department (93%)
- They know about the CMA and what it does (90%)
- That the CMA did not only work with landholders (69%)
- They were generally supportive of the CMA and what it does (94%); and
- The CMA was responsible for water management (68%).

Figures 30 to 36 also compare each of the seven attitude statements across each of the explanatory variables. These analysis generally indicate that in most instances there is minimal variation in landholder's responses to the attitude statements and that the explanatory variables that have been used do not readily explain what variation is evident.

Table 52. Attitudes about the Western CMA

Response	Count	Percent
The CMA is doing a good job supporting land managers to manage natural resources in this region		
Strongly agree (1)	28	9.4
Agree	187	62.5
Tend to agree	63	21.1
Tend to disagree	8	2.7
Disagree	11	3.7
Strongly disagree (5)	2	0.7
<i>Mean</i>	2.3	
The CMA is responsible for controlling vegetation clearing		
Strongly agree (1)	3	1.1
Agree	96	34.5
Tend to agree	102	36.7
Tend to disagree	50	18.0
Disagree	27	9.7
Strongly disagree (5)	0	0.0
<i>Mean</i>	3.0	
The CMA is a Government department		
Strongly agree	5	1.6
Agree	224	71.3
Tend to agree	63	20.1
Tend to disagree	12	3.8
Disagree	10	2.2
Strongly disagree	0	0.0
<i>Mean</i>	2.4	
I would say I know about the CMA and what it does		
Strongly agree (1)	11	3.4
Agree	180	55.9
Tend to agree	99	30.7
Tend to disagree	29	9.0
Disagree	3	0.9
Strongly disagree (5)	0	0.0
<i>Mean</i>	2.5	
The CMA only works with landholders		
Strongly agree (1)	0	0.0
Agree	22	7.6
Tend to agree	67	23.2
Tend to disagree	108	37.4
Disagree	92	31.8
Strongly disagree (5)	0	0.0
<i>Mean</i>	3.9	
I am generally supportive of the CMA and what it does		
Strongly agree (1)	24	7.6
Agree	207	65.9
Tend to agree	63	20.1
Tend to disagree	10	3.2
Disagree	9	2.9
Strongly disagree (5)	1	0.3
<i>Mean</i>	2.3	
The CMA is responsible for water management		
Strongly agree (1)	3	1.0
Agree	87	29.1
Tend to agree	112	37.5
Tend to disagree	75	25.1
Disagree	22	7.4
Strongly disagree (5)	0	0.0
<i>Mean</i>	3.1	
Total landholders	378	100.0

Note: Percentages based on the those landholders who indicated they had heard of the Western CMA (Table 48).

Source: EBC (2009).

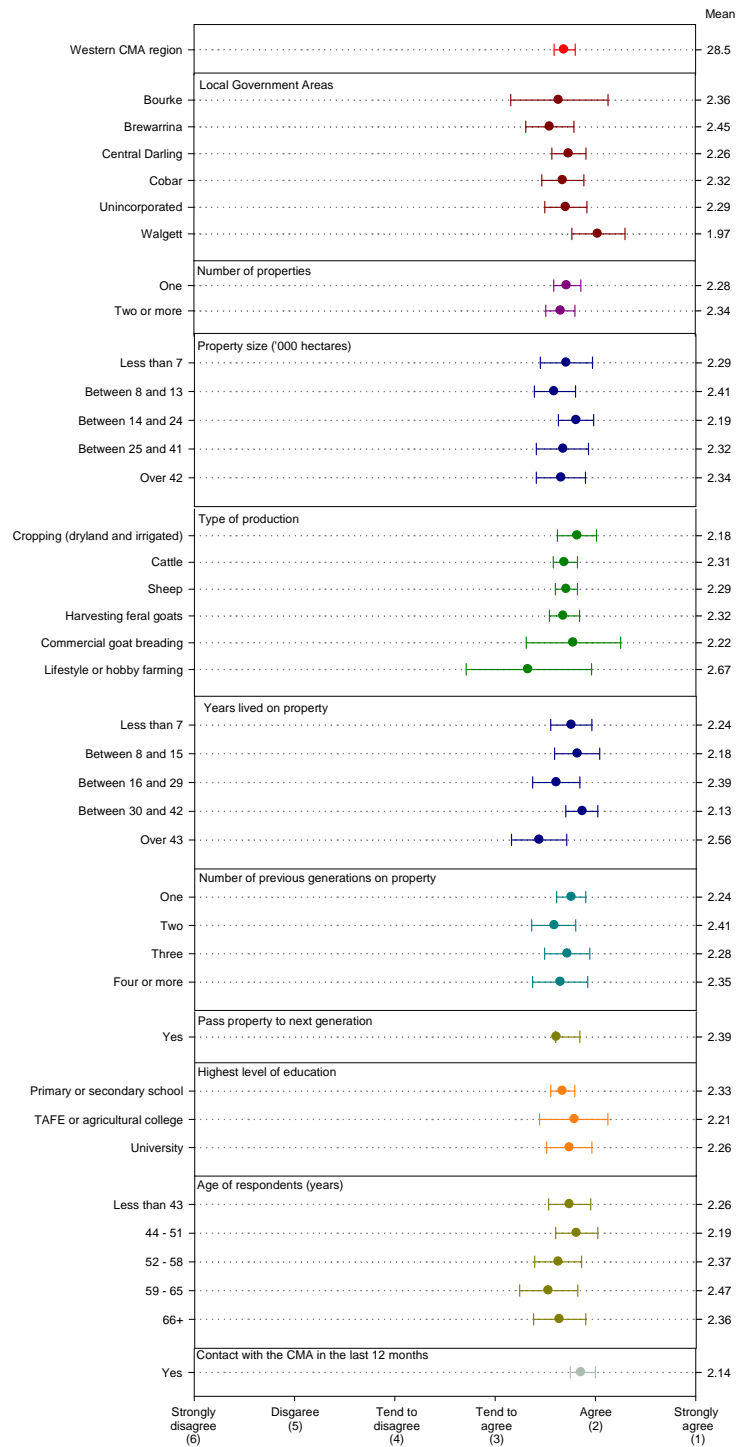


Figure 30. "The CMA is doing a good job supporting land managers to manage natural resources in this region"

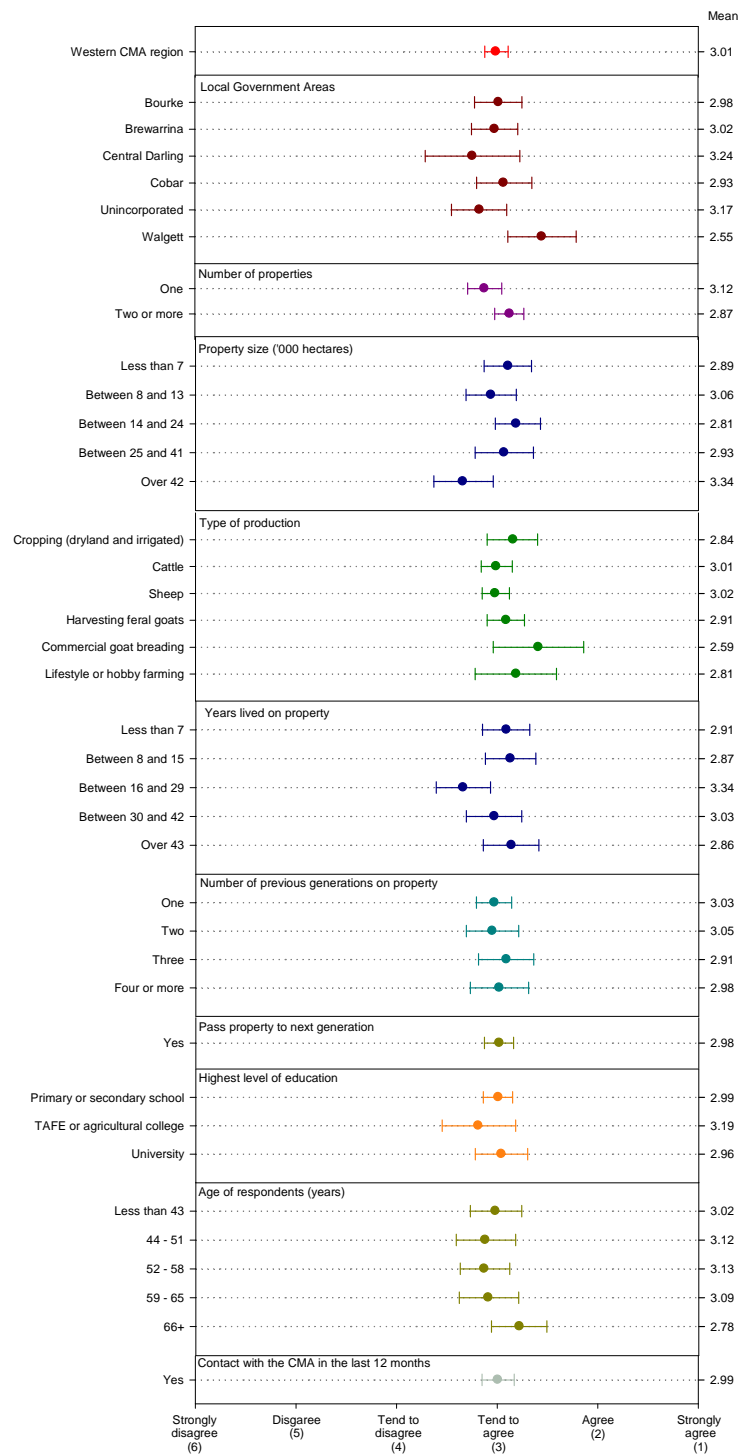


Figure 31. "The CMA is responsible for controlling vegetation clearing"

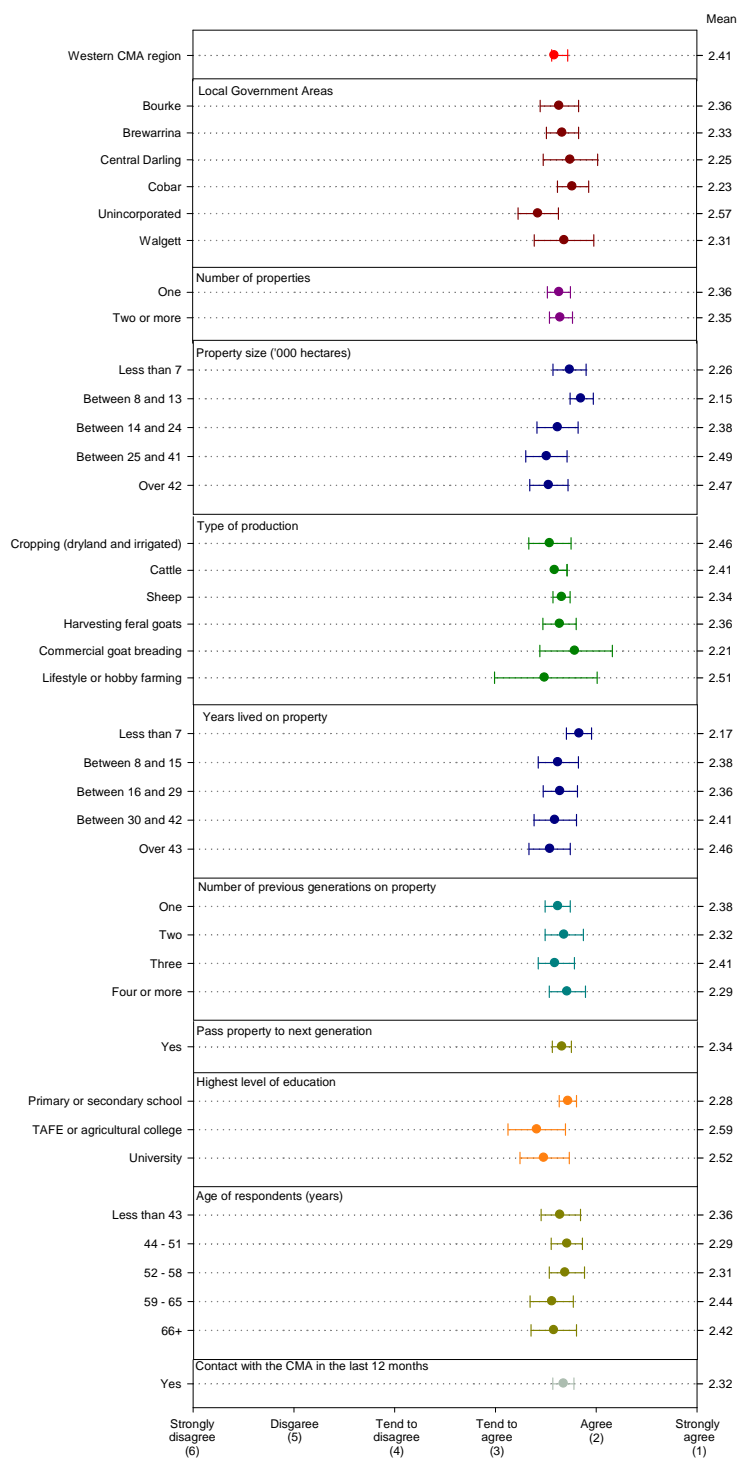


Figure 32. "The CMA is a Government department"

