

## Chapter 3

### **Land and Water Management in the Herbert River Catchment: A Survey of Rural and Urban Residents**

#### **Summary Report to the Herbert River Catchment Coordinating Committee**

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This study forms the community assessment component of CSIRO-led research evaluating the implementation of Integrated Catchment Management (ICM) in the Herbert River Catchment. The study is supported by the Land and Water Resources Research and Development Corporation (LWRRDC).

## **THE STUDY**

This study examined landholders' behaviours and attitudes towards land and water management in the Herbert River Catchment. The aim was to provide an understanding of the sorts of issues that might affect the performance of Integrated Catchment Management (ICM) in the Herbert, and how these might vary according to where people live and what their interests are.

The basis of the study was a community survey, and this was designed as a questionnaire to be filled out by those agreeing to take part (see Appendix 1). Telephone calls were used to inform people about the study, and those willing to be involved were then mailed the survey.

The questionnaire contained items including landholders':

- level of importance, perceived impacts/effects, awareness and attitudes and attitudes towards various land and water management issues;
- perceived ability to control land and water management issues;
- tractability or "manageability" of potential issues;
- intentions to participate in relevant activities;
- awareness of government strategies;
- attitudes towards government's performance;
- use of information sources;
- group involvement.

The study area included the whole catchment. A range of landholders were contacted, including those in the upper and lower catchment; in rural and urban areas; and with different occupations including cane farming, grazing and mining.

In all, 800 telephone calls were made and 718 people agreed to take part. The number of returned and completed questionnaires was 477, providing an overall return rate of 66%.

A breakdown of the number of questionnaires returned and response rates appears in the following table.

| Catchment    | Type of Holding | Number Returned | Response Rate (%) | Towns surveyed   | Number Returned                                  | Response Rate (%)  |  |  |  |
|--------------|-----------------|-----------------|-------------------|--|--|--|--|--|--|
| UPPER        | RURAL           | 59              | 64.1              | Herberton<br>Mt Garnet<br>Ravenshoe<br><br>Allingham<br>Ingham<br>Halifax<br>Lucinda<br>Taylors<br>Beach | 38<br>18<br>30<br><br>28<br>45<br>17<br>26<br>24 | 76.0<br>54.5<br>66.7<br><br>60.1<br>61.6<br>54.8<br>66.7<br>88.9 |  |  |  |
|              | URBAN           | 86              | 67.2              |  |  |  |  |  |  |
| LOWER        | RURAL           | 191             | 67.7              |  |  |  |  |  |  |
|              | URBAN           | 141             | 65.3              |  |  |  |  |  |  |
| <b>TOTAL</b> |                 | <b>477</b>      | <b>66.4</b>       |  |  |  |  |  |  |

## RESULTS

Some of the main conclusions of the research are discussed below. Most results are based on comparisons among four samples: *upper rural*, *lower rural*, *upper urban* and *lower urban*. When appropriate, these categories were also combined into more general *upper* and *lower*, and *rural* and *urban* samples.

### Issue Importance

For the whole sample, land degradation, water quantity problems, water quality problems and nature conservation issues were generally seen as highly important. The last two issues produced the highest and lowest ratings (average or mean scores) respectively. The lower urban sample was likely to place higher ratings of importance for these two issues.

Water quantity problems were largely viewed in terms of the lack – rather than abundance – of water and, as such, appeared to be less important in the lower catchment. Based on current views, one difference between the two catchment areas might be that one does not have enough, and the other has too much water.

Results also showed that ratings of importance tended to be less for others than those felt personally. This occurred largely due to lower importance ratings being provided by the rural samples. This makes sense in that the perception of “others” in the Herbert may include urban residents who may be less affected by problems such as land degradation.

It was interesting that where lower importance ratings (for others) were also provided by the urban sample, this occurred when issues were more likely to be considered personally important (namely water quality and nature conservation issues). Also, for water quality problems, the knowledge that such problems were isolated to certain areas (or less severe in other areas) of the catchment may have helped to lower importance ratings.

