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Monitoring community attitudes to using gene technology methods (*Daughterless Carp*) for managing Common Carp.

A preliminary investigation.

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Executive Summary

This report describes the outcomes of a preliminary research study into a new methodology, Community Value Management, for monitoring how the Australian community views research into gene technology methods (so-called 'Daughterless Carp') for managing Common Carp in Australian inland waterways. The methodology is designed

(a) to monitor the efficacy of an ongoing 'dialogue process' with the community about the research

(b) to assist in setting communication priorities, by helping to select specific issues that the dialogue process needs to address, on an ongoing basis

The method is based on identifying the key Benefits and Concerns that determine overall community support for the research program, and monitoring the community's satisfaction with these factors on an ongoing basis, using telephone surveys. The level of overall community support is then linked to some key business drivers, such as willingness to support similar research into other pest animals, using additional data collected from the surveys.

The study was conducted in New South Wales, and involved surveying some 600 people (approximately equal numbers of males and females, and also from coastal cities and regional and rural communities) by telephone.

Key findings from this initial investigation are:

1. The community's overall view about the Benefits of the research can be satisfactorily described by the factors so far identified; similarly for their overall level of Concern.

2. The results provide management with a quantitative basis for selecting the most important areas requiring attention in the dialogue process and for developing an effective communication strategy aimed at achieving public support and adoption of the technology.

3. At least one other high-level factor, in addition to Benefits and Concerns, is needed to provide an adequate explanation of the overall level of community support

A number of recommendations are made for how the communications and community engagement component of the Daughterless Carp research program might be developed.

1. Introduction

The Pest Animal Control CRC (CRC PAC) aims to focus Australia's expertise in leading edge biotechnology to achieve safe and effective pest control.

Specifically, CRC PAC aims to develop new biological control methods for four of Australia's most damaging pest animals: the European rabbit, European red fox, the introduced house mouse and the Common carp. These methods will be cost effective, environmentally friendly, will reduce the impact of the pest to acceptable levels, be more humane and retain their effectiveness over time.

The CRC leadership recognise that community engagement, acceptance and support for the genetic technology used to control these pest animals is crucial, if the new agents are to be successfully deployed against the pests, and if Australia is to achieve a satisfactory return on the research funds and effort invested. The word “community” is taken to include specific groupings, such as governments and industry bodies that make investment decisions supporting the work; we use the term “stakeholder” to refer to any of these.

To gain acceptance and support, the Centre is planning to engage in an ongoing dialogue with Community about key issues, as a key element in its communication strategy. The purpose of the current study was to explore a new method for monitoring the efficacy of the dialogue process. The objectives of this method are to

1. **ascertain** the key drivers of satisfaction with the proposed program, for each key stakeholder group;
2. **monitor**, on a regular basis, the levels of satisfaction, in order to identify which factors
    a. carry the most weight in determining overall satisfaction with the program; and
    b. are rated lowest; and
3. **detect**, in a timely fashion, important changes in relative importance of the key drivers, and the possible emergence of new critical factors,

as a basis for focusing the dialogue process appropriately.

The report is laid out as follows. Section 2 describes the general approach, Section 3 explains how the survey was conducted, Section 4 presents the results from analysing the quantitative and qualitative data, Section 5 provides some general observations on the results, and Section 6 suggests some possible future actions.

2. Approach

The approach is based on specialising the general Stakeholder Value Management (SVM™) methodology to obtain a process for creating and adding value for the Community[1]. We call the resulting process **Community Value Management**.

The idea behind this approach is to identify the factors that are most important in determining the community's overall approval or disapproval of the proposed work (*Value added for the Australian Community)*, use surveys to monitor the community's perception of the CRC's performance in relation to these factors, and use the resulting data to identify where to focus communication efforts.

