



## Marine and Tropical Sciences Research Facility

### Why community perceptions about social resilience in relation to water quality are important

presented by Dr Margaret Goch  
James Cook University, Townsville.

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of the Australian Water Association,  
Gold Coast International Hotel, Surfers  
Paradise, 30 March - 2 April 2008



SOURCE: GBRMPA

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Source: TCC website

### Townsville

- Population 160,000
- Northern centre for State and Federal Governments, and mining, commerce, retail, community and cultural services.
- water features strongly in the lives of residents



**Bush Garden  
on the banks  
of the Ross River**



Photo courtesy of Townsville City Council



**Ross Creek**  
*Townsville Shire*



Source: TCC website





**Ross River**  
(Townsville Shire)



Source: TCC website



Townsville Town  
Common



**Salt water couch grassland**  
Source: TCC website



**Open Lagoon**  
Source: TCC website

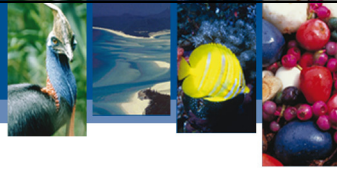




One of Ross  
River's  
many weirs



Water Hyacinth infestations below Aplin's Weir Wall  
(Source: NQ Water)



Each year NQ Water sprays, cuts and collects submerged weeds and deposits them at collection points along the river, using a mechanical harvester.



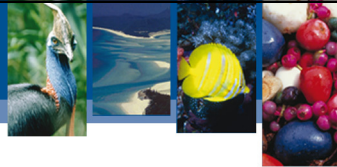
Weed harvester in action at Aplin's Weir





Like many areas in Queensland, water quality has continued to decline, partly due to

- increased population growth
  - increased use
  - continued economic growth.
- (Rolfe et al 2005)



- Clean water is essential for healthy ecosystems *and* human health and well-being.
- Water quality, quantity, distribution, and ecological status are prioritised according to human *values, beliefs* and *perceptions* (Hedelin, 2007).

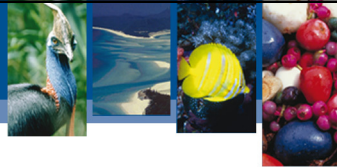




### Resilient communities

...ones that predict and anticipate change;  
absorb, respond and recover from shock or  
disaster; and improvise and innovate in  
response to disaster (*perceived or real*  
– my addition)

(Aguirre, 2006 in Maguire and Hagan, 2007)



### From the literature, in relation to water quality, a resilient community will....

- have a shared understanding of
  - what 'water quality' means why healthy waterways are important
  - how 'water quality' varies for different contexts and for different uses of water
- be vigilant in monitoring in water quality;
- develop smart solutions to water quality problems;
- survive in a rapidly changing world;
- be diverse and innovative;
- inspire other communities. (adapted from Wolfenden, 2007)





## Why focus on resilience??

Resilience centres on *responding* to change and *creating* change.

It implies an active state.



Why are community perceptions about social resilience in relation to water quality important?

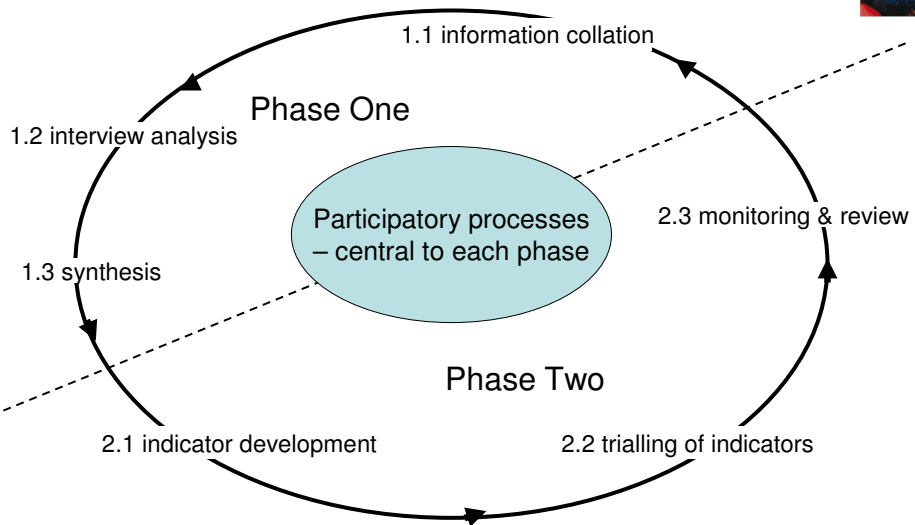
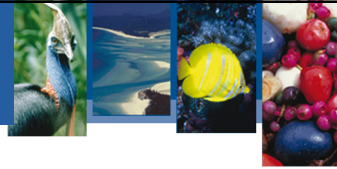
Because perceptions influence how people *think* and *act* in relation to water quality