## **Impacts**

In terms of the effects of various issues on people personally, higher taxes and loss of confidence in the ability of government to manage natural resources were rated highly. Other impacts rated moderate to high included higher production costs, lower fish numbers and loss of environmental uses/benefits. For rural producers in the lower catchment, reduced farm productivity was a high impact.

High impacts on others included higher taxes, higher production costs, loss of confidence in government, poor drinking water quality and loss of farm productivity.

Compared with impacts felt personally, impacts on others tended to be significantly higher. Also, compared with urban residents, the ratings from people in the two rural samples, and particularly the lower rural sample, were less liable to change (when comparing self with others). Therefore, the higher ratings for others generally came from people in the urban samples, who were less likely to be personally affected by issues including higher production costs, loss of independence to make business decisions, and higher taxes.

As discussed in the full report, people in the lower urban sample appeared more “urban” than the upper urban sample in their views about certain issues. From this, it was suggested that the two upper catchment samples may be more like-minded than those in the lower catchment.

As examples, this was the case for the impacts of loss of: access to recreation, environmental uses or benefits, and scenery. As the lower urban sample was most likely to consider these impacts as high (and most likely to agree with other statements, including the need to change laws to increase landholders’ responsibility for their actions), more “urban” may also stand for more “green”. (Or – at least at this time – more concerned with such issues). This particularly seemed the case for those living in Taylors Beach, whereas the views of those living in Ingham were not as pronounced.

Interestingly, those in the lower urban sample were also generally less likely to become personally involved in land and water management activities (see below).

## **Tractability**

For the issue of tractability (or manageability), managing land and water was thought to be made most difficult by the catchment’s large areas, the fact that solutions are not easy, the expense required to put solutions in place, low trust of government programs, the difficulty of moving around the catchment, the wide variety of existing opinions, and insufficient understanding of problems.

Certainly from the point of view of perceived credibility, the low level of trust of government programs appears to be a key issue facing ICM in the Herbert.

On the upside of the scale, according to most, land and water management would not be impeded by any lack of interest in community-type activities, the existence of more costs than benefits, or a lack of problems apparently requiring urgent action.

## Awareness of Government Strategies

Of the three government strategies put forward (ICM, Landcare and Property Management Planning), participants had heard most about Landcare (more than 85%) which, not surprisingly, was also the best-known strategy. Those who had heard about ICM (more than 37%), and knew most about ICM were most likely to be rural producers in the lower catchment.

Interestingly, 11 of the 12 people who knew most about PMP, and 42 of the 47 who knew most about ICM, resided in the lower catchment. Thus, the clear majority of people in the upper catchment (82.6%) knew most about Landcare.

Results appear in the following tables. Please note that the figure “**N**” in the tables shows the number of responses to a particular question. For any question, at least a few people chose not to respond.

| Response        | Rating | Property Management Planning (PMP) |         | Landcare |         | Integrated Catchment Management (ICM) |         |
|-----------------|--------|------------------------------------|---------|----------|---------|---------------------------------------|---------|
|                 |        | N(475)                             | Percent | N(475)   | Percent | N(475)                                | Percent |
| Heard about     | 1      | 123                                | 25.9    | 406      | 85.5    | 178                                   | 37.5    |
| Not heard about | 2      | 352                                | 74.1    | 69       | 14.5    | 297                                   | 62.5    |
|                 | TOTAL  | 475                                | 100.0   | 475      | 100.0   | 475                                   | 100.0   |

## Strategy known most about

| Response          | Rating | N(453) | Percent |
|-------------------|--------|--------|---------|
| PMP               | 1      | 12     | 2.6     |
| Landcare          | 2      | 333    | 73.5    |
| ICM               | 3      | 47     | 10.4    |
| don't know of any | 4      | 61     | 13.5    |
|                   | TOTAL  | 453    | 100.0   |

## Usefulness of the strategy known most about

| Response          | Rating | N(380) | Percent |
|-------------------|--------|--------|---------|
| very useful       | 5      | 20     | 5.3     |
| quite             | 4      | 36     | 9.5     |
| moderately        | 3      | 102    | 26.8    |
| not very          | 2      | 122    | 32.1    |
| not at all useful | 1      | 100    | 26.3    |
|                   | TOTAL  | 380    | 100.0   |
| Mean = 2.4        |        |        |         |

For this issue, nearly 60% of the participants responded that the strategy had been not at all useful or not very useful. Looking at the results for PMP, Landcare and ICM separately, the average ratings were 3.0 (only 12 responses), 2.3 and 2.4 respectively (generally, moderately to not very useful).