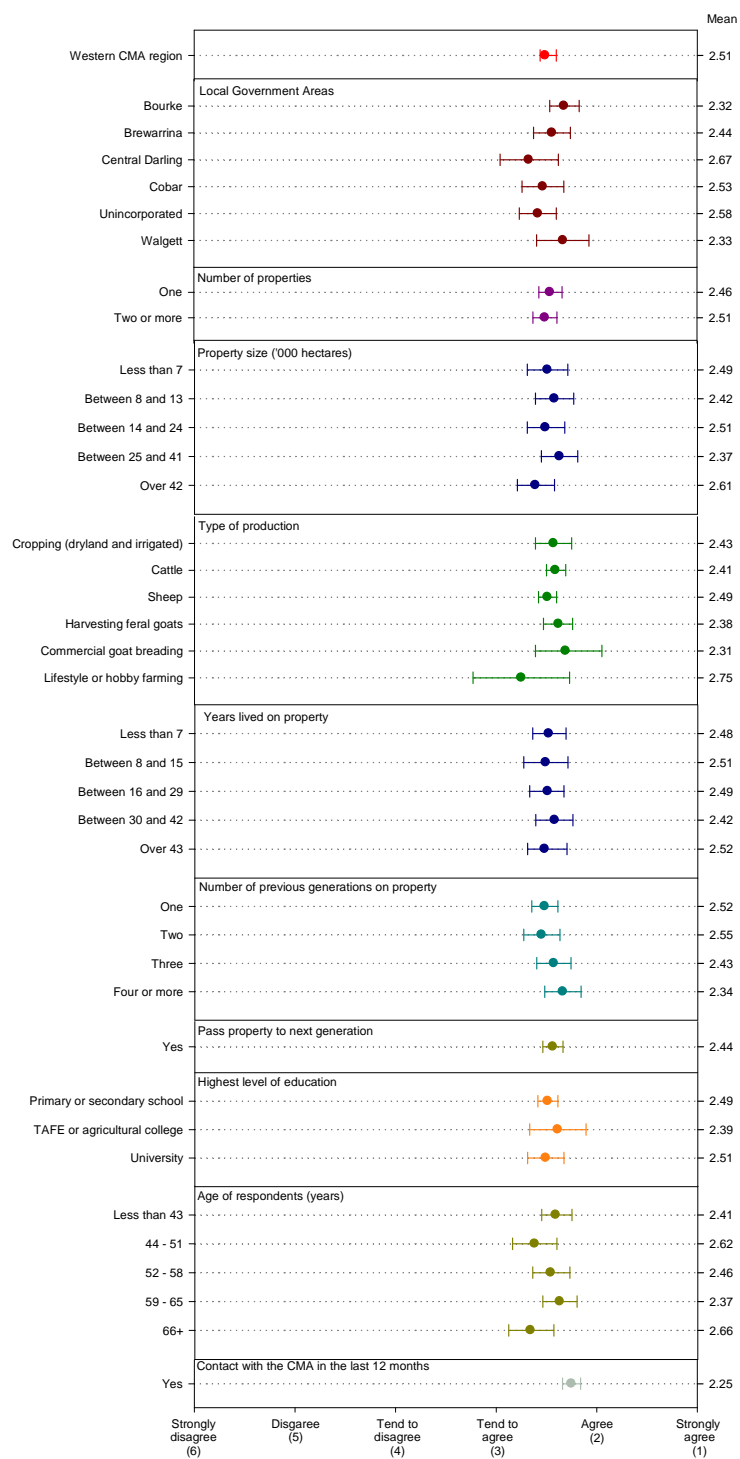


Figure 33. "I would say I know about the CMA and what it does"

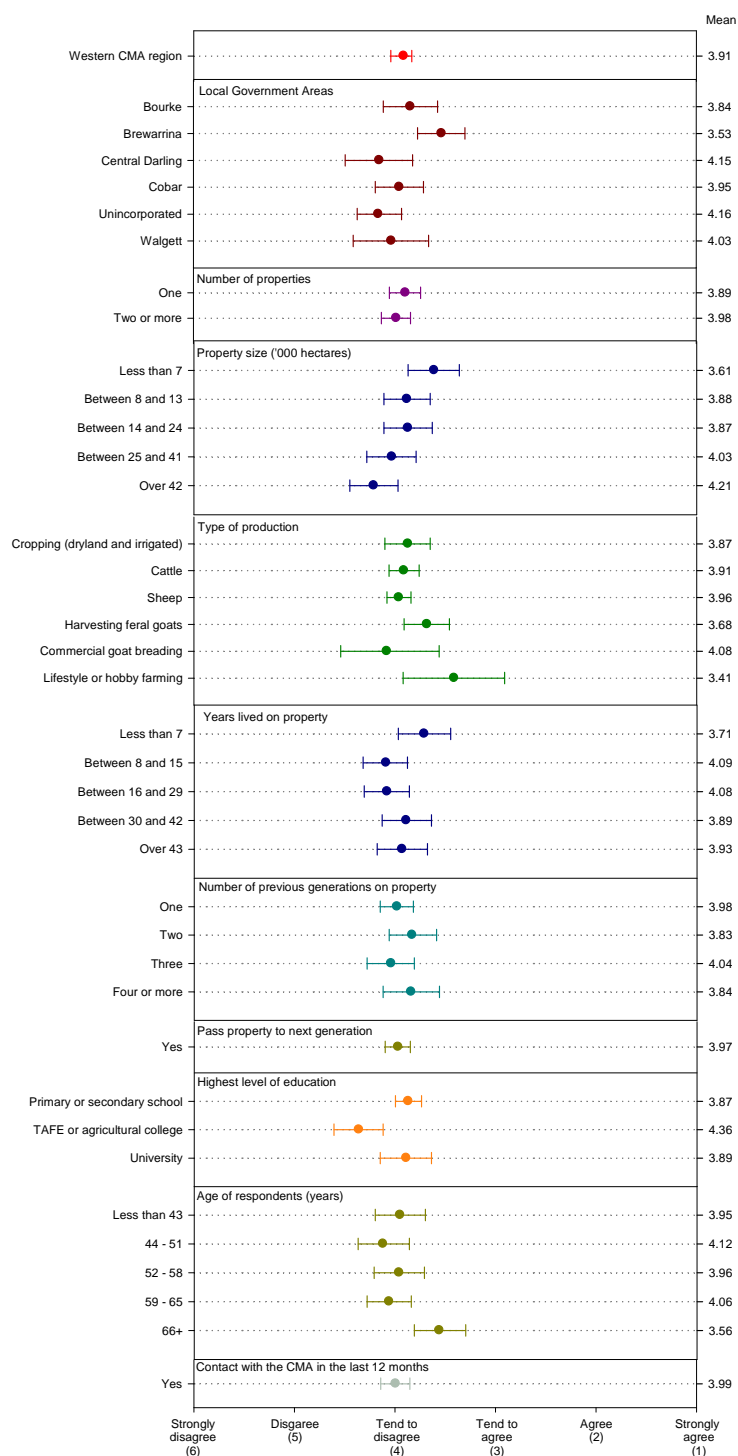


Figure 34. "The CMA only works with landholders"

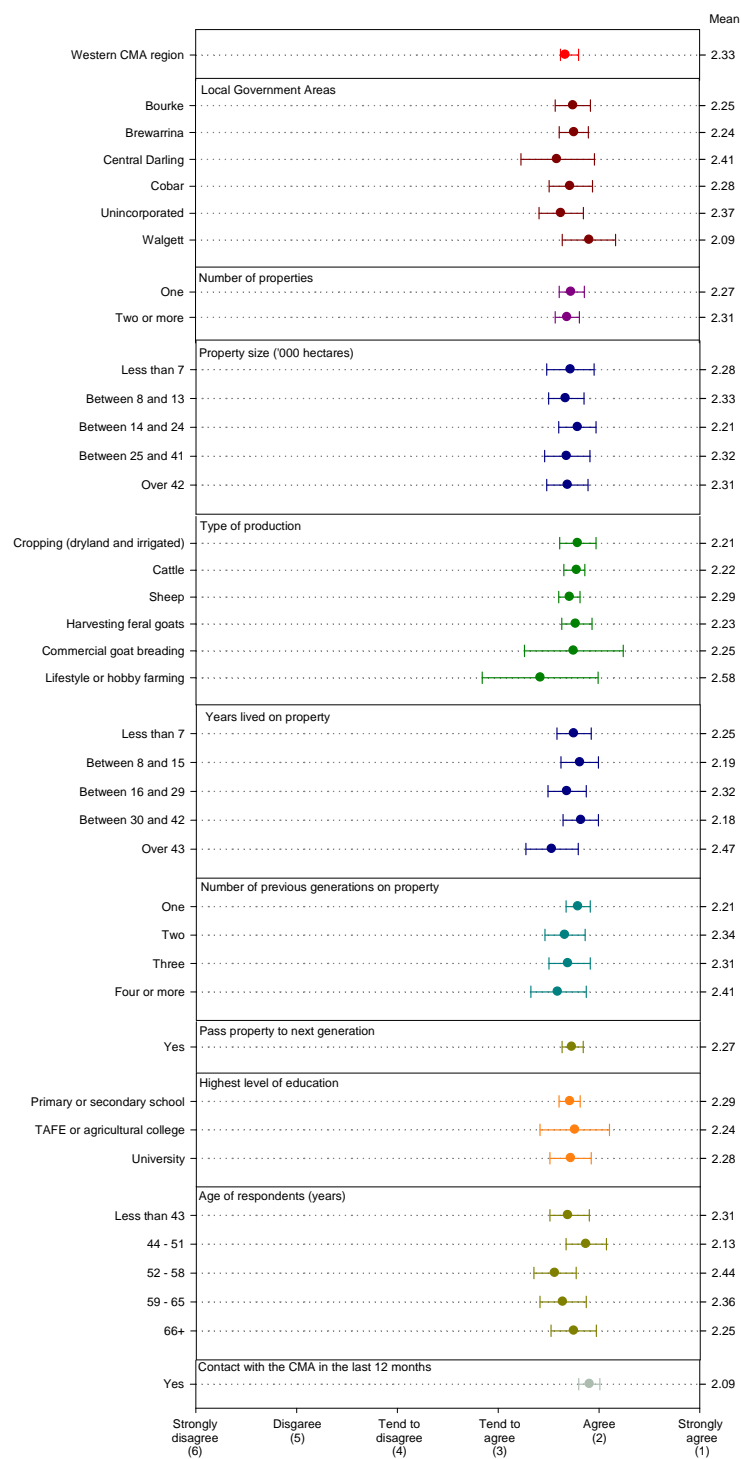


Figure 35. "I am generally supportive of the CMA and what it does"