Building a picture to answer the question:

What indicators would tell us whether communities  
would be resilient to changes in water quality?



## Perceptions of resilience to water quality changes: Townsville case study

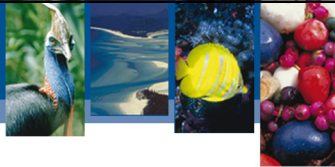


Interview questions asked respondents how they:

- define
  - water quality
  - resilience
  - social resilience
- make judgments about water quality
- see others in the community responding to water quality issues



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### Themes from the interviews

Participants saw water quality as something that

- contributes to human health and well-being
- has widespread impacts on terrestrial and marine systems
- can be regulated
- something that affects local economies
- citizens should take personal responsibility for





Using **social impact assessment** (SIA) through a resilience lens to measure levels of resilience in a community

**Socio-ecological resilience** – 4 main ideas

Resilience  
Adaptability  
Transformability  
Scale

SIA – measures changes in capitals over time

Social  
Cultural  
Economic  
Physical  
Institutional  
Natural  
Human

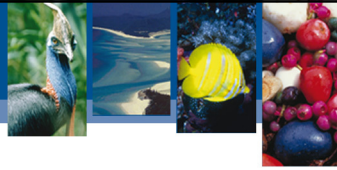


Aims of 'resilience management'

- To be pro-active – ie to prevent a system from moving into an irreversible and/or undesirable state
- To nurture renewal and reorganisation after change

(Holling, Gunderson & Ludwig (2002))





**Indicators** – things that measure change

**Aim is to enhance** community-scale resilience to changing water quality through changing individual behaviour – **focus on human capital**

Approach is called Community Based Social Marketing (CBSM)  
Developed by Dr Doug McKenzie Mohr – environmental psychologist



**Behaviours as indicators of community change**


The Black Ross Water Quality Improvement Plan (BRWQIP) provides a mechanism focus for developing indicators in relation to MATs that are framed in terms of desired behaviours.





### Proto-indicators to classify communities

(eg based on adoption rates of BMPs identified in the BRWQIP using MERI framework)

- 
- Very high potential for resilience** (high percentage of innovators, champions and early adopters)
  - High potential for resilience** (small number of innovators, champions and early adopters; more followers or late adopters)
  - Some potential for resilience** (no innovators; few if any champions or early adopters; more followers, some resistors)
  - Little potential for resilience** (no innovators; champions or early adopters; some followers, more resistors)



Plan to talk to different stakeholders in the community:

- 4 geographic areas – public meetings to discuss different of the WQIP
- Local Marine Advisory Committee – established by GBRMPA
- WQIP steering committee – established by TCC

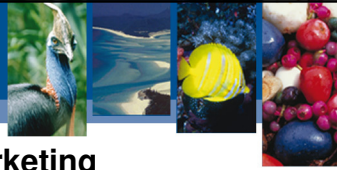
3 Questions:

What water quality issue do you think the community is most able to address?

How can we write that issue as a target to aim for in the WQIP?

What things can community members realistically do to address the issue?