In this situation, the concept of **Value** is described by people's overall perception of the proposed plan of work as being a **Worthwhile Research Project**. The concept of Value is then split into two main drivers: people's satisfaction with the **Benefits** of the research, and the extent to which their **Concerns** are being addressed satisfactorily. Focus groups are used to determine the principal factors relating to the Benefits and the Concerns, leading to a **Community Value Tree** as shown in Figure 1:

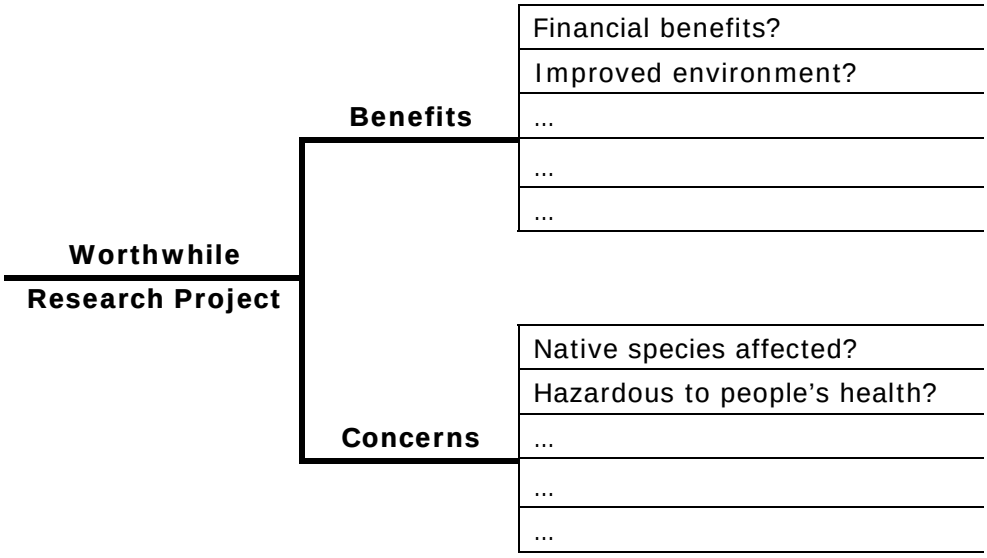

Figure 1. A Community Value Tree, showing the key drivers of Value (Benefits and Concerns). The main Attributes determining satisfaction with each driver are found from Focus Groups, and used as the basis of a Community Value Survey.

A telephone survey based on this Value Tree provides quantitative data that can be modelled and analysed to determine

[1] The **Community**, together with **Owners**, **Customers**, **People**, and **Strategic Partners**, comprise the five key Stakeholder groups of the Performance Measurement Framework (PMF™), a proprietary methodology used by ValueMetrics Australia as a basis for a Performance Measurement System. Such a system requires two key components: (i) **a structure for performance measures**; and (ii) **a process for identifying and using them to create and add value** for each of the stakeholder groups. Stakeholder Value Management provides such a process. It is based on a proven approach for managing Customer Value developed by Ray Kordupleski. See www.valuemetrics.com.au and also the book by Ray Kordupleski with Janice Simpson (*Mastering Customer Value Management*, Pinnaflex Educational Resources, Inc.: Cincinnati, OH. 2003) for more details.

a. which factors are the most important in driving overall satisfaction/dissatisfaction with the research; and
b. where the CRC is currently rated poorly,

Additionally, the approach provides

c. a means of checking that all the most important factors have been included (judged by how well the factors collectively explain the overall scores on Benefits and Concerns)
d. the opportunity to collect qualitative input about Benefits, Concerns, and overall, about whether the project is worthwhile
e. a means of measuring the effectiveness of the CRC's communication efforts.

Analysis of the quantitative [and qualitative data] then provides insight about where [and how] the CRC needs to focus its communication efforts to obtain the biggest increase in overall Value (*viz*. by focusing on those factors that carry the most weight and have the poorest approval rating).

At the end of the survey, it is important to ask about other key business drivers that might be related to the community's overall feeling of satisfaction about the current project. For example, a potentially important business issue might be the community's willingness to see the research adapted to the control of other pests. If responses to these questions are captured as well, the following linkage diagram (Figure 2) can be developed:

