

Land, Water, Waste and Community – Current Best Practice for Local Government motivated towards Reef protection.

Paul Groves, Hugh Yorkston, Jason Vains, Tom Hatley and Melanie Thomas
Great Barrier Reef Marine Park Authority PO Box 1379 Townsville QLD 4810

INTRODUCTION

The Great Barrier Reef is under an increasing level of threat from anthropogenic impacts. In 2009 the Reef was impacted by thermal stress and coral bleaching associated with climate change and also by floodwaters from the Great Barrier Reef catchment. In Addition cyclone Hamish caused physical damage to parts of the southern Great Barrier Reef. Although these events are beyond the control of Local Government, the ability of the Reef to 'bounce back' after such events is highly dependent upon the quality of the water entering the Great Barrier Reef lagoon. The adoption of current best practice by Local Government is a step towards the improvement of the water quality leaving the Great Barrier Reef catchment. To assist catchment based Local Government to improve water quality in their shire, the Great Barrier Reef Marine Park Authority (GBRMPA) has developed a decision support tool for Local Government – Land, Water, Waste and Community – Current Best Practice for Local Government motivated towards Reef protection. This report, managed under the GBRMPA's Reef Guardian Council program is a reference tool for current best practice actions in the management areas of land management, water management, waste management and community capacity building.

BACKGROUND

Current best practice in this context can be defined as something that improves water quality, enhances the community's capacity to manage water quality and improves the way we conduct land and water management. This study however also recognises that new current best practice comes along all the time. This report is targeted predominantly on urban areas. Substantial work has already been conducted in developing current best practice in rural areas (BDTNRM, 2007; Cripps, 2007; Coughlin et al, 2006; Thorburn et al, draft; Cotton Australia, 2004; Coughlin, 2006). The list of actions is extensive, but not exhaustive and the ideas presented won't necessarily apply to all urban centres.

The best practices identified are practices that can apply to Queensland, which may work in this coastal environment and can, if resources permit, be undertaken by Local Government located in the Great Barrier Reef catchment. This report identifies actions, programs and strategies that may be considered as current best practice based on observations from practices from around the globe. The information compiled provides a decision support tool to assist Local Government with deciding on a strategy or action to address water quality management issues. The information provided will also feed into the GBRMPA's Reef Guardian Council program, providing recognition for these actions when undertaken by Local Government. As best practice is adopted, it is hoped that Local Government feedback reporting from the Reef Guardian Council program can be fed back to other Local Government areas.

Note that many of the actions identified may not apply to all Local Government areas. With an extensive catchment area, the Great Barrier Reef catchment ranges from mountainous wet tropics rainforests to dry tropical savannahs and floodplains. It would be an impossible task to develop a set list of current best practice actions that can comprehensively apply to the whole catchment. What may be current best practice in the USA, Victoria or even Townsville may not necessarily be best practice for Cairns. For example, connection of all households to a sewage treatment plant may seem like best practice, but if the community is quite small, widely spaced and well away from any major centre, then on-site systems would more likely be current best practice for that area.

This report forms part of the GBRMPA's Reef Guardian Councils program. It is envisaged that the identification of current best practice actions will become an ongoing process under this program and the results made available, along with this report, through the program website. The actions identified within this project may also be useful in developing a list of actions that can be used, where appropriate for that region, when developing Water Quality Improvement Plans.

METHODS

Determining current best practice involved exploring the research undertaken within a range of organisations including Commonwealth and State agencies, universities and natural resource management groups. Case studies were identified in Local Government areas from within Queensland and experiences from interstate and overseas were investigated and have been included where relevant. The basic process used for identifying Local Government current best practice actions follows the plan shown in figure 1.

1. Plan

- Define scope and framework for identifying current best practice using Local Government current work structure
- Analyse critical success factors – identify projects within this structure that have relevance to water quality improvement outcomes
- Develop performance measures for process to be benchmarked

2. Search

- Find industry partners – who is best in this field?

3. Observe

- Collect information
- Review practices and identify current best practice actions in each field

4. Analyse

- Identify and report any gaps in knowledge

5. Adapt

- Choose 'best practice' actions for inclusion in subsequent reporting
- Provide recommended further research projects
- Forward collected information to industry partners for review and incorporate feedback into final report

6. Recycle

- Identify benchmarks
- New projects identified
- Evolve existing benchmarks

Figure 1. Benchmarking process utilised to assess actions available to Local Government to improve water quality

Indicators of environmental performance that reflect the desired environmental outcomes used in identifying current best practice were based on the intrinsic goals of Water Quality Improvement Plans. These indicators are:

- Nutrients – specifically the ability of the action to instigate a reduction in nutrients entering the waterways
- Sediments - the ability of the action to instigate a reduction in sediments entering the waterways
- Toxicants - the ability of the action to instigate a reduction in chemicals and litter entering the waterways
- Biodiversity – the ability of the action to instigate protection of areas of identified high biodiversity.

Only some of the actions identified in this assessment were able to provide quantifiable outcomes from their uptake. Even those actions that displayed measures of achievable outcomes varied markedly between studies, based on variations in climate, geology, resource availability and topography. Therefore care must be taken when considering the merits of these actions, as they will not apply to all circumstances. What works for one Council may not necessarily work in another.

To assist their uptake, the current best practice actions developed are grouped around the key operational themes used in Local Government day-to-day business and identified in the Reef Guardian Council framework. Those themes are Land Management, Water Management, Waste Management and Community Capacity.

Land Management

- Vegetation management – retaining vegetation cover in the Great Barrier Reef catchment is important for reducing sediment loads entering the Great Barrier Reef.
- Pest management – weed pests can reduce biodiversity, alter water flows (aquatic weeds) and increase the erosion of river banks
- Erosion control (construction) – sediment loads have been demonstrated to reduce light availability, smother corals and reduce coral recruitment
- Erosion control (coastal) – shoreline erosion impacts coastal communities and can damage inshore reefs. Managing coastal erosion is important for conserving the high diversity inshore coral reefs

Water Management

- In most parts of Queensland wastewater and trade waste is treated at sewage plants (and management by Local Government).
- Urban stormwater management in Australia is well studied with best practice publications produced and supporting modelling tools available.
- Waterways and wetlands management in Queensland varies depending on their status and location. Wetlands are important in improving water quality and new guidelines exist to aid in wetland restoration.

Waste Management

- Waste items such as cigarette butts, cans and plastic entering the Great Barrier Reef can cause environmental, social and economic harm.

Community

- Local Government is the level of government closest to the community and subsequently plays a key role in community capacity building and engagement.

These areas of management are part of the day to day management operations of Local Government and this report is provided as a tool to assist with the uptake of current best practice.

OUTCOMES

This report will be made available online, through the Reef Guardian Council website (www.gbrmpa.gov.au) and also be available on CD. A climate change module is also under development and will be available in late 2009.

TAKE HOME MESSAGES

The impacts of climate change and declining water quality are already being seen on the Great Barrier Reef. Local Governments are placed in a position of influence, whereby they can make a difference. By managing the anthropogenic inputs from urbanisation (nutrients, toxicants) that are entering the waterways, Local Governments can contribute to Reef resilience and improve Reef recovery.

ACKNOWLEDGEMENTS

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Townsville, DPI&F Townsville, BSES Ltd Burdekin and Burdekin Bowen Floodplain
Management Advisory Committee Ayr.