For ICM, this figure may not be too concerning since ICM in the Herbert is at a fairly early stage of development. For Landcare, the lack of usefulness may be more of a concern given that it is a more established, locally-based and “hands on” approach than ICM. As noted below, however, very few of the samples were members of Landcare groups and this likely explains the figures in the above table.

| <b>Response</b>                   | <b>Rating</b> | <b>N(380)</b> | <b>Percent</b> |
|-----------------------------------|---------------|---------------|----------------|
| very effective                    | 5             | 6             | 1.6            |
| fairly effective                  | 4             | 100           | 26.7           |
| neither effective nor ineffective | 3             | 130           | 34.8           |
| fairly ineffective                | 2             | 108           | 28.9           |
| very ineffective                  | 1             | 30            | 8.0            |
|                                   |               | 374           | 100.0          |
| TOTAL                             |               |               |                |
| Mean = 2.9                        |               |               |                |

Looking at the results for PMP, Landcare and ICM separately, the average ratings were 3.3 (only 12 responses), 2.8 and 2.8 respectively. Interestingly, when comparing the strategy’s personal usefulness with their general effectiveness, the ratings all increased significantly.

While there were widespread views that ICM and Landcare lacked use-value and clear effectiveness, this might be partially explained by low membership numbers in such groups (or, alternatively, may explain the low level of membership). Nevertheless, it is a finding that should warrant close attention.

| <b>Sources of knowledge</b>          | <b>N</b> | <b>Percent</b> |
|--------------------------------------|----------|----------------|
| Newspapers                           | 79       | 23.7           |
| Television/television advertisements | 72       | 21.6           |
| Media (in general)                   | 44       | 13.2           |
| Word of mouth                        | 40       | 12.0           |
| Meetings (in general)                | 31       | 9.3            |
| Canegrowers meetings                 | 22       | 6.6            |
| Radio/radio talk shows               | 22       | 6.6            |
| Reading                              | 17       | 5.1            |
| Advertisements (in general)          | 12       | 3.6            |
| Canegrowers magazine                 | 12       | 3.6            |
| Local pamphlets                      | 9        | 2.7            |
| Personal experience                  | 8        | 2.4            |
| Landcare                             | 6        | 1.8            |

67% of the responses could be classified as media sources (ie. a combination of the newspaper, television, media and radio responses).

With approximately three-quarters of this sample, Landcare accounted for the bulk of the responses. Most common were newspapers (72 of 79 in total), television (69 of 72), media (42 of 444), word of mouth (34 of 40), radio (22 of 22), and reading (15 of 17).

For ICM, 15 people stated their sources to be meetings, while 7 people were more specific in stating canegrowers meetings. Other sources included newspapers (6), drainage boards (3), word of mouth (3), and the Canegrowers Magazine (2).

The next question asked people whether they had heard of the Herbert River Catchment Coordinating Committee.

| <b>Response</b> | <b>Rating</b> | <b>N(425)</b> | <b>Percent</b> |
|-----------------|---------------|---------------|----------------|
| Yes             | 1             | 93            | 21.9           |
| Vaguely         | 2             | 86            | 20.2           |
| No              | 3             | 246           | 57.9           |
|                 | <b>TOTAL</b>  | <b>425</b>    | <b>100.0</b>   |

Interestingly, of those who had definitely heard about the HRCCC, 68 were from the lower rural sample (41% of this sample). Only 8 and 4 people had definitely heard about the HRCCC in the upper catchment rural and urban samples (14 and 5 % of these samples) respectively. Thirteen people (10%) of the lower urban sample had heard of the HRCCC.