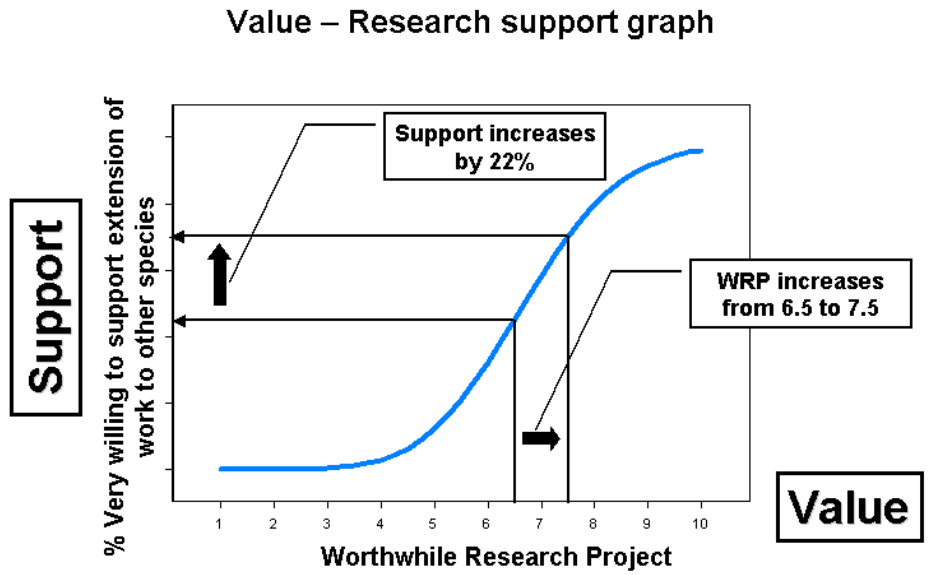

Figure 2. The graph shows how the overall Value score from a survey (WRP) can be related to an important business driver (support for further work), and so used to determine targets for the Value score. For example, if it is essential to have a very high level of community score for support for further work, this suggests that a score of at least 8 will need to be achieved for WRP.

Once the initial survey has been carried out, and a communication plan devised and implemented in response to the findings, the intention is to run the telephone survey continuously. Using proprietary statistical methodology developed over the last few years, it is possible to detect, in a timely fashion, important changes in relative importance of the key drivers – reflecting changes in community values or sentiment - and the possible emergence of new critical factors, as a basis for focusing the dialogue process and communication activity appropriately.

3. Design and conduct of the survey

Step 1. Obtain expert input
An initial focus group was conducted with a group of scientific experts, to obtain a provisional list of the main attributes associated with the Benefits and with the Concerns, and to decide which factors might be important in any community decision to adopt or oppose the intended technology. Attributes that were used in an earlier research investigation relating to pest mice were also considered.

Step 2. Validate and modify the attributes
The provisional lists were subsequently modified by two focus groups conducted in Sydney, and another two in Wagga Wagga. Based on this information, it appeared that common lists of attributes would be appropriate for both coastal cities and country and regional centres in New South Wales, so that the same survey instrument could be used.

Step 3. Develop a provisional survey instrument
Some brief material to introduce the survey topic to potential telephone respondents was developed in consultation with PAC. It read:

> *Carp are a non-native species that are seen as a major pest of Australia's waterways, with a severe impact on native fish and water plants, river banks and water quality.*
> *Scientists are proposing to reduce carp populations using a genetic technology that will cause to carp to have only male offspring.*
> *Over a long time, this will lead to reduced numbers of females and the population will crash.*
> *Although the GM technology is years away from implementation, we are interested in your views about this research, which is expected to be effective in reducing carp populations.*

The Attributes of Benefits and Concerns were then turned into simple statements for use in the survey.

Step 4. Test the list of attributes for adequacy and comprehensibility
Two pilot telephone surveys (approximately 80 people in NSW coastal cities and 80 from regional centres and country NSW, each split almost equally between males and females) were used

(a) to refine the statements to be used in telephone surveys; and
(b) to provide a check on whether a major attribute either for Benefits or for Concerns appeared to be missing.

The check in (a) is carried out in consultation with the survey company, whose expertise is, in part, to know how to phrase questions, and to learn from listening in to pilot telephone interviews. The check in (b) derives from the statistical analysis, which reveals whether an important Attribute of the Benefits or of the Concerns has been overlooked.

Step 5. Finalise the survey instrument and carry out main surveying
The pilot survey suggested that the lists were satisfactory. The final set of statements relating to these attributes is provided in Table 1.

For the Benefits, respondents were asked to rate the each attribute on a scale of 1 to 10, where 1 = *Poor* and 10 = *Excellent*. They were then asked to provide an overall rating for Benefits. For the Concerns, respondents were asked to rate the each attribute on a scale of 1 to 10, where 1 = *Unconcerned* and 10 = *Very Concerned*. They were then asked to provide an overall rating for Concerns. Note that this scale is in the opposite direction to the one for Benefits, as it was less confusing for respondents. Finally, respondents were asked to provide an overall

rating, on the same scale as used for Benefits. The 'business impact' questions are provided in Table 2.