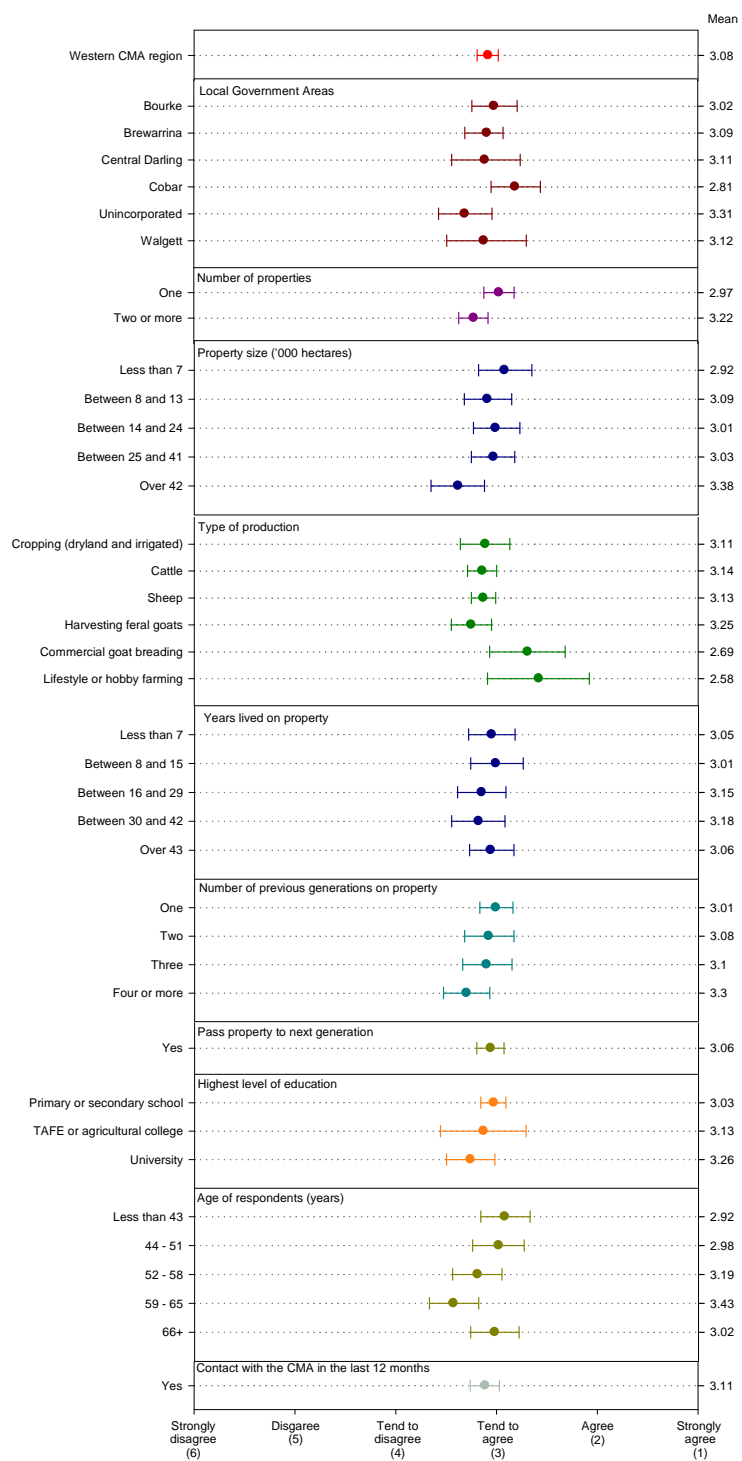


Figure 36. "The CMA is responsible for water management"

When landholders were asked to identify the preferred method through which the CMA should communicate with people in their area (Table 53 and Figure 37), the most preferred method identified was to ‘post information through the mail’ (78%). In addition, 41% of landholders within the region also identified email communication as one of the most preferred methods for the CMA to communicate with people in their area.

Table 53. “The CMA is responsible for supporting the management of natural resources in the region. If the CMA wanted to communicate information to people in your area, what do you think would be the best way for the CMA to do this?”

Response	Count	Percent
Post information through the mail	294	77.6
Email information	155	40.9
Hold community meetings	143	37.7
Have a field day	141	37.2
Put information in the local newspaper	133	35.1
Visit people at their homes or properties	128	33.8
Put information on the radio	93	24.5
Letterbox drop	53	14.0
Place information on the CMA website	42	11.1
Place TV advertisements	27	7.1
Total landholders	378	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Responses were prompted.

Source: EBC (2009).

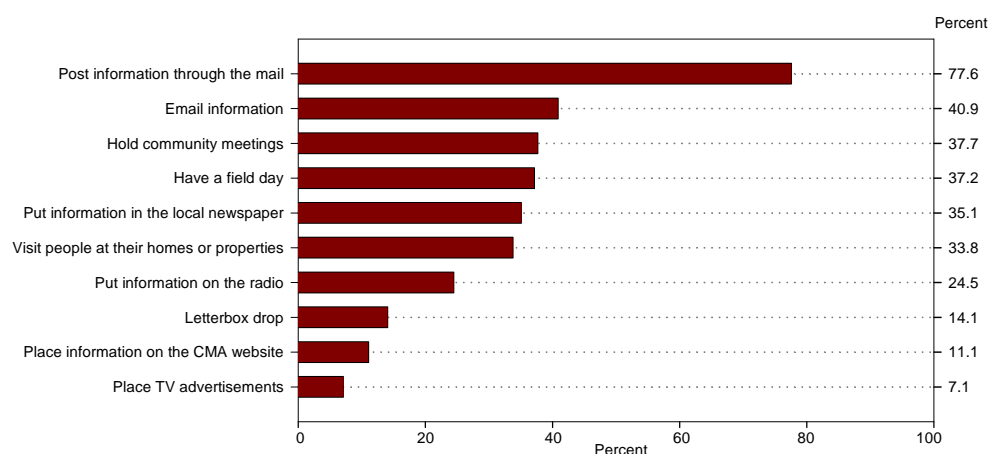


Figure 37. Preferred methods of CMA communication with landholders

Landholders were asked if they would be willing to attend a one day training course on property management held by the CMA. Table 54 shows that 40% of landholders would be willing to attend such a course.

Table 54. “If the CMA was holding a one day training course on property management would you be willing to attend?”

Response	Count	Percent
Willing to attend	154	40.5
Maybe willing to attend	173	45.5
Not willing to attend	53	13.9
Total landholders	380	100.0

Source: EBC (2009).

Amongst those landholders who indicated they would not attend a training course provided by the CMA, 43% indicated they would not attend as they had no need for training or courses, while a further 33% indicated they would not attend as they were 'too busy during the day' (Table 55).

Table 55. "Why would you be unlikely to attend?"

Response	Count	Percent
No need for any training or courses	22	43.1
Too busy during the day	17	33.3
Too old	12	23.5
Have been to similar courses before and they are of limited value	6	11.8
Too far to travel	1	2.0
Personal costs (e.g. accommodation etc)	0	0.0
Other reasons	2	3.9
Total landholders	51	100.0

Note: Responses were prompted.

Source: EBC (2009).

Amongst those landholders who indicated a willingness to attend a training course provided by the CMA, 50% of landholders indicated they would travel up to 106 kilometres to attend such a course (Table 56).

Table 56. "How far would you be willing to travel to attend?"

Kilometres	Count	Percent	Cumulative Percent
1 – 20	18	6.3	6.3
21 – 40	20	7	13.3
41 – 60	45	15.7	29.0
61 – 80	21	7.3	36.3
81 – 100	103	35.9	72.2
101 – 120	10	3.5	75.7
121 – 140	6	2.1	77.8
141 – 160	14	4.9	82.7
161 – 180	0	0	82.7
181 – 200	39	13.6	96.3
201 +	11	3.8	100.1
Total landholders	287	100.0	
Mean kilometres	105.8		

Source: EBC (2009).

The kilometres landholders would be willing to travel to attend a training course held by the CMA (Figure 38) was highest amongst landholders in the Central Darling Local Government area (128km) and unincorporated areas (133km) and amongst landholders on larger properties. For instance landholders on properties of less than 7,000 hectares would travel an average of 76km while landholders on properties over 42,000 hectares would travel an average of 132km.

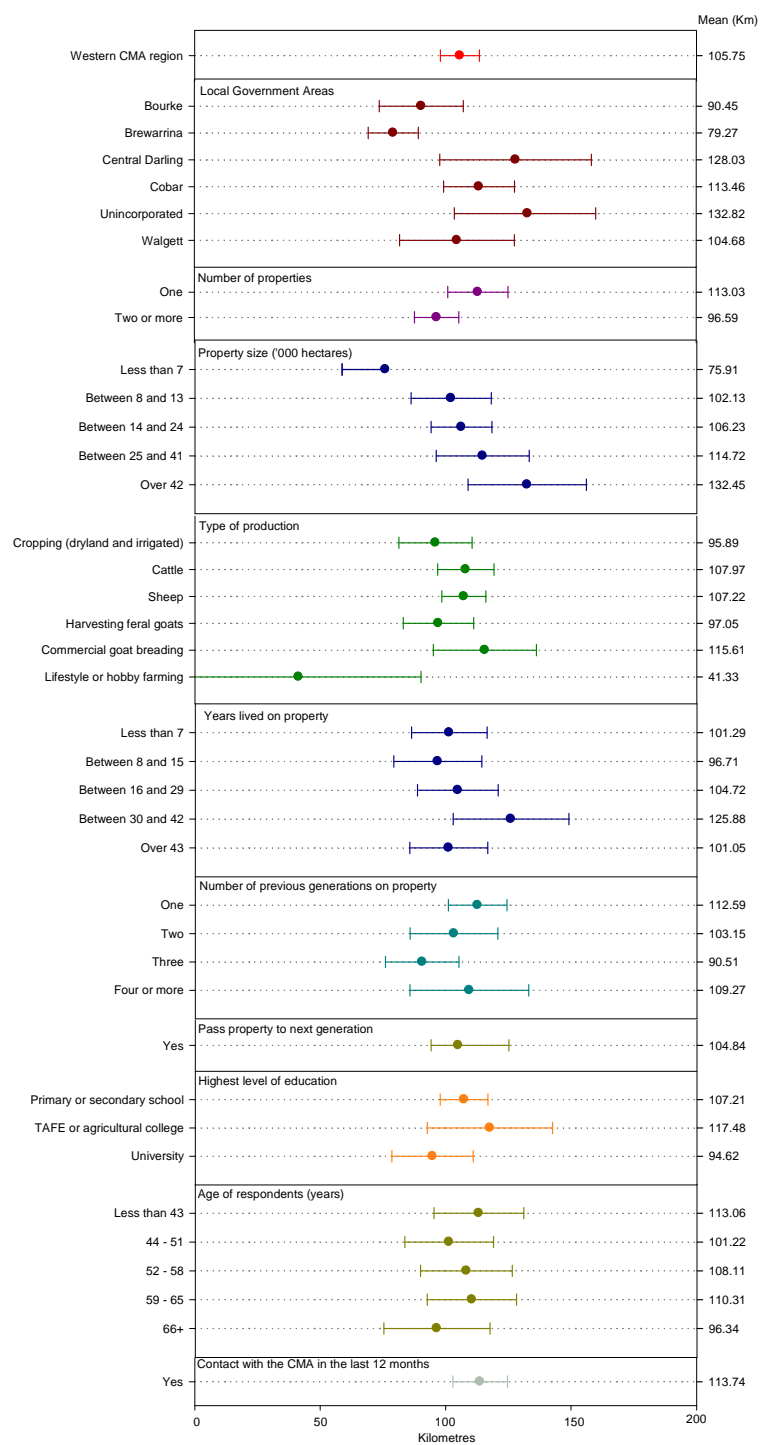


Figure 38. Mean distance willing to travel to attend training courses on property management

9 URBAN RESIDENTS³

The sample of urban residents was randomly drawn from four town locations within the Western CMA. This included 25 residents from the towns of Bourke, Brewarrina, Cobar and Wilcannia. As such this is not a random sample of all urban residents within the Western Catchment, but is essentially four samples which are specific to each of the four town locations.

The questionnaire used in the survey of urban residents is presented in Appendix C.

9.1 Awareness of the Western CMA

Table 57 indicates the level of awareness of the Western CMA amongst urban residents from each of the four town locations. This table includes percentages associated with both unadjusted and adjusted percentages. The unadjusted percentage is based on all urban residents within each town location when they were asked if they had heard of the Western CMA.

The adjusted percentages are based on changes made to the responses based on what they believed the main activity of the Western CMA to be. For instance if they could not describe the main activity of the Western CMA or referred to the main activity of the Western CMA being only water management, their responses were changed from 'having heard of the Western CMA' to having 'not heard of the Western CMA'.

It is the adjusted percentages which best represent the level of awareness of the Western CMA amongst urban residents and as shown in Table 57, between 11 and 20 percent of urban residents were found to be aware of the Western CMA.

Table 57. "Had you heard about the Western Catchment Management Authority or CMA prior to this phone call and prior to receiving information in the mail about this survey?"

