

# Participatory tools for coastal zone management: Use of stakeholder analysis and social mapping in Australia

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**Abstract.** This paper presents research currently being conducted in Central Queensland, Australia to understand conflicts between coastal zone resource users and the associated socio-cultural and political issues surrounding coastal zone management. Conflict occurs between stakeholders in the coastal zone over values, conservation and development trade-offs, access, and resource use rights. Decisions are currently made within a multi-stakeholder framework where there is limited understanding among stakeholders of each groups values and aspirations, and few mechanisms for negotiation, or to ensure transparency of decisions and feedback on consultation. This paper reports on the contribution of stakeholder analysis and social mapping to conflict management and findings from their application. As it is applied here, stakeholder analysis and social mapping have been successful participatory tools used to document and feed back the values, interests, attitudes and aspirations of stakeholders. Understanding stakeholder conflict is essential in progressing a whole catchment approach to decision-making that secures the cooperation of a diverse range of social groups.

**Keywords:** Environmental conflict; Great Barrier Reef; Planning; Queensland; Social analysis; Socio-cultural.

**Abbreviation:** ICM = Integrated catchment management.

## Introduction

Worldwide, conflict among stakeholders in natural resource decision-making over competing interests and goals continues to impede sustainability efforts. Planning and management for sustainable outcomes in the coastal zone often extends across different sectors, organizations and ownership boundaries, and encompasses catchment areas further inland from the coast. Consequently, in the coastal catchment landscape – with its complex ecological problems, diverse interest groups and multiple resource uses – there is significant potential for conflict among resource users. Often, multi-objective environmental management challenges tend to become zero-sum problems; in the sense that conflict generally has winners and losers. Too frequently, those losers come from already marginalized social groups which lack the resources and capacity (technical, financial, institutional, social, or political) to participate effectively in existing political forums. For the purposes of this study, all individuals, groups, organizations and communities either involved in, or affected by, decisions made to plan and manage coastal resources are regarded as legitimate stakeholders in coastal zone management. McGlashan & Williams (2003) provide a similar definition of stakeholders. They also provide a useful distinction between ‘institutional stakeholders’ which are organized groups representing a large number of interests with the technical expertise and resources to be effective participants (e.g. industry, public organizations such as local government authorities and state government agencies) and ‘local stakeholders’ that are small groups or individuals with limited resources and organizational capacity to engage effectively in consultative processes and influence decision-making (e.g. recreational groups, local conservation groups). Use of such stakeholder categories can be helpful in understanding the various stakeholders and their attributes. A number of stakeholder categories are used in this study to assist in fully determining the convergences and

conflicts of interests, values and aspirations of all the stakeholders.

The resolution of environmental conflict is difficult in the absence of good understanding among stakeholders of who else is involved in, or affected by, their own actions and decisions. Understanding the basis for such social conflict is essential in progressing cooperative catchment-wide decision-making. This paper uses the social research methods of stakeholder analysis and social mapping to gain an understanding of stakeholders, and to identify, explain and find ways to overcome conflicts in coastal resource management. In particular, it explores the potential of a stakeholder analysis framework to provide a platform for better stakeholder understanding and interaction, with an emphasis on identifying areas and issues of conflict between stakeholders in coastal resource planning and management. Although much attention has been given to understanding the nature of the problem as a basis for negotiation and conflict in environmental management, we have used stakeholder analysis as a participatory tool for identifying and better managing conflict, and developing a common understanding among stakeholders. Stakeholder analysis makes issues more visible and clarifies the ways in which the multiple values and objectives of stakeholders converge. This then provides the basis for reform of current participation and decision-making processes. Discussion of the specific conflicts identified by stakeholders using stakeholder analysis and social mapping will demonstrate the need to use these participatory tools and apply social analysis methods early in planning processes to inform participants of attributes (values, interests, perceptions, aspirations) of the individual stakeholders.

Case study findings from research in a coastal catchment of Central Queensland in Australia are used to inform the discussion. The case study provided the opportunity to investigate a coastal zone that supports a rapidly increasing urban base and expanding world class industrial operations which are surrounded by pristine environment. The research is part of a major multi-institutional research and planning initiative embodied in the Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Coastal CRC), an institution that involves several universities together with local and state government agencies and CSIRO, the Commonwealth Scientific and Industrial Research Organization.

## **Background – Coastal zone conflict and management**

Increasing pressure on environmental resources, and a growing awareness of the value of different resources for a wide range of interests, has seen environmental conflicts become prominent aspects of coastal zone decision-making.

Coastal zone conflict is, in part, a symptom of the interconnectedness of environmental processes and issues. For example, pressure to clear and develop land for urban and industrial areas on the coast in a response to increased population demands and economic opportunities cause land degradation. Greater sedimentation in rivers as an ecological problem for fisheries has resulted from such land based impacts of soil erosion, itself a result of complex ecological, hydrological and socio-economic interactions. The interconnectedness of the land and water incorporates catchment areas, river systems and oceans (including reefs) in a diverse landscape where actions taken, and resultant impacts, are spatially and temporally separated. This highlights the need for decision-makers to broaden their view to understand the impacts of their decisions on other stakeholder groups and socio-economic sectors (Westmacott 2001). This requires decision-makers and stakeholder to be aware of the values and aspirations for the coastal zone that are held by others. Also, since environmental issues are always value based, it is inevitable that the outcomes of decisions and their relative desirability will be evaluated differently according to the values and interests of competing stakeholders (Jennings & Moore 2000).