Apart from geographical location, some other demographic variables were thought likely to have an effect on the responses provided. A list of these variables is provided in Table 3.

Associated with each of the three overall assessment statements (Benefits, Concerns, and Value), respondents were asked for the main reason why they had given the specific rating. This provided a large amount of qualitative data that helped interpretation of the results derived from analysing the quantitative data.

The main survey involved telephone interviews of an additional 230 respondents from each of the two groups. The entire data set of over 600 respondents was used for statistical modelling and analysis.

Attributes of Benefits
• It will help improve the quality of river water and river banks
• It will help native species to recover
• It will improve recreational and tourism uses of the waterways
• It's a humane approach (the carp aren't killed or hurt)
• It's safe to humans and other species
• It will bring economic benefits to rural communities (by increased tourism and improving irrigation quality)
• There's the potential to use the technology for other species and for export

Attributes of Concerns
• It could have negative effects on the behaviour of Carp
• The possibility of it affecting other animals or even humans by mutating or jumping species
• It could be considered an unethical way to control Carp
• The costs of developing and using the approach could outweigh the benefits
• The possibility that it would not really work and could backfire
• The possibility that the technology could be misused against humans
• The Australian community may not be kept informed
• It could be poorly implemented

Table 1. Attributes of Benefits and Concerns used in telephone survey (*actual wording used by interviewers*).

Business impact questions
(a) What is your approval rating of the use of gene technology to control Carp?
(b) What is your approval rating of research into gene technology for control of other pests such as rabbits and foxes?
(c) How important it is for the community to be consulted on research like this?

Table 2. Questions asked after the main survey had been completed, to link the overall Value score from the survey to key business issues.

Demographic variables

Variables	Levels	
Region	• City/Coastal (**C/C**)	• Country/Regional (**C/R**)
Age	• < 25 • 25 – 50	• > 50
Gender	Male / Female	
Highest education level attained	• No formal education • Primary School • High School	• College (TAFE) • University
Type of job	• Unclassified or no current occupation • Farm labourer • Unskilled (except farm workers) • Semi skilled • Farmer • Skilled manual worker • Clerk / Typist	• Sales person • Semi professional • Owner of a small business • Manager, large business • Professional • REFUSED

Table 3. Demographic factors and levels used in the survey.

4. Results of analysis

4.1 Analysis of quantitative data

Hierarchical statistical modelling and analysis were used to determine the relative importance of the various factors at each level of the Value Tree in Figure 1, and how they were rated. Thus at the highest level of the Value Tree, we seek to determine impact weights **W** and ratings **R** as shown in Figure 2.

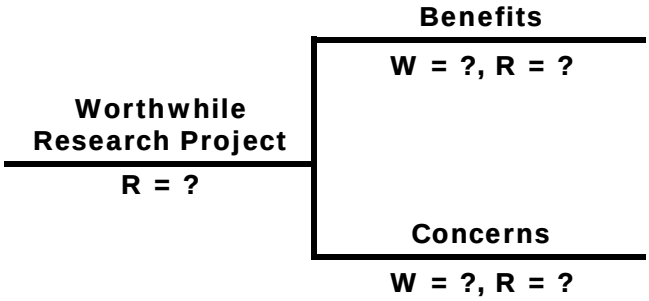

Figure 2. The goal of the statistical modeling and analysis is to estimate the rating (**R**) of each factor, and the relative importance or impact weight (**W**) of the two lower-level factors (Benefits and Concerns) in determining the higher-level factor (Worthwhile Research Project).

The results for the relationship between Value (Worthwhile Research Project) and Benefits and Concerns are shown in Table 4, for both survey groups. There are a number of points to note.

Interpretation of the Impact Weights (W).
Consider the Impact Weights for the Country/Rural data. Ideally, we would like to be able to predict the rating for Value (= Worthwhile Research) almost perfectly, once we knew the ratings for Benefits and for Concerns. The values 39% and 4% indicate the amount of variation in Value that each factor explains; *i.e*. the two factors combined can only explain 43% of the variation in Value[2]. Generally, this would be regarded as dismal: more than half the variation is unexplained, so there are probably some other major factors that we have not identified. However, there are also things to be inferred from this result.