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Unadjusted								
Heard of the Western CMA	18	64.3	18	81.8	22	88.0	18	72.0
Had not heard of the Western CMA	10	35.7	4	18.2	3	12.0	7	28.0
Adjusted								
Heard of the Western CMA	3	10.7	4	18.2	3	12.0	5	20.0
Had not heard of the Western CMA	25	89.3	18	81.8	22	88.0	20	80.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0

Note: Unadjusted responses includes all responses obtained from landholders in the survey. The adjusted responses are based on changes to landholders responses based on what they believed the main activity of the Western CMA to be. For instance if they could not describe the main activity of the Western CMA or referred to the main activity of the Western CMA being only related to water management their responses were changed from 'having heard of the Western CMA' to having 'not heard of the Western CMA'.

Source: EBC (2009).

³ Given the low sample size and the use of four separate towns from which the sample was drawn, limited additional information could be gained by using graphs to present the results of the survey of urban residents.

As shown in Table 58 most urban residents who believed they had heard of the Western CMA (unadjusted responses) also believed the Western CMAs main activity was related to water management, which included river management and the management of irrigation and water licences.

Table 58. “What do you think is the main activity undertaken by the CMA?”

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Water management	13	46.4	5	22.7	14	56.0	9	36.0
Environment, catchment or NRM issues	0	0.0	3	13.6	3	12.0	4	16.0
Land management	3	10.7	2	9.1	0	0.0	2	8.0
Supporting landholders	1	3.6	1	4.5	1	4.0	1	4.0
Don't know	14	50.0	13	59.1	9	36.0	11	44.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted and have been classified into theme area as shown in the Table 58.

Source: EBC (2009).

All urban residents were told that the CMA was responsible for the management of natural resources in the region. They were then asked how they believed the CMA could get involved in environmental issues in their area.

Table 59 shows that between 60 and 80 percent of urban residents could not answer this question. Amongst those residents who did answer the question, many referred to the use of specific community engagement activities while others indicated the CMA needed to implement specific water related policies, programs and activities.

Table 59. “The CMA is responsible for supporting the management of natural resources in the region. How do you think the CMA could get involved in environmental issues in your area?”

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Community engagement activities (inc. field days, email, meetings etc)	4	14.3	7	31.8	0	0.0	1	4.0
Implement specific water policies, programs, projects and activities	2	7.1	0	0.0	8	32.0	2	8.0
Implement specific land management policies, programs, projects and activities	1	3.6	1	4.5	2	8.0	2	8.0
Don't know	21	75.0	14	63.6	15	60.0	20	80.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted and have been classified into theme area as shown in the Table 59.

Source: EBC (2009).

9.2 Beliefs about local environmental issues

Urban residents were also asked to identify the most important environmental issues in their local area. Table 60 shows that the environmental issues that were identified were often specific to the town location of the resident. However, the three most commonly reported issues were all related to water management, which included the lack of river flows and riparian and river management.

While issues related to water management may be important within each of the local areas, it is also possible that this issue has been raised as many urban residents believed the CMA was responsible for water management in their area (see for example Tables 58 and 59).

Table 60. “What do you think are the most important environmental issues in your local area around your town?”

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Lack of river flows	4	17.4	0	0.0	8	32.0	21	84.0
Riparian and river management	10	45.3	5	22.7	9	36.0	17	68.0
Water management (general)	10	43.5	13	59.1	9	36.0	2	8.0
Recycling and waste management	0	0.0	2	9.1	11	44.0	3	12.0
Need new weir in river	0	0.0	0	0.0	0	0.0	8	32.0
Drought	2	8.7	2	9.1	1	4.0	2	8.0
Remove Carp from river	0	0.0	0	0.0	1	4.0	4	16.0
Weeds	1	4.3	1	4.5	2	8.0	0	0.0
Land clearing	0	0.0	0	0.0	3	12.0	0	0.0
Overgrazing of land	0	0.0	0	0.0	0	0.0	2	8.0
Erosion	0	0.0	0	0.0	2	8.0	0	0.0
Feral animals	0	0.0	0	0.0	2	8.0	0	0.0
Other issues	2	7.1	2	9.1	6	24.0	4	16.0
Don't know	5	17.9	0	0.0	3	12.0	2	8.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Responses were unprompted and have been classified into theme area as shown in the Table .

Source: EBC (2009).

Urban residents were asked to consider the land around where they lived and to score the current health of the land on a scale from one to ten, with one being very unhealthy and ten being very healthy. Examining the mean scores in Table 61, the land around Brewarrina is perceived as being relatively unhealthy compared to the land around the other three urban locations.

Residents were also asked to use the same scale and judge the land around where they lived as it was 10 years ago. Table 61 shows that with the exception of Brewarrina, the land around Bourke, Cobar and Wilcannia is seen as being healthier now when compared to 10 years ago. In the case of Brewarrina there has been essentially no change in the perceived health of the land around this town over the past 10 years.

Table 61. "If you were to judge the environmental health of the land around where you live on a scale from one (1) to ten (10), with one (1) being very unhealthy and ten (10) being very healthy, what score would you give it?"

Score	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Current								
1 (very unhealthy)	2	7.1	0	0.0	1	4.0	0	0.0
2	2	7.1	1	4.5	0	0.0	2	8.0
3	0	0.0	0	0.0	1	4.0	4	16.0
4	4	14.3	0	0.0	2	8.0	4	16.0
5	6	21.4	7	33.3	9	36.0	7	28.0
6	4	14.3	1	4.5	4	16.0	2	8.0
7	3	10.7	3	13.6	3	12.0	2	8.0
8	6	21.4	5	22.7	2	8.0	4	16.0
9	1	3.6	4	18.2	3	12.0	0	0.0
10 (very healthy)	0	0.0	0	0.0	0	0.0	0	0.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0
Mean score		5.5		6.7		5.8		5.0
10 Years ago								
1 (very unhealthy)	2	7.1	1	4.5	1	4.0	0	0.0
2	1	3.6	1	4.5	2	8.0	0	0.0
3	2	7.1	1	4.5	1	4.0	2	8.0
4	1	3.6	1	4.5	0	0.0	2	8.0
5	4	14.3	1	4.5	2	8.0	8	32.0
6	1	3.6	0	0.0	4	16.0	1	4.0
7	4	14.3	2	9.1	1	4.0	2	8.0
8	5	17.9	9	40.9	4	16.0	5	20.0
9	4	14.3	2	9.1	3	12.0	2	8.0
10 (very healthy)	3	10.7	0	0.0	3	12.0	1	4.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0
Mean score		6.4		6.6		6.6		6.2
Difference in mean scores between current and 10 years ago								
		-0.9		+0.1		-0.8		-1.2

Note: A negative difference core between the current health of the land and the health of the land 10 years ago, indicates the land is now more unhealthy compared to 10 years ago.

A positive difference core between the current health of the land and the health of the land 10 years ago, indicates the land is now more healthy compared to 10 years ago.

Source: EBC (2009).

Table 62 identifies the primary reasons underpinning people's judgements about the health of land to be related to the drought and the lack of water.

Table 62. Reasons for change in health of land relative to 10 years ago

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Land now more unhealthy								
Drought	6	42.9	2	40.0	10	100.0	4	44.4
Less water in rivers	0	0.0	0	0.0	0	0.0	3	33.3
Cotton farms removing water	2	14.3	0	0.0	0	0.0	2	22.2
Overstocking	0	0.0	2	40.0	0	0.0	0	0.0
Other issues	8	57.1	1	20.0	0	0.0	0	0.0
Total urban residents	14	100.0	5	100.0	25	100.0	25	100.0
Land now more healthy								
Drought	2	40.0	2	50.0	0	0.0	0	0.0
More awareness	2	40.0	0	0.0	0	0.0	0	0.0
Other issues	1	20.0	2	50.0	3	100.0	2	100.0
Total urban residents	5	100.0	4	100.0	3	100.0	2	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

Table 63 shows that approximately one-third of urban residents in Bourke (36%) and Brewarrina (32%) had participated in activities to address environmental issues in their local area in the last two years. However, the level of participation was much higher in Cobar (76%) and Wilcannia (84%). Interviews with urban residents indicated that this was primarily due to their participation in 'Clean up Australia Day'.

Table 63. "In the last two years have you participated in any activities to address environmental issues in your local area?"

Response	Bourke		Brewarrina		Cobar		Wilcannia	
	Count	%	Count	%	Count	%	Count	%
Participated	10	35.7	7	31.8	19	76.0	21	84.0
Have not participated	18	64.3	15	68.2	6	24.0	4	16.0
Total urban residents	28	100.0	22	100.0	25	100.0	25	100.0

Note: Many of the responses related to participation in environmental activities included participation in 'Clean up Australia Day'

Source: EBC (2009).

10 STAKEHOLDERS⁴

The stakeholder organisations survey included a survey of non-Government and Government stakeholder organisations. The questionnaire used in the survey is presented in Appendix D.

10.1 Contact and communication with the Western CMA

With the exception of one non-Government stakeholder organisation, all stakeholder organisations indicated they had had contact or communication with the Western CMA over the past 12 months.

Table 64 shows the type of contact stakeholder organisations had with the Western CMA. Amongst non-Government stakeholder organisations the two most common forms of contact were receiving written information from the CMA and obtaining advice or assistance from CMA staff. On the other hand, Government stakeholder organisations contacted or communicated with the CMA through a number of different processes (Table 64).

Table 64. Type of contact or communication with the Western CMA

Response	Count	Percent
Non-Government		
Received written information from the CMA	10	100.0
Gained advice or assistance from CMA staff	8	80.0
Attended a meeting or event organized by the CMA	5	50.0
Applied for funding or incentives through the CMA	4	40.0
Obtained funding or incentives through the CMA	3	30.0
CMA attends our meetings	2	20.0
Total stakeholders	10	100.0
Government		
Attended a meeting or event organized by the CMA	9	90.0
Gained advice or assistance from CMA staff	8	80.0
Received written information or reports from the CMA	8	80.0
Provided advice or assistance to the CMA	8	80.0
Undertook a CMA funded project	6	60.0
Provided funding to the CMA	3	30.0
Total stakeholders	10	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

⁴ Given the low sample size limited additional information could be gained by using graphs to present the results of the stakeholder organisations survey.

10.2 Knowledge and understanding of the role of the Western CMA

All stakeholder organisations were asked to judge how much knowledge people in their organisation had of the Western CMA on a scale from zero, which indicated no knowledge at all, to ten which indicated all the knowledge anyone could have.

As shown in Table 65, the level of knowledge of the CMA amongst stakeholder organisations was above average with a mean score of 7 amongst non-Government organisations and a mean score of 7.7 amongst Government organisations.

Table 65. "Think about all the people in your organisation. If you were to give an average score from one to ten in relation to their knowledge of the Western CMA, with one being no knowledge at all and ten being all the knowledge anyone could have, what score would you give on average to the people in your organisation?"

Response	Non-Government		Government	
	Count	Percent	Count	Percent
1 (No knowledge)	0	0.0	0	0.0
2	0	0.0	0	0.0
3	1	9.1	0	0.0
4	1	9.1	0	0.0
5	0	0.0	1	10.0
6	0	0.0	1	10.0
7	4	36.4	3	30.0
8	4	36.4	2	20.0
9	0	0.0	1	10.0
10 (All possible knowledge)	1	9.1	2	10.0
Total stakeholders	11	100.0	10	100.0
Mean score		7.0		7.7

Source: EBC (2009).

Table 66 also confirms that the majority of both non-Government and Government stakeholder organisations have an understanding of the role of the CMA and an understanding of the regional NRM process and programs implemented by the CMA.

Table 66. Belief statements: Knowledge of the Western CMA

Response	Non-Government		Government	
	Count	Percent	Count	Percent
<i>I would say this organisation's understanding of the role of the CMA is..</i>				
High (1)	6	54.5	4	40.0
Moderate-high	3	27.3	3	30.0
Moderate	1	9.1	3	30.0
Moderate-low	1	9.1	0	0.0
Low (5)	0	0.0	0	10.0
Total stakeholders	11	100.0	10	100.0
Mean score		1.7		1.9
<i>Would you say this organisation's knowledge and understanding of regional NRM processes and programs undertaken by the CMA, including planning, incentives and on ground actions, is...</i>				
High (1)	3	27.3	6	60.0
Moderate-high	6	54.5	1	10.0
Moderate	1	9.1	2	20.0
Moderate-low	0	0.0	0	0.0
Low (5)	1	9.1	1	10.0
Total stakeholders	11	100.0	10	100.0
Mean score		2.1		1.9

Source: EBC (2009).