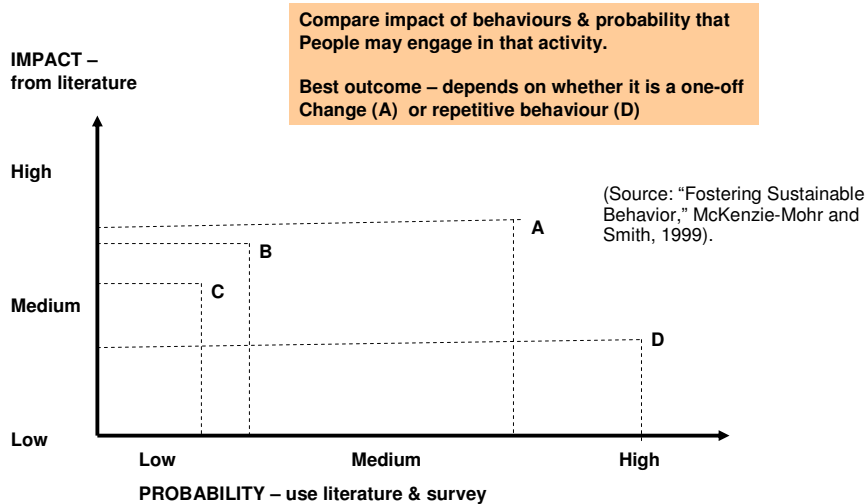
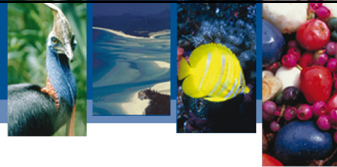


## Community-Based Social Marketing

Involves the following:

1. Selecting desired **behaviour** & target **audience** – eg BMP
2. Identifying **barriers** and **benefits** to a behavioural change – ie activity
3. Developing a **strategy** that uses effective “**tools**”
4. **Piloting** the strategy
5. **Evaluating** the strategy once it has been implemented across a community.

(Source: “Fostering Sustainable Behavior,” McKenzie-Mohr and Smith, 1999).





Identifying **barriers** and **benefits** to a behavioural change (ie an activity)

Specific behaviour		Perceived barriers	Perceived benefits	Type
Encourage		1 _____ 2 _____ 3 _____ 4 _____	1 _____ 2 _____ 3 _____ 4 _____	<input type="checkbox"/> One off <input type="checkbox"/> Repetitive
Discourage		1 _____ 2 _____ 3 _____ 4 _____	1 _____ 2 _____ 3 _____ 4 _____	<input type="checkbox"/> One off <input type="checkbox"/> Repetitive

(Source: "Fostering Sustainable Behavior," McKenzie-Mohr and Smith, 1999).

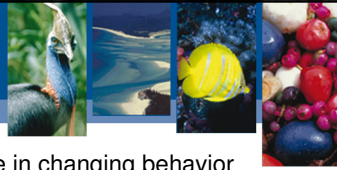


**Developing a strategy** - use "tools" that are effective in changing behaviour

- Public Commitment** – eg sign a petition
- Prompts** – close in time & space – eg sticker
- Norms** – peer behaviour
- Effective messages** – media – short, sharp, vivid
- Incentives/Remove external barriers** – one-off reward
- Diffusion Tools** – social networking, word-of-mouth

(Source: "Fostering Sustainable Behavior," McKenzie-Mohr and Smith, 1999).

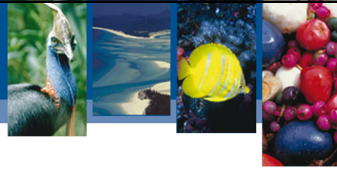




**Developing a strategy** - use “tools” that are effective in changing behavior

Encourage/ Discourage		Tools	Strategies
<i>Barriers</i> to behaviour you want to encourage	1 _____	1 _____	1 _____
	2 _____	2 _____	2 _____
	3 _____	3 _____	3 _____
<i>Benefits</i> to behaviour you want to encourage	1 _____	1 _____	1 _____
	2 _____	2 _____	2 _____
	3 _____	3 _____	3 _____
<i>Barriers</i> to behaviour you want to discourage	1 _____	1 _____	1 _____
	2 _____	2 _____	2 _____
	3 _____	3 _____	3 _____
<i>Benefits</i> to behaviour you want to discourage	1 _____	1 _____	1 _____
	2 _____	2 _____	2 _____
	3 _____	3 _____	3 _____

(Source: “Fostering Sustainable Behavior,” McKenzie-Mohr and Smith, 1999).



- Once the strategy is developed, we will implement a baseline survey of residents ability and willingness to adopt the desired behaviour(s).
- The next step is to implement a pilot of the strategy, and when finalised, implement the strategy across Townsville.
- The idea is to repeat the survey over time to measure the extent to which the community has responded in relation to this issue.