(i) The Benefits do play a major role in explaining the overall variation in Value.
(ii) At present (with no strong public opposition), Concerns are having little impact on the community's overall views about the value of the research. An active public campaign against use of gene technology might well see significant weight attaching to Concerns.

The situation is not much better for the City/Coastal data, although Concerns now carry a small amount of weight. In Section 5, we speculate about one particular missing factor that may also be important in explaining the variation in community's overall perception of the value of the research.

Interpretation of the Ratings (R).
Key points to note include:

(iii) For the Country/Rural results and to a slightly (but significantly) less extent for City/Coastal, the overall ratings of Value appear to be quite

[2] In statistical parlance, 43% is the square of the multiple correlation coefficient (usually denoted by the symbol R^2) when a regression model is fitted with *Value* as the response, and *Benefits* and *Concerns* are the explanatory variables.

high, effectively driven by the high ratings for Benefits. But how can this be interpreted – **is it high enough for business purposes**? We return to this key issue in §4.2 and §5.

(iv) The ratings for Concerns indicate a middling level of unease, but are not nearly as extreme as the ratings for Benefits.

Attribute	Impact weight (W) C/R	Impact weight (W) C/C	Rating (R) C/R	Rating (R) C/C
Benefits	39%	47%	8.9 (±0.20)	8.3 (±0.20)
Concerns	4%	0%	5.5 (±0.34)	5.9 (±0.34)
Worthwhile Research			**8.8** (±0.20)	**8.2** (±0.20)

Table 4. Impact weights and ratings for the highest-level factors in the Community Value Tree.
Impact weights indicate the amount of variation in Worthwhile Research explained by each of the two drivers.
Ratings are measured on a 10-point scale: for Worthwhile Research and for Benefits, 1 = *Poor*, and 10 = *Excellent*; on the other hand, for Concerns, 1 = *Unconcerned*, and 10 = *Very concerned.*
Numbers in parentheses (*e.g.* ±0.20) represent two standard errors.

We now turn to the more detailed level of the survey, to study the extent to which the attributes identified in focus groups actually explain the overall ratings for Benefits and for Concerns.

Tables 5 and 6 provide the comparative results for the attributes of Benefits and of Concerns, respectively.

For the attributes of Benefits,

(v) for both groups, the set of attributes provide a reasonable explanation of the overall ratings for Benefits, as judged by the total variation explained
(vi) the responses for the two groups are quite similar
(vii) one attribute (*Help native species recover*) currently carries no weight in either group; another (*Benefits to the rural economy*) carries no weight with the supposed beneficiaries
(viii) three attributes (no.'s 1, 4 & 7) have relatively large impact weights

For the attributes of Concerns, there are only minor differences between the two groups, and no individual concern stands out as a major factor. For each group, the attributes capture a reasonable amount of the variation in the response.

In Section 5, we shall consider how these tables can be used to inform an ongoing dialog process.

Effect of demographic variables. Apart from the geographical factor, the impact of which has already been discussed to some extent, there was no discernible effect relating to the other demographic variables (Age, *Sex*, *Education Level* and *Job Type*) listed in Table 3.

Benefits of research program **Attribute**	**Impact weight (W)** C/R (%)	 C/C (%)	**Rating (R)** (s.e. < ± *0.28*) C/R	 C/C
1. Help improve quality of river water & banks	19	17	8.9	8.5
2. [Help native species to recover]	0	0	[9.1]	[8.8]
3. Improve recreational & tourism uses of waterways	10	8	8.0	7.7
4. Humane approach	3	12	8.4	8.2
5. Safe to humans & other species	16	11	8.7	8.2
6. Economic benefits to rural communities	0	10	[7.9]	8.2
7. Use technology for other species & for export	21	18	7.9	7.7
Overall rating of Benefits			**8.9**	**8.3**

Table 5. Impact weights and ratings for the attributes of Benefits in the Community Value Tree.
For the Country/Regional data, the Attributes explain 69% of the variation in overall Benefits, whereas for the City/Coastal survey they explain 76%.
The second Attribute had no significant impact in either group, and the 6th was insignificant for the Country/Regional survey.