10.3 Achievement of NRM targets

Table 67 indicates that both non-Government and Government stakeholder organisations believed the CMA had been ‘somewhat successful’ in its progress towards the achieving of NRM targets as identified in the CAP.

Table 67. “Think about the CMAs progress towards and achievement of Natural Resource Management targets as identified in the CMA Catchment Action Plan. On a scale from one to ten, with one being very unsuccessful and ten being very successful, what score would you give the CMA in terms of the progress being made towards the achievement of these targets?”

Response	Non-Government		Government	
	Count	Percent	Count	Percent
1 (Very unsuccessful)	0	0.0	0	0.0
2	0	0.0	0	0.0
3	0	0.0	0	0.0
4	1	11.1	0	0.0
5	0	0.0	1	14.3
6	1	11.1	5	71.4
7	4	44.4	1	14.3
8	3	33.3	0	0.0
9	0	0.0	0	0.0
10 (Very successful)	0	0.0	0	0.0
Total stakeholders	9	100.0	7	100.0
Mean score		6.8		6.0

Source: EBC (2009).

10.4 Support provided by the Western CMA

Amongst non-Government stakeholder organisations, 64% indicated the CMA had provided information, advice or funding to their organisation in the last 12 months.

Table 68. “In the last 12 months has the CMA supported your organisation in providing information, advice or funding?”

Response	Count	Percent
Supported	7	63.6
Not supported	4	36.4
Total stakeholders	11	100.0

Source: EBC (2009).

All non-Government stakeholder organisations believed the type and level of support provided by the CMA had been either ‘very good’ or ‘good’ (Table 69).

Table 69. Type and level of support

Response	Count	Percent
<i>In relation to the type of support needed by your organisation, would you say the support provided by the CMA has been...</i>		
Very good (1)	5	71.4
Good	2	28.6
Average	0	0.0
Fair	0	0.0
Poor (5)	0	0.0
Total stakeholders	7	100.0
Mean score		1.3
<i>In relation to the level of support needed by your organisation, would you say the support provided by CMA has been...</i>		
Very good (1)	5	71.4
Good	2	28.6
Average	0	0.0
Fair	0	0.0
Poor (5)	0	0.0
Total stakeholders	7	100.0
Mean score		1.3

Note: Percentages based on those stakeholders who indicated they had received support from Western CMA (Table 68).

Source: EBC (2009).

Table 70 shows the most valuable support provided by the CMA to stakeholder organisations was access to technical support and advice and project or strategic planning assistance.

Table 70. “If you think of the support provided by the CMA to your organisation, what has been the most valuable? Does it include?”

Response	Count	Percent
Access to technical support and advice	7	100.0
Project or strategic planning assistance	7	100.0
Assistance in obtaining funding	6	85.7
Help in developing partnerships with other groups and organisations	5	71.4
Training opportunities	5	71.4
Other (contract work, participation in educational program and committees)	3	42.9
Total stakeholders	7	100.0

Note: Percentages based on the those stakeholders who indicated they had received support from Western CMA (Table ???).

This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

Table 71 shows that approximately half of the non-Government stakeholder organisations (55%) believed they would need support or additional support from the CMA in the next 12 months.

Table 71. “In the next 12 months do you think you will need support or additional support from the CMA and its staff?”

Response	Count	Percent
Support required	6	54.5
No support required	5	45.5
Total stakeholders	11	100.0

Source: EBC (2009).

Although based on only a small sample size, Table 72 indicates the type of support stakeholder organisations will require from the Western CMA in the next 12 months include assistance in obtaining funding and access to technical support and advice.

Table 72. Descriptions of the specific type of support required

Response	Count	Percent
Assistance in obtaining funding		
Developing funding applications	3	60.0
Knowledge of what is available in funding	1	20.0
Total	4	80.0
Access to technical support and advice		
Know what is happening so we can plan events	1	20.0
Field officer support	1	20.0
Ways to protect significant areas	1	20.0
Total	3	60.0
Project or strategic planning assistance		
Continuing on-going project	1	20.0
Waste water project and filtering systems	1	20.0
Total	2	40.0
Training opportunities		
Knowledge of types of grasses best for area	1	20.0
Field days	1	20.0
Total	2	40.0
Help in developing partnerships with other groups		
Attendance at Landcare forums field days etc	1	20.0
Total	1	20.0
Other support needs		
Planning for future events	1	20.0
Help keep Paroo River pristine	1	20.0
Publicity and marketing	1	20.0
School projects	1	20.0
Total	4	80.0
Total	5	100.0

Note: Based on only those stakeholder organisations who indicated a need for CMA support in the next 12 months (Table 71).
Includes only non-Government organisations

Source: EBC (2008)

10.5 Decision making by the Western CMA

Four attitude statements were used to assess stakeholder beliefs about decision making within the Western CMA. The majority of both non-Government and Government stakeholder organisations believed that:

- (i) the CMA took the views of different organisations into account in its decision making;
- (ii) the CMA was adequately informed by different stakeholder and interest groups;
- (iii) decision making transparency within the CMA was high; and
- (iv) the CMA was inclusive of other organisations in the management of natural resources.

Table 73. Belief statements: Decision making by the Western CMA

Response	Non-Government		Government	
	Count	Percent	Count	Percent
<i>I think the CMA takes the views of this organisation into account in its decision making.</i>				
Strongly agree (1)	1	9.1	-	-
Agree	6	54.5	-	-
Tend to agree	0	0.0	-	-
Tend to disagree	0	0.0	-	-
Disagree	3	27.3	-	-
Strongly Disagree (5)	1	9.1	-	-
Total stakeholders	11	100.0	-	-
Mean score		3.1		
<i>When the CMA makes important NRM planning and investment decisions is it adequately informed by different stakeholder and interest groups</i>				
Strongly agree (1)	1	14.3	0	0.0
Agree	2	28.6	2	40.0
Tend to agree	2	28.6	1	20.0
Tend to disagree	0	0.0	1	20.0
Disagree	2	28.6	0	0.0
Strongly Disagree (5)	0	0.0	1	20.0
Total stakeholders	7	100.0	5	100.0
Mean score		3.0		3.4
<i>I would say the level of transparency that exists in the decision making processes within the CMA is ...</i>				
High (1)	5	50.0	3	50.0
Moderate-high0	0	0.0	2	33.3
Moderate	4	40.0	1	16.7
Moderate-low	0	0.0	0	0.0
Low (5)	1	10.0	0	0.0
Total stakeholders	10	100.0	6	100.0
Mean score		2.2		1.7
<i>The willingness of the CMA to be inclusive of other organisations in the management of natural resources in the region ...</i>				
High (1)	7	63.6	7	70.0
Moderate-high	2	18.2	1	10.0
Moderate	2	18.2	1	10.0
Moderate-low	0	0.0	1	10.0
Low (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	10	100.0
Mean score		1.5		1.6

Source: EBC (2009).

10.6 Quality of the relationship with the Western CMA

Responses to the four attitude statements shown in Table 74 indicates a positive relationship between stakeholder organisations and the Western CMA. The majority of non-Government and Government stakeholder organisations believed:

- (i) There was an effective relationship between their organisation and the CMA;
- (ii) There had been improvement in their relationship with the CMA over the past two years;
- (iii) That their organisation had a high level of trust in the CMA; and
- (iv) That the CMA's interaction with their organisation was more strategic than opportunistic.

Table 74. Belief statements: Quality of the relationship with the Western CMA

Response	Non-Government		Government	
	Count	Percent	Count	Percent
<i>There has been an effective relationship between the CMA and this organisation</i>				
Strongly agree (1)	3	27.3	2	20.0
Agree	6	54.5	7	70.0
Tend to agree	1	9.1	1	10.0
Tend to disagree	0	0.0	0	0.0
Disagree	1	9.1	0	0.0
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	10	100.0
Mean score		2.1		1.9
<i>If you were asked this question two years ago how would you have answered it</i>				
Strongly agree (1)	2	20.0	0	0.0
Agree	4	40.0	6	60.0
Tend to agree	3	30.0	3	30.0
Tend to disagree	0	0.0	1	10.0
Disagree	1	10.0	0	0.0
Strongly Disagree (5)	0	0.0	0	20.0
Total stakeholders	10	100.0	10	100.0
Mean score		2.4		2.5
<i>This organisation has a high level of trust in its relationship with the CMA</i>				
Strongly agree (1)	1	9.1	4	40.0
Agree	9	81.8	5	50.0
Tend to agree	0	0.0	1	10.0
Tend to disagree	0	0.0	0	0.0
Disagree	1	9.1	0	0.0
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	10	100.0
Mean score		2.2		1.7
<i>I think the CMAs approach to engaging with our organisation tends to be more opportunistic than strategic</i>				
Strongly agree (1)	1	9.1	0	0.0
Agree	2	18.2	1	10.0
Tend to agree	2	18.2	0	0.0
Tend to disagree	0	0.0	2	20.0
Disagree	6	54.5	6	60.0
Strongly Disagree (5)	0	0.0	1	10.0
Total stakeholders	11	100.0	10	100.0
Mean score		3.7		4.6

Source: EBC (2009).

10.7 NRM leadership and partnerships

In relation to the attitude statements reported in Table 75, the majority of stakeholder organisations believed:

- (i) The CMA provided leadership in relation to NRM;
- (ii) The CMA had an on-going commitment to maintaining its relationship with their organisation;
- (iii) That different organisations involved in NRM in the region shared information; and
- (iv) That their organisation had the capacity to work in partnership with the CMA.

Table 75. Belief statements: NRM leadership and partnerships

Response	Non-Government		Government	
	Count	Percent	Count	Percent
<i>To what extent do you agree with the statement that "Within this region, the CMA provides leadership in relation to NRM"</i>				
Strongly agree (1)	3	27.3	2	20.0
Agree	6	54.5	6	60.0
Tend to agree	2	18.2	2	20.0
Tend to disagree	0	0.0	0	0.0
Disagree	0	0.0	0	0.0
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	10	100.0
Mean score		1.9		2.0
<i>The level of ongoing commitment by the CMA to maintaining its relationship with this organisation has been...</i>				
High (1)	4	36.4	7	70.0
Moderate-high	4	36.4	2	20.0
Moderate	1	9.1	1	10.0
Moderate-low	0	0.0	0	10.0
Low (5)	2	18.2	0	0.0
Total stakeholders	11	100.0	10	100.0
Mean score		2.3		1.4
<i>The different organisations involved in NRM in the region always share information and knowledge</i>				
Strongly agree (1)	1	9.1	1	12.5
Agree	2	18.2	2	25.0
Tend to agree	3	27.3	3	37.5
Tend to disagree	3	27.3	0	0.0
Disagree	2	18.2	2	25.0
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	8	100.0
Mean score		3.3		3.0
<i>What capacity including time, people and other resources does your organisation have to work in partnership with the CMA?</i>				
High (1)	5	45.5	3	33.3
Moderate-high	0	0.0	1	11.1
Moderate	3	27.3	1	11.1
Moderate-low	3	27.3	1	11.1
Low (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	9	100.0
Mean score		2.4		2.3

Source: EBC (2009).

10.8 Landholder engagement by the Western CMA

In relation to landholder engagement, the majority of stakeholder organisations believed the CMA had been effective in engaging with landholders within the region (Table 76).

Table 76. Belief statements: Landholder engagement by the Western CMA

Response	Non-Government		Government	
	Count	Percent	Count	Percent
<i>The CMA has clear and well understood processes for engaging with landholders</i>				
Strongly agree (1)	0	0.0	0	0.0
Agree	9	81.8	3	37.5
Tend to agree	1	9.1	5	62.5
Tend to disagree	0	0.0	0	0.0
Disagree	1	9.1	0	0.0
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	8	100.0
Mean score		2.4		2.6
<i>In the last 12 months, I think the CMA has initiated or supported sufficient activities for the engagement of landholders</i>				
Strongly agree (1)	0	0.0	1	14.3
Agree	10	90.9	4	57.1
Tend to agree	1	9.1	1	14.3
Tend to disagree	0	0.0	0	0.0
Disagree	0	0.0	1	14.3
Strongly Disagree (5)	0	0.0	0	0.0
Total stakeholders	11	100.0	7	100.0
Mean score		2.3		2.4
<i>In the last 12 months I think the level of participation by landholders in these activities has been...</i>				
High (1)	2	20.0	1	20.0
Moderate-high	4	40.0	2	40.0
Moderate	2	20.0	2	40.0
Moderate-low	1	10.0	0	0.0
Low (5)	1	10.0	0	0.0
Total stakeholders	10	100.0	5	100.0
Mean score		2.5		2.2

Source: EBC (2009).