Around three quarters of those who had definitely or vaguely heard of the Herbert River Catchment Coordinating Committee were rural producers in the lower catchment. Therefore, compared with this sample, all other samples were much less likely to have heard of the HRCCC.

From lowest to highest, those who responded “Yes” or “Vaguely” comprised 17, 31, 34, and 65% of the upper urban, lower urban, upper rural and lower rural samples respectively. This result could have been expected, given that ICM may have more of a presence in the lower catchment and a greater focus on rural (rather than urban) resource management issues.

Of further interest, it is noteworthy that 179 people had heard of the HRCCC and 178 people had heard about ICM, with both figures being in the order of 40%. More than three quarters of those who had heard about ICM had heard of the HRCCC, while more than 21% of those who had not heard about ICM had at least vaguely heard about the HRCCC.

Participants were then asked to state what they believed to be the main purpose of the HRCCC. Some of the more prominent purposes of the HRCCC are summarised in the following table. The figures in the percent column related to the total number of people who gave at least one response (161).

| <b>Purpose of HRCCC</b>   | <b>N</b> | <b>Percent</b> |
|---|----------|----------------|
| Preserve waterways (including land quality and river banks)   | 23       | 14.3           |
| Conserve and manage water   | 21       | 13.0           |
| Care for the catchment area   | 14       | 8.7            |
| Coordinate river use  | 12       | 7.4            |
| Control/mitigate flooding in the lower catchment (including a suggestion to dredge the Herbert River) | 10       | 6.2            |
| Raise awareness/inform the public of existing problems  | 8        | 5.0            |
| Coordinate groups to discuss problems (such as drainage)  | 8        | 5.0            |
| Calculate regular flood areas   | 7        | 4.3            |
| Maintain flow in the Herbert River and creeks/keep it clean   | 7        | 4.3            |
| Not sure/it has never been fully publicised locally   | 7        | 4.3            |
| Form strategies to assist the community (eg. to help with drainage disputes)                          | 6        | 3.7            |
| Combine all drainage boards into one body (eg. to cut costs and improve effectiveness)                | 6        | 3.7            |
| Dam the river   | 3        | 1.9            |
| Monitor fertiliser runoff   | 3        | 1.9            |

As can be seen, a variety of purposes were put forward. Most related mainly to water issues and many were fairly hands-on; for example, to improve drainage, control flooding, calculate flood areas, maintain river flow, and dam the river.

### **Responsibility and Control**

For these questions, a clear finding was the widespread agreement by participants that (a) there were things that they as individuals and as a community could do to help improve the environment, and (b) the local community should take some responsibility for doing this. Another potential influence to action was the high level of agreement that many environmental problems come from the way people manage their properties.

While there was agreement with these issues, any action to improve the environment may be limited by an equally widespread view that finances are lacking to plan more than a year ahead (although less prevalent in the lower rural sample).

Next, many agreed they could prevent land and water problems on their properties. However, there was less agreement with this issue in the lower catchment (which was possibly related to flooding and drainage concerns being more widespread).

Compared with the ability to prevent problems, fewer people agreed that they had complete control over the land and water on their properties. Interestingly, for the issue of prevention, distinctions were between the upper and lower catchment (with those in the lower catchment believing they had less ability) whereas for control, these were along rural-urban lines. As might be predicted, those in urban areas (and, therefore, with smaller properties and less direct use of their land) felt they had more control.

In brief, many agreed that laws should be changed to ensure landholders become more responsible for their actions. Again, those in the lower urban sample (with the exception of Ingham) were more likely to agree and, compared with the lower rural sample, the upper urban sample was also more likely to agree. Lastly, most of the sample disagreed that thinking about land and water management for an area the size of the Herbert was too hard. One conclusion drawn from this was that, while managing land and water on a catchment basis was generally considered difficult, thinking about such issues was by no means viewed as impossible.