Concerns about research program **Attribute**	**Impact weight (W)** C/R (%)	 C/C (%)	**Rating (R)** (s.e. < ± *0.35*) C/R	 C/C
Possible negative effects on the behaviour of Carp	9	8	3.5	4.2
Effect on other animals or humans	0	10	[7.3]	7.7
Unethical way to control Carp	4	8	3.4	4.1
How much will it cost and who will pay?	14	8	4.7	5.0
Will it really work or could it backfire?	12	5	5.9	6.2
Technology could be mis-used against humans	10	10	6.2	6.5
Will the Australian community be kept informed?	10	8	6.5	6.7
How will it be implemented?	12	13	6.0	6.1
Overall rating of Concerns			**5.5**	**6.1**

Table 6. Impact weights and ratings for the attributes of Concerns in the Community Value Tree.
For the Country/Regional data, the Attributes explain 71% of the variation in overall Concerns, whereas for the City/Coastal survey they explain 70%.
The second Attribute was insignificant for the Country/Regional survey.

4.2 Connecting the overall Value scores to business drivers

Whilst the results reported in §4.1 are valuable in terms of identifying communication priorities, of equal if not greater importance is what they might tell us about important drivers of business success. The key point is that the

overall Value score can be linked to the corresponding responses to questions (a) – (c) in Table 2, as indicated in Figure 2. The mean responses to all four questions are provided in Table 7. The graphs corresponding to Figure 2 are shown in Figures 3 and 4, for Country/Regional and City/Coastal surveys respectively. Section 5 provides further explanation of the use of these graphs.

Business impact question	Mean response
Willingness to support the use of this method for control of Carp?	**6.9** (± 0.26)
Willingness to support research into gene technology methods for control of other pests such as rabbits and foxes?	**6.9** (± 0.28)
How important is it for the community to be consulted on research like this?	**8.8** (± 0.22)

Table 7. Mean responses (on 10-point scales) to the Business Impact questions.

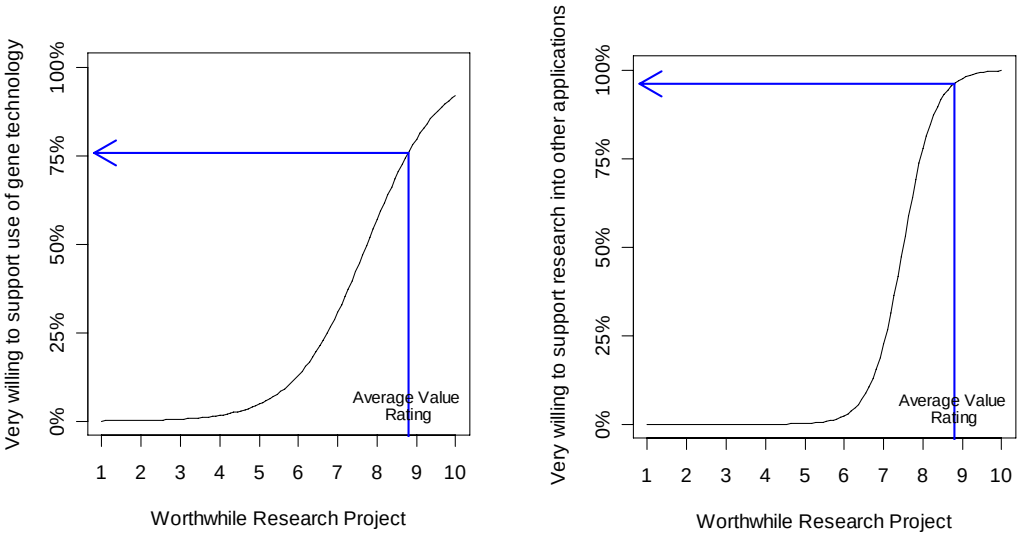

Figure 3. Relationship between overall Value score for Country/Regional survey and key business drivers.