When stakeholder organisations were asked if the partnership between their organisation and the CMA could be improved several non-Government and Government organisations emphasised the need to improve the level of communication and contact amongst organisations (Table 77).

Table 77. "Do you think the partnership between your organisation and the CMA could be improved?"

Response	Count	Percent
Non- Government		
Listen to landholders not bureaucrats	1	25.0
Talk to us – we have never been approached	1	25.0
More regular contact	1	25.0
Need a full time local officer	1	25.0
Total stakeholders	4	100.0
Government		
More communication	2	33.3
Need to increase our staff to work with the CMA	1	16.7
By maintaining the level of communication with us	1	16.7
Could attend more of our meetings (provide information on projects)	1	16.7
Engaging in more projects	1	16.7
Total stakeholders	6	100.0

Source: EBC (2009).

When asked if there were other activities that the CMA could be doing in partnership with their organisation that they were currently not doing, some emphasis was placed particularly amongst non-Government stakeholders on greater involvement of the CMA in the partner organisation (Table 78).

Table 78. “Are there any other activities that the CMA could be doing in partnership with your organisation that they are currently not doing?”

Response	Count	Percent
Non- Government		
Would require legislative changes	1	20.0
Could be more involved with us	1	20.0
More involved in our programs	1	20.0
Planning of future projects	1	20.0
Need WCMA to take a leading role in our projects	1	20.0
Total stakeholders	5	100.0
Government		
Help with funding submissions	1	33.3
Holistic approach to groundcover and landscape change	1	33.3
Property planning	1	33.3
Total stakeholders	3	100.0

Source: EBC (2009).

10.9 Stakeholder capacity

Non-Government stakeholder organisations were asked if they had an additional \$50,000 to build their capacity, what would be the priority activities their organisation would undertake. As is evident in Table 79, nearly all the activities reported were very specific to the objectives and interests of each stakeholder organisation.

Table 79. “If your organisation had an additional \$50,000 to build its own capacity to better address natural resource management issues, what would be some of the priority activities your organisation would undertake?”

Response	Count	Percent
Lobbying	2	18.2
Controlling INS	1	9.1
Develop wetlands	1	9.1
Employ full-time Landcare coordinator	1	9.1
Fencing for rotational grazing	1	9.1
Field days	1	9.1
Identifying weed species to control	1	9.1
Install pipelines	1	9.1
More public campaigns to protect the river	1	9.1
More water points	1	9.1
On ground works	1	9.1
Rejuvenate flora and fauna	1	9.1
Too small a sum	1	9.1
Warrego river mapping	1	9.1
Water metering	1	9.1
Water use efficiency	1	9.1
Weed control	1	9.1
Total stakeholders	11	100.0

Note: This is a multiple response table in which a respondent may be included in multiple rows.

Source: EBC (2009).

APPENDIX A:

Background Information and Instructions Sent to Key Informants in the Development
of the Landholder Questionnaire

WESTERN CMA COMMUNITY TARGET MONITORING: SOCIAL BENCHMARKING SURVEY

INTRODUCTION

The Western CMA is undertaking a benchmarking survey of all landholders within the catchment. The questionnaire will focus on four key themes which will include:

1. *Management Target 1:* Sustainable Agriculture Management practice carried out by 50% of landholders by 2016.
2. *Management Target 12:* There is a continual increase in the land managers' awareness, knowledge, and skills in NRM and adoption of practices which improve natural resource outcomes.
3. Awareness of and attitude towards the Western CMA.
4. Landholder characteristics

The survey will be a telephone survey of all landholders in the Western CMA and will be undertaken in February and March 2009.

OBJECTIVE OF THE INTERVIEWS

Interviews are being undertaken with staff and Board Members from the Western CMA and other individuals who have been involved in the development of BMPs.

The objective of the interviews is to identify issues and questions to be included in the telephone survey of landholders, which will allow the CMA to monitor the achievement of management targets (see Section 4 below) across time.

After the first round of interviews a draft questionnaire will be developed. The draft questionnaire will be circulated to those with an interest in assisting in the development of the questionnaire. It is anticipated that there may be several draft versions of the questionnaire developed for review prior to the final draft questionnaire being developed.

SURVEY AND QUESTIONNAIRE CONSTRAINTS

When identifying specific issues and questions for inclusion in the telephone survey you should remember the following three constraints:

1. This is a telephone survey and the questions must be sufficiently simple so as to be completed through verbal communication over the phone.
2. The questionnaire must be able to be completed within 20 minutes. As such we need to identify the priority issues that need to be monitored across time and not all the issues we could monitor.
3. We should try and develop questions that are primarily closed questions. For example, with closed questions, people would respond with a Yes/No; or use a response scale from strongly agree to strongly disagree.

QUESTIONNAIRE DEVELOPMENT

The questionnaire should include questions which focus on the four key themes as shown below. The first two themes address management targets 1 and 12 from the Western CMA CAP. Theme 3 requires questions to be developed which address landholder awareness and attitudes towards the Western CMA. The fourth theme would include questions which describe important characteristics of landholders in the CMA, including for example how long they have lived on their property, how large the property is and the type of production they have.

1. Management Target 1: Sustainable Agriculture Management practice carried out by 50% of landholders by 2016.

Given the need to focus on priority issues within the 20 minute interview, one suggestion has been that questions related to BMPs should focus on:

- a) Ground cover and soil management (pastures, stubble management, erosion, compaction)
 - b) Total grazing pressure (stock, pest animals -goats, rabbits etc)
 - c) Cultivation issues (controlled access to watering etc)
 - d) Invasive scrub (control through mechanical, chemical, fire, biological methods)
- Are these the priority areas that should be addressed?
 - If you were to ask a landholder about the adoption of BMPs within each of the four areas what specific questions would you ask?
 - Would the questions you might ask be equally appropriate for all landholders? For instance, the adoption of some practices may only be appropriate under certain conditions or in certain contexts (i.e., for specific types of production). Do we need to ask additional questions to better understand the context for each landholder? If so what contextual questions do we need to ask?

2. Management Target 12: There is a continual increase in the land managers' awareness, knowledge, and skills in NRM and adoption of practices which improve natural resource outcomes.

Measuring landholder awareness, knowledge and skills is not easy. There are two ways this can be done.

- a) The first way is to rely on self reported knowledge. For example we might ask....

If you were to judge the amount of knowledge you have about how to best manage invasive native scrub, on a scale from one (1) to ten (10), with one (1) no knowledge and ten (10) being all the knowledge anyone could have, what score would you give yourself?

Similar questions could be developed for other areas such as pasture management, managing total grazing pressure etc.

- b) The second way of assessing knowledge is to ask some objective questions as one would do in a written test. We would then add the correct answers so that we had a score representing their knowledge of specific BMPs. For example,
 - a. Identify two species of invasive native scrub?

- b. Identify three methods of controlling invasive native scrub?
 - c. What is the best time after germination to control woody weeds with fire?
- What do you think might be the best way to assess knowledge?
 - What might be some of the knowledge/skill questions you might ask to address this management target?

3. Awareness of and attitude towards the Western CMA.

Questions that we may use include:

- a) Have you heard of the Western CMA? (Yes/No)
 - b) (If Yes to a) Have you had any contact or communication with the CMA? (Yes/No)
 - c) (If Yes to b) What was the contact or communication about?
 - d) (If Yes to a) What do you think is main activity undertaken by the Western CMA?
 - e) (If Yes to a) A series of statements to which landholders respond using the scale: strongly agree, agree, tend to agree, tend to disagree, disagree, or strongly disagree.
 - a. The CMA is doing a good job in the management of natural resources in this region
 - b. The CMA is primarily responsible for controlling vegetation clearing
 - c. The CMA is a Government department
 - d. I would say I know about the CMA and what it does
 - e. The CMA only works with farmers
 - f. I am generally supportive of the CMA and what it does
 - g. The CMA is primarily responsible for water management
 - h. I think the CMA is implementing best management practices in my local area
- Are there other questions that need to be included?
 - Are the questions shown above useful?

4. Landholder characteristics

- a) How many years have you lived on your current property? (years)
 - b) In what year were you born?
 - c) How large is your property (acres/hectares)
 - d) Do they have written property management plan (Yes/No)
 - e) Have they undertaken any agriculture related training courses in the last two years?
 - f) What are the main things you produce on your property?
(Sheep- wool; Sheep – meat; Beef; Goats; Cotton; Cropping)
- Are there other questions that need to be included?
 - Are the questions shown above useful?

CONTACT

The interviews will be undertaken by Ms Arwen Rickert.

Arwen's contact details are:

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APPENDIX B:

Landholder Questionnaire

WESTERN CATCHMENT MANAGEMENT AUTHORITY NATURAL RESOURCE MANAGEMENT (NRM) BENCHMARKING SURVEY

LANDHOLDER INTERVIEW SCHEDULE

Information for Interviewer

The objective of this project is to:

1. Assess the current level of community awareness, knowledge and skills in natural resource management;
2. Assess current land use and management practices in the region and specifically the adoption of best management practices; and
3. Assess the level of awareness and attitudes towards the Western CMA.

The project is funded by the Western Catchment Management Authority (the CMA) and involves telephone interviews with all landholders in the region and a random sample of 100 urban residents. The telephone survey should last no more than 30 minutes and you should interview only those persons you reasonably judge to be 18 years of age and over.

If additional information is requested about the project you can refer them to a website (www.ebc.net.au/wcma) or indicate the project manager will contact them..

Hello, my name is..... I am from Environment and Behaviour Consultants and we have been contracted by the Western Catchment Management Authority or CMA to undertake a survey of all landholders in the region. You may have read about the survey in information sent to you in the mail.

1. Do you live on, own or look after a rural property in the Western district?

☐ Yes

☐ No (**Conclude interview**)

The survey is being undertaken so the CMA can better support landholders in addressing land management issues. The survey will take about 30 minutes and all the information you provide is confidential.

We are offering you a \$25 IGA grocery voucher if you complete the full survey as recognition for the time you've taken to participate in this study. Or if you wish we can send the money as a donation to the Royal Flying Doctor Service. If you would like the IGA voucher we require your address for the voucher to be sent to you. Your address will be passed to the CMA so they can send you the voucher and will not be stored with the information you provide from the survey. Would you like to undertake the survey?

2. Are you the manager or involved in the management of the property?

☐ Yes

☐ No...is it possible to speak to someone who is involved in the management of the property?
(*Call back may be required. If No then conclude interview*)

3. Do you have more than one property in the district?

☐ Yes (**If Yes** then say "when answering the questions could you answer for all properties combined")

☐ No

4. Had you heard about the Western Catchment Management Authority or CMA prior to this phone call and prior to receiving information in the mail about this survey?