### **Views on Government**

This part of the questionnaire showed a high level of agreement that governments should work out better ways to fix land and water problems, and that incompetent government activities had been seen locally. Many people also felt they could recall a government action that had damaged their livelihood.

The upper urban sample was more likely to trust that public servants worked in their interests most of the time, although, in general, many others also agreed public servants were trustworthy. Those who agreed they had seen government incompetence, however, were less likely to trust that public servants worked in their interests.

There were similar findings for the statements, *I am sure that our local views will be considered when planning for land and water management in this area*, and *Programs like Integrated Catchment Management interfere with people's rights to make their own decisions*. Those who noted they had seen government incompetence were less and more likely to agree with these statements respectively.

### **Awareness and Intentions**

In general, awareness of, and willingness to become involved in land and water management activities were viewed as moderate. Willingness was generally rated as higher in the upper catchment.

Also, many agreed they would be prepared to assist in local projects such as riverbank stabilisation. Again, this was more evident in the upper catchment.

Compared with these issues, fewer people thought it likely they would become involved or stay involved with a Landcare or catchment group. Similarly, less believed they could personally benefit from being involved in group activities.

Like all issues concerning personal involvement, many people felt that such issues did not apply to them. Generally, the majority of these were from people living in urban areas.

Many (nearly 60%) agreed it was likely that they would look into ways to improve the environmental condition of their properties. Many (more than 50%) also agreed that they knew people who considered local groups to be a good way to deal with many land and water management issues.

To highlight again the distinction between other samples and the lower urban sample, the latter was more likely to disagree that the statement, *the local environment is no worse off than when I first lived here*. For all samples, while more chose to disagree, there were also many who agreed. There was also

some relationship between this statement and the item, *how much are you prepared to become involved in land and water issues in the Herbert?*. Those who were more likely to become involved were also more likely to disagree that the local environment had not deteriorated over time.

### **Influences on Involvement**

Further scrutiny was made of the items relating to intentions to participate in land and water management activities. Of these, four items were combined into a single measure of intention. The items selected were:

- *How much are you prepared to become involved in land and water issues in the Herbert?*
- *I would be prepared to assist in local projects such as riverbank stabilisation;*
- *It is likely that I will become involved (or stay involved) with a Landcare or catchment group over the next year or two;*
- *I can personally benefit from being involved in group activities to help manage land and water.*

The combined measure concerns preparedness to become involved, both in a local and group context (specifically concerning land and water management), and relates group involvement to personal benefits. This measure was called *Personal and Group Intentions*.

Next, an attempt was made to find out whether this measure was related to other items in the questionnaire. In other words, other items were looked at to see if they could influence (predict) Personal and Group Intentions.

For the whole sample (and in order of significance), Personal and Group Intentions were influenced by interest in local community issues, the personal importance of land degradation, beliefs about the difficulty of thinking about an area the size of the Herbert, and the personal usefulness of the specified government strategy (ie. the strategy known most about). Use of the river/creeks, the personal effects of higher production costs, and the importance of nature conservation issues also influenced intentions.

In summary, the likelihood of participating in land and water management activities appeared to be influenced by:

- a strong interest in local community issues;
- a belief that land degradation was personally important;
- a belief that thinking about land and water issues for an area as big as the Herbert was not too difficult;
- the opinion that government strategies (generally Landcare, and ICM) do have some personal use.

Also, more frequent use of the river/creeks, concern about the personal effects of higher production costs and the rating of nature conservation issues as important, also related positively to Personal and Group Intentions.

It is important to note that, while trust of government programs was considered a key issue facing ICM in the Herbert, this was not related to Personal and Group Intentions. However, trust in public servants was to a small degree.

For the rural sample only (upper and lower catchment), influences on intentions were similar and also included the ability to prevent land and water problems from occurring at the property level.

For the urban sample, Personal and Group Intentions were best predicted by the personal importance of nature conservation issues, interest in community issues and the belief that many environmental problems come from the way people manage their properties. Loss of confidence in the ability of government to manage land and water resources was also influential.