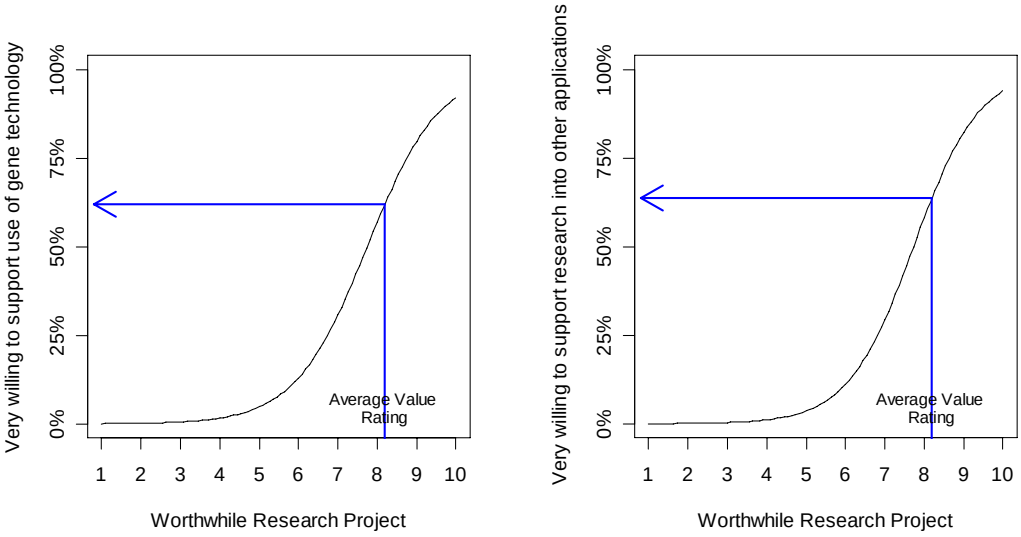

Figure 4. Relationship between overall Value score for City/Coastal survey and key business drivers.

4.3 Analysis of qualitative data obtained from comments in focus groups and survey responses

The following issues emerged:

(a) Communication efforts must articulate more clearly the impact of carp on native species (fish and aquatic plants) and water quality and the benefits to be expected from controlling them (*i.e*. *why* is the CRC is doing this research).

(b) Safety and species specificity of the technology are underlying public concerns, and need to be addressed in detail by the communication plan. (ie *Is it safe? Is it stable? Could it backfire?)*

(c) There must be a transparent public discussion and approval process before any release of the technology, that gives the public a sense of permission or 'control' over how the technology is to be used. (*i.e. Was I consulted? Who's in control?* See (f) below)

(d) Criticism from those who oppose GE technology is to be expected, and needs to be anticipated in communication planning. It should be welcomed as identifying areas of possible public concern that need to be addressed.

(e) The public has an ambiguous view of scientists. On the one hand they are viewed as trustworthy and dedicated individuals. On they other they are perceived as 'working for government' (*i.e*. secretive) and inclined to take risks. Through openness, this project creates an opportunity to enhance public confidence in Australian biological science and pest biocontrol programs in particular.

(f) GE is seen by some in the community as 'unethical'. More research is required to understand why this concern exists and how it can be addressed. Contemporary communication theory holds that "ethical" is interpreted by the public as "Was I consulted?" It is probable that both transparency and an effective public dialogue process will provide reassurance.

(g) The community will insist on fairly rigorous evidence of the efficacy of the technology, not only in reducing carp numbers but in achieving beneficial impacts on rivers and water quality. (*i.e. Does it work?)*

(h) There is public concern about the cost/benefits of the program that must be addressed in the communication plan, perhaps through a triple bottom line analysis. People also wish to know why R&D resources are devoted to an issue such as carp, compared with other higher-profile issues. (*i.e. What will it cost? Will I be asked to pay ior it?)*

(i) There is initial concern about the possibility that the technology could 'backfire' in some unexpected way. A publicly visible demonstration project, with a citizens' review panel, might help alleviate this. The safety of humans and other creatures which eat carp must be assured and demonstrated.

(j) There is concern about the potential for misuse or abuse of the technology (*i.e*. could it be applied against humans?). Some reassurance about how the knowledge will be controlled is desirable. (*i.e. How can I be sure it won't get into the wrong hands?)*

While benefits and concerns are broadly similar between urban and regional Australian, the research suggested some differences that have significance for how the work is communicated to different audiences:

(k) Regional people are clearly more concerned about carp and the suspected harm they cause than urban Australians. They are more an economic issue for the bush.

(l) Urban Australians are more likely to raise ethical concerns about the proposed technology.

(m) Regional Australians are more likely to raise safety and specificity concerns.

(n) Regional Australians may have unrealistically high expectations about the speed and efficacy of the technology based on previous highly successful biocontrol programs (*e.g.* cactoblastis and myxoma).

(o) Urban Australians will rate the humaneness of the technology more highly.

(p) Regional Australians worry they may have to foot the bill for carp control or any problems associated with it.

5. Some general observations

5.1 Qualitative issues

Focus groups conducted with representatives of the Australian public on the Pest Animal Control CRC's Daughterless Carp Project in Sydney and Wagga underlined the importance of effective two-way communication for the success of the project and ultimate adoption of the technology.