☐ Yes

☐ No (Go to Question 14)

5. What do you think is the main activity undertaken by the CMA?

6. Have you had any contact or communication with the CMA in the last 12 months?

☐ No

☐ Yes...what was it through...(read list) (*multiple responses*)

☐ ...attending a course or field day organised by the CMA

☐ ...attended a course or field day that another organisation was running

☐ ...a CMA staff member visiting my property

☐ ...developing a property vegetation plan

☐ ...developing a property management plan

☐ ...applying for funding from the CMA

☐ ...implementing a project on my property

☐ ...visiting a CMA office

☐ ...contacting the CMA office for general advice

☐ ...the CMA has attended a meeting of a group I'm involved with

Other _____

I am going to read out some statements about the Western Catchment Management Authority. After I read out each statement could you tell me whether you strongly agree, agree, tend to agree, tend to disagree, disagree, or strongly disagree with each statement? (*Interviewer: If they don't know then leave blank*)

7. The CMA is doing a good job supporting land managers to manage natural resources in this region	SA	A	TA	TD	D	SD
8. The CMA is responsible for controlling vegetation clearing	SA	A	TA	TD	D	SD
9. The CMA is a Government department	SA	A	TA	TD	D	SD
10. I would say I know about the CMA and what it does	SA	A	TA	TD	D	SD
11. The CMA only works with landholders	SA	A	TA	TD	D	SD
12. I am generally supportive of the CMA and what it does	SA	A	TA	TD	D	SD
13. The CMA is responsible for water management	SA	A	TA	TD	D	SD

14. The CMA is responsible for supporting the management of natural resources in the region. If the CMA wanted to communicate information to people in your area, what do you think would be the best way for the CMA to do this? (*read list*) (*multiple responses*)

- | | |
|--|--|
| <input type="checkbox"/> Visit people at their homes or properties | <input type="checkbox"/> Have a field day |
| <input type="checkbox"/> Put information in the local newspaper | <input type="checkbox"/> Hold community meetings |
| <input type="checkbox"/> Put information on the radio | <input type="checkbox"/> Post information through the mail |
| <input type="checkbox"/> Place information on the CMA website | <input type="checkbox"/> Email information |
| <input type="checkbox"/> Place TV advertisements | <input type="checkbox"/> Letterbox drop |

15. If the CMA was holding a one day training course on property management would you be willing to attend?

- ☐ Yes
- ☐ Maybe → ...How far would you be willing to travel to attend? _____ Kilometres
- ☐ No...Why would you not? _____
- ☐ Too busy during the day
- ☐ Too far to travel
- ☐ No need for any training or courses
- ☐ Have been to similar courses before and they are of limited value
- ☐ Personal costs (e.g. accommodation etc)
- Other reasons _____

CROPPING

16. How large is your property?

_____Acres or _____Hectares

17. Did you undertake any cropping activities in the last two years on the property?

- ☐ Yes
- ☐ No (Go to Question 21)

18. Approximately what area of your property was under cropping?

_____Acres or _____Hectares

19. How much of your cropping country did you cultivate using...(leave blank if not used)
- ...no tillage, using one pass, direct drill with disks or knife points _____Acres or _____Hectares
- ...minimum tillage using one cultivation plus sowing _____Acres or _____Hectares
- ...conventional tillage using 2 or more cultivations prior to sowing _____Acres or _____Hectares
- ...Did you use any other cultivation methods
- (1) _____Acres or _____Hectares
- (2) _____Acres or _____Hectares
20. Have you undertaken any of the following cropping practices in the last two years? (*read list*) (*multiple responses*)
- | | |
|---|--|
| <input type="checkbox"/> Stubble retention | <input type="checkbox"/> Crop rotation |
| <input type="checkbox"/> Controlled traffic | <input type="checkbox"/> Soil testing |
| <input type="checkbox"/> Precision farming | <input type="checkbox"/> Selective grazing |
21. Have you used your property to run stock in the last two years?
- ☐ Yes
- ☐ No (Go to Question 33)
22. What area of your property is grazed?
- _____ Acres or _____ Hectares
23. Do you adjust stocking rates to manage your pastures?
- ☐ Yes ☐ No
24. How to you manage your pastures in times of drought? Do you... (*read list*) (*multiple responses*)
- | | |
|--|---|
| <input type="checkbox"/> ...sell your stock outright | <input type="checkbox"/> ...move stock off the property |
| <input type="checkbox"/> ...reduce numbers to a core herd | <input type="checkbox"/> ...use a temporary drought feedlot |
| <input type="checkbox"/> ...move stock elsewhere on the property | <input type="checkbox"/> ...sacrifice key paddocks |
- Do something else (*describe*) _____
25. (a) Which of the following native and feral animals that you have on your property? (*read list*) (*multiple responses*).
 (b) Which of these do you try and control?
- | | |
|--------------------------------------|--------------------------------------|
| (a) | (b) |
| <input type="checkbox"/> Kangaroos | <input type="checkbox"/> Foxes |
| <input type="checkbox"/> Rabbits | <input type="checkbox"/> Wild dogs |
| <input type="checkbox"/> Feral Goats | <input type="checkbox"/> Wild horses |
| <input type="checkbox"/> Pigs | <input type="checkbox"/> Donkeys |
| <input type="checkbox"/> Camels | |
- Other animals (*describe*) _____
26. In managing your total grazing pressure do you try to restrict the grazing of feral and native animals?
- ☐ Yes ☐ No

27. What proportion of your property is fenced for the purpose of excluding feral or native grazing animals?
 _____Percent
28. In managing your stocking rates do you regularly move your stock between different paddocks or do you tend to keep them in the same paddocks?
☐ Regularly move them
☐ Don't move them (e.g. set stocking) (Go to Question 31)
29. In regularly moving them do you use any of the following methods? (*read list*) (*multiple responses*)
☐ Rotational grazing or cell grazing based on length of time in paddock
☐ Rotational grazing based on pasture availability
 Other methods (please describe) _____
30. When making decisions about stock movement do you primarily consider stock health or pasture health?
☐ Stock health ☐ Pasture health
31. Do you manage or control stock access to watering points as part of your management of domestic or feral stock, through for example, fencing off watering points or turning tanks on or off?
☐ Yes
☐ No (Go to Question 33)
32. What are your main reasons for controlling stock access to watering points? (*free recall*) (*multiple responses*)
☐ Preserve creek/river banks ☐ Exclude feral or native animals
☐ Prevent erosion ☐ Control domestic stock movements
☐ Trap feral goats ☐ Preserving available pasture
☐ Stock health (e.g., prevent stock deaths in waterholes)
 Other reasons (please describe) _____
33. Ground cover can include any live or dead vegetation, rock or other protective cover that has the capacity to break or stop raindrops making contact with the soil.
 What percentage of ground cover do you try to maintain in the majority of your paddocks throughout the year?
 _____Percent
☐ Whatever I can
☐ Don't know
34. What key species or types of perennial pastures do you have?
☐ Don't know
 1. _____
 2. _____
 3. _____
35. Do you have a problem with invasive native scrub or woody weeds on your property?
☐ Yes
☐ No (Go to Question 42)

36. Over what percentage of your property is invasive native scrub or woody weeds a problem?

_____Percent

37. What do you think are the main causes of invasive native scrub and woody weeds on your property?

38. In the last two years have you attempted to control invasive native scrub or woody weeds on your property?

☐ Yes

☐ No (Go to Question 42)

39. Which of the following methods do you use to control invasive native scrub or woody weeds?

(read list) (multiple responses)

☐ Fire

☐ Grazing goats

☐ Chemicals

☐ Controlling stocking rates and total amount of grazing

☐ Cultivation such as cropping

☐ Blade ploughing, grubbing, chaining or other mechanical methods (i.e., crocodiling)

Do you use any other methods?

(1) _____

(2) _____

40. Do you control invasive native scrub or woody weeds with one treatment or multiple follow up treatments?

☐ One treatment

Why do you use only one treatment? (then go to Question 42)

☐ Multiple follow up treatments

41. Which of the following methods do you use when you undertake follow up treatments of invasive native scrub or woody weeds? (read list) (multiple responses)

☐ Fire

☐ Grazing goats

☐ Chemicals

☐ Stocking rates and total amount of grazing

☐ Cultivation such as cropping

☐ Blade ploughing, grubbing, chaining or other mechanical methods (i.e., crocodiling)

Do you use other methods

(1) _____

(2) _____

42. Do you have a problem with exotic pest plant species such as Parkinsonia, Mesquite or Prickly Acacia on your property?

☐ Yes

☐ No (Go to Question 45)

43. Over what percentage of your property are exotic pest plant species a problem?

_____Percent

44. What do you think are the main causes of exotic pest plant species on your property?

KNOWLEDGE AND SKILLS IN NRM AND THE ADOPTION OF BEST MANAGEMENT PRACTICES

45. Have you undertaken any agriculture, grazing or land management related courses in the last two years?

☐ Yes

☐ No (Go to Question 48)

46. What courses have you undertaken? (*free recall*) (*multiple responses*)

☐ Grazing for Profit

☐ Pasture to Pocket

☐ Pro-Graze

☐ Whole Farm Planning

☐ Holistic Resource Management

☐ Tactical Grazing Management

☐ Western CMA Sustainable Grazing Forum (Broken Hill, 2008)

Other 1 _____

Other 2 _____

47. Did you change any of your land management practices as a result of what you learnt from the course?

☐ Yes

☐ No...why not?

48. Do you have a documented or written property management plan or map?

☐ Yes

☐ No (Go to Question 52)

49. How many years ago was the property management plan developed?

_____ years (*if less than 1 year record 1 year*)

50. How often do you refer to your property management plan when making decisions? Would it be...

☐ Always

☐ Often

☐ Sometimes

☐ Occasionally

☐ Never

51. Which of the following is included in your documented property management plan? Does it include a description or map of ... (*read list*) (*multiple responses*)

☐ ...an air photo or satellite imagery mapping

☐ ...pest plants or areas of invasive native scrub

☐ ...soil or land types

☐ ...conservation or sanctuary areas

☐ ...vegetation types

☐ ...stock or crop management

☐ ...natural or man made watering points

☐ ...fencing requirements

☐ ...future plans or developments

LANDHOLDER CHARACTERISTICS

52. What is your property primarily used for? (*free recall*) (*multiple responses*)

- | | |
|---|--|
| <input type="checkbox"/> Dryland cropping | <input type="checkbox"/> Commercial goat breeding |
| <input type="checkbox"/> Irrigation cropping | <input type="checkbox"/> Orchard crops (Stone and/or fruit orchards) |
| <input type="checkbox"/> Cattle | <input type="checkbox"/> Tourism or farm stays |
| <input type="checkbox"/> Sheep | <input type="checkbox"/> Conservation land use |
| <input type="checkbox"/> Harvesting feral goats | <input type="checkbox"/> Indigenous land use |
| <input type="checkbox"/> Lifestyle or hobby farming | |

Other uses (please specify) _____

53. Has the property's primary use changed significantly from five years ago?

- ☐ Yes ☐ No

54. Do you have adequate access to the internet on your property?

- ☐ Yes ☐ No

55. How many years have you lived on your current property?

_____ years (*if less than 1 year record 1 year*)

56. How many generations of your family have been on the property? (*circle one*)

1 2 3 4

57. Is it the intention that the property will be passed onto the next generation in your family?

- ☐ Yes ☐ No

58. How many years have you managed land in the Western Division?

_____ years (*if less than 1 year record 1 year*)

59. What is the highest level of education that you have? Is it...(*Read list*) (*One response only*)

- | | |
|--|---|
| <input type="checkbox"/> Primary school | <input type="checkbox"/> A TAFE college |
| <input type="checkbox"/> Secondary school | <input type="checkbox"/> A university |
| <input type="checkbox"/> An agricultural college | |

Other (please specify) _____

60. What would be the nearest town or location to your property?

61. How many kilometres by road are you from this town or location?

_____ Km

62. In what year were you born? _____

63. *Interviewer: Record Male or Female*

- ☐ Male ☐ Female

64. Would you like the \$25 IGA grocery voucher to be sent to you or would you like the money sent to the Royal Flying Doctor service as a donation?

- ☐ Send me \$25 IGA Voucher
- ☐ Send the money to the Royal Flying Doctor Service (Go to Question 66)
- ☐ Neither (Go to Question 66)

65. What address should the IGA voucher be sent to?

66. Would you like the CMA to retain your address on their mailing list?
Your responses to this survey will remain confidential – only your mailing address will be provided for the mailing list.

- ☐ Yes ☐ No

Appendix C

Urban Residents Questionnaire

**WESTERN CATCHMENT MANAGEMENT AUTHORITY NATURAL RESOURCE
MANAGEMENT (NRM) BENCHMARKING SURVEY
URBAN HOUSEHOLD INTERVIEW SCHEDULE**

Information for Interviewer

The objective of this project is to:

1. Assess the current level of community awareness, knowledge and skills in natural resource management;
2. Assess current land use and management practices in the region and specifically the adoption of best management practices; and
3. Assess the level of awareness and attitudes towards the Western CMA.

While the main focus for the project is a telephone survey of all landholders within the Western CMA region, a random sample of 100 urban residents is also being surveyed. Twenty-five random telephone numbers have been selected from four town locations which include (i) Wilcannia, (ii) Cobar, (iii) Bourke and (iv) Brewarrina.

The project is funded by the Western Catchment Management Authority (the CMA).

The telephone survey should last no more than 10 minutes and you should interview only those persons you reasonably judge to be 18 years of age and over.

If additional information is requested about the project you can refer them to a website (www.ebc.net.au/wcma) or indicate the project manager will contact them..