### Information Sources

Participants were asked, *Which of the following sources of information help you to keep informed about land and water management issues?*

In the following table, the figures in both percentage columns show the proportion of people – compared with the whole sample – who use a particular source of information.

| Information Source       | Percent | Information Source | Percent  |
|--------------------------|---------|--------------------|----------|
| Neighbours               | 46.5    |                    | .2 (N=1) |
| A government agency      | 13.4    |                    | 59.7     |
| Industry groups          | 24.7    |                    | 27.3     |
| Community groups         | 21.6    |                    | 23.9     |
| Family members           | 34.2    |                    | 15.1     |
| Friends/colleagues       | 53.9    |                    | 5.9      |
| Personal experience      | 39.0    |                    | 30.2     |
| The local “grapevine”    | 48.4    |                    | 7.5      |
| Public meeting           | 32.3    |                    | 28.3     |
| The Australian newspaper | 10.9    |                    | 43.6     |
| Cairns Post              | 16.8    |                    | 2.5      |
| Townsville Bulletin      | 30.6    |                    | 5.5      |

In brief, the most frequently used sources of information included the Herbert River Express, friends/colleagues, the local “grapevine”, neighbours, “Landline”, personal experience, and family members.

One of the more notable findings was that the Herbert River Express was used more frequently than more “traditional” sources such as friends and personal experience.

Second, “Landline” was used more frequently than personal experience, family members and public meetings. Its use was particularly high in the upper catchment.

Certainly an unexpected finding, “Landline” was considered the most reliable source. Clearly, “Landline” is an influential program in passing on information to catchment residents.

On this point, it was noted that the local “grapevine” was also a preferred source of information in the upper catchment, whereas sources including industry groups and public meetings were used more frequently in the lower catchment. This finding therefore suggests that ways to provide

information about land and water management activities (including ICM) may need to be tailored to the two catchment areas.

The Herbert River Express, public meetings, personal experience, the Country Hour, and Canegrowers were also frequently noted as reliable sources.

Briefly, a clear example of the lack of integration between the upper and lower catchment areas was found in the readership of the Townsville Bulletin (lower catchment) and the Cairns Post (upper catchment).

Further analysis revealed a number of differences between the use of particular information sources and other questionnaire items. Many of these were related to the use of Landline, neighbours, community groups, personal experience and public meetings. For example, compared with non-use, use of these sources was related to more awareness of government strategies (PMP, Landcare, ICM), more agreement that things could be done personally to help improve the environment, and stronger intentions of becoming (or staying) involved in a Landcare or catchment group.

### **Group Involvement**

One quarter of the whole sample were members of regional/state/national groups, while 44% were members of local groups. Many were members of each, and nearly 50% were members of either type of group. Rural producers, in particular, had high levels of group membership.

Compared with non-members, members were, for example, more likely to consider constraints to managing land and water to be the wide variety of opinions held by local people, and the difficulty in thinking about relevant issues for an area this size. Members were also more prepared to become involved in land and water issues and to assist in local projects such as riverbank stabilisation, and more likely to become (or stay) involved in Landcare or catchment groups and to see the personal benefits of involvement in group activities.

Some of the more prominent groups included sporting groups, charity/church/welfare groups, agriculture related organisations, and Parents and Friends Associations.

Lastly, approximately half of those who stated involvement with an agriculture-related organisation nominated this as the most important group. This was also the case for the “Landcare, Conservation or similar” category.

### **Interest in Community Issues**

This part of the questionnaire showed that most people were comfortable in being members of their local communities, thought it was a good place to live, could recognise many other local people, and would like to remain living in the Herbert for a long time.

Next, it was noted that any difference on the items all included differences between the lower rural and upper urban samples. From this, it was broadly summarised that, compared mostly with the upper urban sample, the “community” as perceived by those within the lower rural sample appears more cooperative and self-reliant. However, as a word of caution, the differences to appear slight.

For life satisfaction, all but one of the average ratings centred around moderate. The exception was satisfaction with community facilities and services, with this being the area that people were the least satisfied. In particular, people in the upper urban sample were more likely to register dissatisfaction.