On the positive side, it is clear from the results of the pilot focus groups that carp have few friends among either urban or regional Australians, and that any solution to the perceived problem will be welcome provided it meets certain criteria, chiefly the **safety, efficacy, ethics** and **value** of the proposed technology.

As with other genetic research, public concern and suspicion exist. It is clear from both groups that people do not feel they have sufficient information about the technology to form a clear opinion as to its merits, and this will require a consistent, long-term approach to communication from now until the technology is due for release, and thereafter.

This requirement poses a significant communication challenge in reaching audiences across Australia who may otherwise be unengaged in the issue, but nevertheless may influence government decisions on whether or not to adopt it. This is likely to involve significant resources devoted to public dialogue and education.

5.2 Quantitative issues

Possible missing drivers of overall Value.
As noted in §4.1, the two drivers (Concerns and Benefits) explain rather less than 50% of the overall variation in Value, a result that would normally be regarded as very unsatisfactory.

This result is in contrast to an earlier study of community attitudes towards research into genetically modified organisms for managing pest mice. In that study, Benefits and Concerns explained about 70% of the variation. One key difference between the two studies may be that the problem of pest mice is perceived as one of rather greater urgency – and hence of higher priority in terms of expenditure of research dollars.

This suggests at least one potential driver to be investigated for inclusion in subsequent surveys, relating to the overall importance of this project compared with other such projects seen as competing for funds (*cf*. also §4.3(h)).

Using the linkage to business drivers to set goals and inform business strategy.
There are two points to make:

- Taking Figure 3 as an exemplar, management might select a 12-month goal to achieve 80% of respondents willing to support eventual implementation of the gene technology solution. This in turn implies a target for the overall Value score from the survey, and so leads to the need to make improvements at lower levels in the Value Tree.

- An ongoing monitoring process will provide a trend chart for this business driver. Management may take the view that they are not willing to risk the 'scale-up' costs associated with implementation if they cannot achieve

an overall level of community support in excess of 90%. This will provide an ultimate target for the Value score from the survey process.

Using the quantitative results to identify communication priorities.
The way to use the results contained in Tables 4 – 6 is to look, at each level of the Value Tree, for drivers or attributes that (a) have significant impact weights, and (b) are rated relatively poorly. For example, in Table 5, the 7th attribute has an impact weight of 21% and is rated at 7.7, allowing scope for significant improvement.

At present, in the absence of a vigorous public campaign opposing the current research program, the community's overall Concerns appear to be having very little influence on their overall view of the value of the research program. On the face of things, one might well not bother to focus on improving ratings relating to Concerns. However, this luxurious situation might well change were a well-orchestrated opposition to materialise, in which case Table 5 reveals several items requiring attention.

6. Possible next steps

The current investigation, and the initial study relating to pest mice, suggest that the general approach to measuring community attitudes has the potential to play a valuable role in monitoring the efficacy a community dialogue process and informing its deployment. Based on what has been learnt to date, possible next steps might include the following:

(a) Seek to identify a possible third driver to go with Benefits and Concerns, run a couple of Focus groups to identify its main Attributes, and then run another survey to check on its explanatory power

(b) Expand the general Focus group work to other States and regions in order to check for consistency/opinion variance across Australia. (As a national issue it will need national approval, so every State will need to have a say.)

(c) Build on and enhance the current Daughterless Carp Communication Strategy to ensure that the community engagement component addresses the issues and concerns raised by the public, as identified in this report

(d) Start preparing public responses to the issues and concerns raised by the community in the initial Focus groups and in the qualititative responses in the surveys, for use in the Daughterless Carp community engagement process, on the CRC PAC website and as educational/informational handouts

(e) Build on and enhance the Daughterless Carp community engagement process in key communities and consider some additional processes such as setting up citizens' reference panels in relevant areas, citizens' juries or consensus conferences, *etc*.

(f) Once a dialogue process has commenced, implement a continuous survey program to monitor the efficacy of the process, identify where next to focus communication efforts, and establish trends in the relative importance of the various drivers and attributes, and in their ratings.

(g) (g) Identify where any potential public campaign opposing the current research program may arise

(h) Consider using this research tool to do a 'before' and 'after' study of community attitudes in a rural area, following a community engagement process on the Daughterless Carp program.