Interview Process

Hello, my name is..... I am from Environment and Behaviour Consultants and we have been contracted by the Western Catchment Management Authority or CMA to undertake a survey of residents in the region. You may have read about the survey in information sent to you in the mail.

The survey is being undertaken so the CMA can better support landholders in addressing land management issues.

The survey will take about 10 minutes and all the information you provide is confidential.

We are offering you a **\$10 IGA** grocery voucher if you complete the full survey as recognition for the time you've taken to participate in this study. Or if you wish we can send the money as a donation to the Royal Flying Doctor Service. If you would like the IGA voucher we require your address for the voucher to be sent to you. Your address will be passed to the CMA so they can send you the voucher and will not be stored with the information you provide from the survey. Would you like to undertake the survey?

1. Do you live on, own or look after a farm or rural property?

☐ Yes (**Don't use this questionnaire...but use the landholder questionnaire with them. Note change to \$25 voucher if completing landholder questionnaire**)

☐ No

2. Had you heard about the Western Catchment Management Authority or CMA prior to this phone call and prior to receiving information in the mail about this survey?

☐ Yes

☐ No (Go to Question 4)

3. What do you think is the main activity undertaken by the CMA?

4. The CMA is responsible for supporting the management of natural resources in the region. How do you think the CMA could get involved in environmental issues in your area?

☐ Don't know

1. _____

2. _____

3. _____

5. What do you think are the most important environmental issues in your local area around your town?

☐ Don't know

☐ None

1. _____

2. _____

3. _____

6. If you were to judge the environmental health of the land around where you live on a scale from one (1) to ten (10), with one (1) being very unhealthy and ten (10) being very healthy, what score would you give it?

Score _____

☐ Don't know

7. On a scale from one (1) to ten (10), how would you have judged the environmental health of your local area 10 years ago?

Score _____

☐ Don't know

8. *(Interviewer: Only ask this question if the scores for questions 6 and 7 are different. Depending on the difference in scores between 6 and 7 ask...)*

What has changed in your local environment over the past 10 years?

9. In the last two years have you participated in any activities to address environmental issues in your local area?

☐ Yes ☐ No

10. Would you like the \$10 IGA grocery voucher to be sent to you or would you like the money sent to the Royal Flying Doctor service as a donation?

☐ Send me \$10 IGA Voucher

☐ Send the money to the Royal Flying Doctor Service (Go to Question 12)

☐ Neither (Go to Question 12)

11. What address should it be sent to?

12. Would you like the CMA to retain your address on their mailing list?

Your responses to this survey will remain confidential – only your mailing address will be provided for the mailing list.

☐ Yes ☐ No

Appendix D

Stakeholder Organisations Questionnaire

WESTERN CATCHMENT MANAGEMENT AUTHORITY NATURAL RESOURCE
MANAGEMENT (NRM) BENCHMARKING SURVEY
STAKEHOLDER ORGANISATIONS INTERVIEW SCHEDULE

Information for Interviewer

The objective of this project is to:

1. Assess the current level of community awareness, knowledge and skills in natural resource management;
2. Assess current land use and management practices in the region and specifically the adoption of best management practices; and
3. Assess the level of awareness and attitudes towards the Western CMA.

While the main focus for the project is a telephone survey of all landholders within the Western CMA region, 40 representatives from key stakeholder organisations are also being surveyed. The telephone survey should last no more than 15 minutes.

This questionnaire is in two parts. Part A is for non-Government organisations, while Part B is for Government organisations. You should use the term 'organisation' or 'group' as appropriate.

If additional information is requested about the project you can refer them to a website (www.ebc.net.au/wcma) or indicate the project manager will contact them.

Interview Process

Hello, my name is..... You would have received a letter or email from the Western CMA about a benchmarking survey being undertaken of key stakeholder groups and organisations. The survey takes about 15 minutes to complete and includes questions which focus on the relationship between your organisation and the CMA. All information is confidential in so far as the information will be aggregated and no individual groups or organisations identified.

As we have had to design the interview questions for all stakeholder organisations in the region, some questions you may not consider relevant to your organisation. In this case do not answer these questions.

Would you have some time for me to ask you some questions?

PART A: NON-GOVERNMENT ORGANISATIONS

1. In the last 12 months has your organisation had any contact or communication with the Western CMA?

☐ No

☐ Yes...what type of contact or communication has occurred.... *(May tick more than one)*

☐ Attended a meeting or event organised by the CMA

☐ Gained advice or assistance from CMA staff

☐ Applied for funding or incentives through the CMA

☐ Obtained funding or incentives through the CMA

☐ Received written information from the CMA

Describe any other type of contact _____

2. Think about all the people in your organisation. If you were to give an average score from one (1) to ten (10) in relation to their knowledge of the Western CMA, with one (1) being no knowledge at all and ten (10) being all the knowledge anyone could have, what score would you give on average to the people in your organisation?

Score ____

3. If your organisation had an additional \$50,000 to build its own capacity to better address natural resource management issues, what would be some of the priority activities your organisation would undertake?

1. _____

2. _____

3. _____

4. In the last 12 months has the CMA supported your organisation in providing information, advice or funding?

☐ Yes

☐ No (Go to Question 8)

5. In relation to the **type of support** needed by your organisation, would you say the support provided by the CMA has been...

☐ Very good

☐ Good

☐ Average

☐ Fair

☐ Poor

6. In relation to the **level of support** needed by your organisation, would you say the support provided by CMA has been...

☐ Very good

☐ Good

☐ Average

☐ Fair

☐ Poor

7. If you think of the support provided by the CMA to your organisation, what has been the most valuable? Does it include... (*May tick more than one*)

- ☐ ...Access to technical support and advice
- ☐ ...Assistance in obtaining funding
- ☐ ...Help in developing partnerships with other groups and organisations
- ☐ ...Project or strategic planning assistance
- ☐ ...Training opportunities

....Is there other support provided by the CMA to your organisation?

1. _____
2. _____

or

- ☐ None of the support has been particularly valued

8. In the next 12 months do you think you will need support or additional support from the CMA and its staff?

- ☐ Yes
- ☐ No (Go to Question 10)

9. What type of support would you like from the CMA? Would it include...
(*Read out each one identified in bold and tick if appropriate*)

- ☐ ...**Access to technical support and advice**

Describe _____

- ☐ ...**Assistance in obtaining funding**

Describe _____

- ☐ ...**Help in developing partnerships with other groups and organisations**

Describe _____

- ☐ ...**Project or strategic planning assistance**

Describe _____

- ☐ ...**Training opportunities**

Describe _____

☐ Are there other areas of additional support required?

1. _____
2. _____
3. _____

10. I am going to read out a number of different statements. Please tell me if you strongly agree, agree, tend to agree, tend to disagree, disagree or strongly disagree with each statement. In the following statements the term 'community' means residents, landholders, organisations and groups.

I think the CMA takes the views of this organisation into account in its decision making.

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

11. This organisation has a high level of trust in its relationship with the CMA

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

12. There has been an effective relationship between the CMA and this organisation

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

13. If you were asked this last question two years ago how would you have answered it?

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

14. When the CMA makes important NRM planning and investment decisions is it adequately informed by different stakeholder and interest groups?

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

15. To what extent do you agree with the statement that "Within this region, the CMA provides leadership in relation to NRM"

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

16. The different organisations involved in NRM in the region always share information and knowledge

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

17. The CMA has clear and well understood processes for engaging with landholders

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

18. I think the CMA's approach in engaging with landholders tends to be more opportunistic than strategic

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

19. In the last 12 months, I think the CMA has initiated or supported sufficient activities for the engagement of the landholders

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

20. In the last 12 months I think the level of participation by landholders in these activities has been...
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Low-Moderate ☐ Low
21. In responding to the following statements, please tell me if your response is high, moderate to high; moderate; moderate to low or low.
- I would say this organisation's understanding of the role of the CMA is...
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
22. What capacity including time, people and other resources does your organisation have to work in partnership with the CMA?
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
23. Would you say this organisation's knowledge and understanding of regional NRM processes and programs undertaken by the CMA, including planning, incentives and on ground actions, is...
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
24. The level of ongoing commitment by the CMA to maintaining its relationship with this organisation has been...
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
25. The level of ongoing commitment by the CMA to maintaining its relationship with this organisation has been...
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
26. The willingness of the CMA to be inclusive
- ☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
27. Think about the CMAs progress towards and achievement of Natural Resource Management targets as identified in the CMA Catchment Action Plan. On a scale from one (1) to ten (10), with one (1) being very unsuccessful and ten (10) being very successful, what score would you give the CMA in terms of the progress being made towards the achievement of these targets?
- Score ____
- ☐ Don't know
28. Do you have any comments you would like to make on the level of transparency that exists in the CMA's decision making process?
- ☐ No
-
-
29. Do you have any comments you would like to make on the willingness of the CMA to be inclusive of other organisations in the management of natural resources in the region?
- ☐ No
-
-

30. Do you think the partnership between your organisation and the CMA could be improved?

☐ No

☐ Yes...how could it be improved?

31. Are there any other activities that the CMA could be doing in partnership with your organisation that they are currently not doing?

☐ No

☐ Yes...what are they?

PART B: GOVERNMENT ORGANISATIONS

1. In the last 12 months has your organisation had any contact or communication with the Western CMA?

☐ No

☐ Yes...what type of contact or communication has occurred.... *(May tick more than one)*

☐ Attended a meeting or event with the CMA

☐ Gained advice or assistance from CMA staff

☐ Received written information or reports from the CMA

☐ Provided funding to the CMA

☐ Provided advice or assistance to the CMA

☐ Undertook a CMA funded project

Describe any other type of contact _____

2. Think about all the people in your organisation. If you were to give an average score from one (1) to ten (10) in relation to their knowledge of the Western CMA, with one (1) being no knowledge at all and ten (10) being all the knowledge anyone could have, what score would you give on average to the people in your organisation?

Score ____

3. I am going to read out a number of different statements. Please tell me if you strongly agree, agree, tend to agree, tend to disagree, disagree or strongly disagree with each one. In all following statements the term 'community' means residents, landholders, organisations and groups.

This organisation has a high level of trust in its relationship with the CMA

☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree

4. There has been an effective relationship between the CMA and this organisation
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
5. If you were asked this last question two years ago how would you have answered it?
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
6. When the CMA makes important NRM planning and investment decisions is it adequately informed by different stakeholder and interest groups?
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
7. To what extent do you agree with the statement that “Within the region, the CMA provides leadership in relation to NRM”
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
8. The different organisations involved in NRM in the region always share information and knowledge
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
9. The CMA has clear and well understood processes for engaging with the landholders
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
10. I think the CMA’s approach in engaging with landholders tends to be more opportunistic than strategic
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
11. In the last 12 months, I think the CMA has initiated or supported sufficient activities for the engagement of landholders
☐ Strongly agree ☐ Agree ☐ Tend to agree ☐ Tend to disagree ☐ Disagree ☐ Strongly Disagree
12. In the last 12 months I think the level of participation by landholders in these activities has been...
☐ High ☐ Moderate-High ☐ Moderate ☐ Low-Moderate ☐ Low
13. I would say this organisation’s understanding of the role of the CMA is...
☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
14. What capacity including time, people and other resources does your organisation have to work in partnership with the CMA?
☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
15. Would you say this organisation’s knowledge and understanding of regional NRM processes and programs undertaken by the CMA, including planning, incentives and on ground actions, is...
☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low
16. The level of ongoing commitment by the CMA to maintaining its relationship with this organisation has been...
☐ High ☐ Moderate-High ☐ Moderate ☐ Moderate-Low ☐ Low

17. Think about the CMAs progress towards and achievement of Natural Resource Management targets as identified in the CMA Catchment Action Plan. On a scale from one (1) to ten (10), with one (1) being very unsuccessful and ten (10) being very successful, what score would you give the CMA in terms of the progress being made towards the achievement of these targets?

Score ____

☐ Don't know

18. Do you have any comments you would like to make on the level of transparency that exists in the CMA's decision making process?

☐ No

19. Do you have any comments you would like to make on the willingness of the CMA to be inclusive of other organisations in the management of natural resources in the region?

☐ No

20. Do you think the partnership between your organisation and the CMA could be improved?

☐ No

☐ Yes...how could it be improved?

21. Are there any other activities that the CMA could be doing in partnership with your organisation that they are currently not doing?

☐ No

☐ Yes...what are they?