Similarly, for satisfaction with the community in which people live, people in the upper urban sample were less likely to be satisfied than those in the lower catchment.

The upper urban sample also responded less positively to the statements, *When thinking about your relationships with local people, how comfortable are you about living here?*, and, *When thinking about how much interest local people have for your ideas and opinions, how comfortable are you about living here?*

### **Other Information**

In brief, other findings included the following:

- Residents in the upper catchment had fewer familial ties beyond those in their household;
- People with property next to a river or creek which floods were less likely to agree that they had complete control over the land and water on their properties;
- Generally, people in the upper catchment were more likely to use rivers/creeks than those in the lower catchment.

Finally, compared with those who never used the river, those who used the river often gave different ratings on a number of items. For example, these people were:

- more likely to consider lower fish numbers and loss of access to recreation as personal impacts;
- more likely to have loss of confidence in government's ability to manage land and water resources;
- less likely to see programs such as ICM interfering with people's rights to make their own decisions.

Those who used the river often were also more prepared to be involved in land and water management activities and to see the benefits from such involvement.

### **Implications for ICM**

A number of findings were considered to have implications for the progress of ICM in the Herbert.

The first relevant finding was that the four principal issues (ie. land degradation, water quality problems, water quantity problems and nature conservation issues) were generally viewed as highly important. In brief, while there were some differences between samples (eg. lower urban residents were more likely to rate the importance of water quality and nature conservation issues as high), the general importance of these issues to residents implies that ICM has the scope to plan and carry out actions along a number of fronts. This could be done according to different areas of importance and, discussed below, where perceived impacts are seen to be high.

As was the case for issue importance, a number of influences on life in the Herbert were viewed as having a high impact, in particular, higher taxes and lost confidence in the ability of government to manage natural resources. Other notable impacts included higher production costs, lower fish numbers and loss of environmental uses/benefits.

The potentially wide scope for ICM was emphasised by the fact that (a) several impacts were seen as high and (b) many impacts were seen as higher on others in the community than that experienced personally. That is, some issues were less important personally, but were still rated as having high impacts on others. These included the high cost of water, loss of farm productivity, and higher production costs.

On average, the awareness of land and water management issues held by local people was considered moderate. Along with high ratings of personal impacts and those on others, this also shows that ICM can have inroads into a number of important areas. As stated below, compared with “others”, personal importance/impacts appeared more likely to influence intentions to participate in land and water management activities. However, knowledge that certain impacts on others in the Herbert are generally seen as high (or low) can help to guide planning and action.

While awareness of land and water management issues held by local people was considered moderate, many agreed that problems are not well understood. Therefore, awareness of problems does not appear to be related to understanding.

Continuing with knowledge and awareness issues, Landcare was clearly the best-known government strategy, and knowledge of the three government strategies was generally higher in the rural samples. Those who had heard about ICM and the HRCCC and (of the three strategies) knew most about ICM were most likely to be rural producers in the lower catchment.

ICM in the Herbert is at an early stage of development. However, while noting that there appears to be a fair degree of awareness of relevant issues (at least as defined within the questionnaire), the widespread lack of knowledge and perceived effectiveness of ICM may require close attention. Further, target areas for increasing awareness of ICM include all urban settlements and the upper catchment generally.

In addition, it is noteworthy that approximately 40% of the sample had heard of ICM and the HRCCC. Due to a lack of comparable results from other areas, it is difficult to say whether this level of awareness is excellent, mediocre, or somewhere in between.

In one study in the Blackwood Catchment in Western Australia (Butterworth & Carr, 1996), it is notable that similar questions returned 40% for ICM and 81% for the local coordinating group (BCCG).

A possible reason for this figure is that the BCCG has long had a solid public profile (eg. via local press) and, perhaps more significant, has had a “shop front” by way of a regional office in a prominent location in the catchment. A similar example closer to the Herbert, the Johnstone River Catchment Centre is located in the centre of Innisfail. This has helped ICM in the Johnstone to gain both a public profile and customer focus (Syme, Butterworth & Nancarrow, 1993).

From their findings, Butterworth and Carr (1996) suggested that the profile of ICM in the Blackwood needed to be raised as the basis of the aims and activities of the BCCG. For example, within an information strategy, differences between ICM and Landcare, as well as existing or needed coordination on areas of overlap, could be highlighted.

For the issues of tractability, managing land and water was considered to be made most difficult by the large area and difficulty in moving around the catchment, the fact that solutions are not easy and expensive, low trust of government programs, the wide variety of existing opinions, and insufficient understanding of problems.

Results also showed that land and water management would not be obstructed by any lack of interest in community-type activities, the existence of more costs than benefits, or lack of problems requiring action. Within an ICM information strategy, for example, it may be useful to highlight factors such as the importance of land degradation and impacts associated with higher production costs, rather than emphasising the benefits of land and water management and the urgency of some problems.

Next, the low level of perceived conflict in the Herbert (at least at the time of the survey) contrasts with the view that the wide variety of existing opinions is a potential obstacle to managing land and water. While this appears to have positive implications for ICM, it is understood that “hot:” issues may occasionally occur in the Herbert and these may increase the potential for conflict. Therefore, further research would be needed to clarify the degree to which perceived conflict is stable or varies over time.

Another set of relevant findings for ICM included the analysis of people’s intentions and formation of the measure *Personal and Group Intentions*. In brief, those prepared to participate in land and water management activities were likely to:

- be interested in local community issues;
- believe that land degradation was personally important;
- believe that thinking about land and water issues for an area as big as the Herbert was not too difficult;
- hold that government strategies (generally Landcare and ICM) do have some personal use.

More frequent use of the river/creeks, concern about the personal impacts of higher production costs and the rating of nature conservation issues as important also related to intentions to participate.

Assuming a “causal” relationship exists between the above influences and intentions, such influences could be the focus for arousing interest in ICM. Broadly, for example, the importance of land degradation throughout the catchment, the usefulness of ICM and Landcare, and the significance of catchment identity could all be promoted.

Regarding views on ability and responsibility to manage land and water, the widespread agreement that actions could and should be undertaken as individuals and as a community is another positive implication for ICM. However, any action may be restricted by an equally widespread perception of lack of finances to plan more than a year ahead and the related belief that locals do not have money available to spend on solutions (particularly in the upper catchment).

Many people also agreed that laws should be changed to ensure landholders become more responsible for their actions (although those in the lower rural sample had more mixed views towards this statement). The majority also disagreed that thinking about relevant issues for the whole catchment was too hard. As such, it appeared that many may think that managing land and water on a catchment basis may be a difficult, but certainly not futile exercise.

Views on government revealed a high level of agreement that governments should develop improved methods for addressing land and water problems, and that there had been incompetent government activities within the catchment. Further, many stated they could recall a government action that had damaged their livelihood. People who agreed they had seen government incompetence were less likely to trust public servants and more likely to agree that programs like ICM interfere with the right of landholders to make their own decisions.

In particular, the low level of trust of government programs and public servants seem prominent issues facing ICM in the Herbert. To this end, one suggestion is proposed for dealing with low government credibility and trust. In conjunction with catchment residents, appropriate roles for public servants could be defined as a way to gain successful and ongoing relationships between the community and government in key areas.

Finally, to mention two other findings that may have relevance for ICM, members of groups were more prepared to become involved in land and water management activities (including assisting in local projects), more likely to become (or stay) involved in a Landcare or catchment group, and more likely to assume there are personal benefits from involvement in group activities. Second, proximity to, and use of, the river/creeks provided some notable findings. For example, those with property next to a river or creek which floods agreed less that they had complete control over land and water, while those who used the river often were also more prepared to be involved in relevant activities and to see the benefits from such involvement.

Consequently, positive aspects and experiences related to group membership and involvement generally could also be used as promotional tools within an ICM information/communication strategy.

## **References**

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