Diversity of values and interests makes it imperative that decision-making processes are able to provide a platform for negotiation and conflict resolution. Successful conflict resolution is dependent on having the appropriate stakeholders and decision-makers present in processes of deliberation and negotiation (Bingham 1986). Managing and resolving conflict between stakeholders also strengthens the democratic and participatory aspects of environmental decision-making. Resulting consensus lends greater commitment to the implementation of outcomes.

Excluding stakeholders, or not acknowledging their interests and rights, on the other hand, creates conflict situations that potentially compromise the implementation of decisions. There is a constant danger in environmental decision-making that a limited number of prominent 'voices' will be heard, leaving less visible stakeholders silenced, disempowerment and disadvantaged. Stakeholders such as voluntary community groups, non-government organizations and indigenous people often struggle to have a presence or role in the

process and to hold a position at the decision-making table. This is, in part, due to the belief that they are represented by politicians and state agencies through representative democratic institutions and processes (Jennings & Lockie 2002). However, there is a pressing need to ensure that representative structures neither preclude more direct forms of participation nor become beholden to a narrow range of interests (Lockie & Jennings 2002).

### *Current coastal zone management practice in Queensland*

Commonwealth and State legislation, a combination of regulatory and management agencies, and numerous planning processes seek to protect and manage the coastal zone. This paper does not outline these in detail, but it is worth pointing out that coastal zone management is commonly viewed in Queensland from an integrated landscape perspective that attempts to incorporate water catchments, the coastal zone and outlying reefs. The management of coastal areas and resources is thus undertaken through an integrated catchment management (ICM) framework that is used to facilitate participatory catchment planning on natural landscape boundaries. The key elements of ICM include cooperation among stakeholders, agreement on common objectives, and the involvement of all stakeholders in identifying issues and solutions (Mitchell & Hollick 1993). An ICM approach allows for planning and management arrangements to link across the land and sea (Wescott 2002). This approach recognizes the interrelationships between different environments and acknowledges the presence of the World Heritage Great Barrier Reef system. This encompasses a greater geographical landscape than integrated coastal management (cf. Cicin-Sain & Knecht 1998) which involves management of the marine, estuarine, wetland and coastal systems (Westmacott 2001). The key point here is that the involvement of numerous organizations – each with different mandates (regulatory, planning, management) and instigating multiple initiatives and programs – over such large spatial units places considerable demands on stakeholders for consultation and information uptake. Processes of exclusion are not necessarily, therefore, deliberate, but result often from the limited capacity of some stakeholder groups to commit time and resources to multiple processes and assimilate the vast quantities of information involved.



**Fig. 1.** Location map of the Port Curtis catchment in Central Queensland of Australia.

## **Methods**

### *Research study areas*

The research reported in this paper was undertaken in the Port Curtis catchment of Central Queensland (Fig. 1). The map also shows the adjacent, and much larger, Fitzroy catchment which is also part of the study but not reported on here. The Port Curtis catchment is a major industrial centre and deep-water port facility with a land area of approximately 44 800 km<sup>2</sup>. Inland from the coast supports mineral and agricultural enterprises. The main land uses are heavy industry (port facilities, metal refining, chemical and mineral production, coal/mineral/petroleum extraction and power generation), grazing and horticulture. Other activities include urban development, commercial fishing and recreational activities such as fishing and boating. Noted environmental features include the World Heritage listed Great Barrier Reef, mangrove areas, a deep-water harbour and two river systems. Though presently containing a relatively small human population there are a wide range of stakeholders with potential conflicts of interest due to the diverse range of resource uses and activities. Planned future development for the Port Curtis coastal zone will result in significant increases in the urban population and expansion of the town, infrastructure and port development, and heavy and light industry operations.

Stakeholders are those individuals, groups, organizations and communities involved in or affected by decisions made to plan and manage coastal resources. In the present study this incorporated state and local government organizations, along with industry, primary producer groups, economic development organizations, community groups and indigenous people.

### *Stakeholder analysis and social mapping*

Stakeholder analysis and social mapping are applied here as participatory social research tools that document and feed back the values, interests, attitudes and aspirations of a defined group of stakeholders to encourage mutual understanding and enhance negotiation and deliberation over genuine conflicts of interest. Drawing on Dale and Lane's (1994) and Stolp's (1999) stakeholder analysis models, the research progressed through two recursive phases. The first involved the use of face-to-face interviewing and document analysis to explore with stakeholders their key values and aspirations regarding the coastal zone, as well as their experience of decision-making and preferred frameworks for involvement in decision-making. This data was then used to construct a series of 'social maps' that attempt to show visually the relationships between stakeholders, with a particular focus on convergences and differences regarding key values and aspirations relative to specific coastal zone management issues or processes. These maps provide a starting point for discussion among stakeholders and between stakeholders and researchers over areas of common and contested interest.

The second stage used these maps to begin identifying, with stakeholders, strategies to address areas of stakeholder conflict. As this will lead somewhat inevitably to changing relationships between stakeholders, and to changing understandings for individual stakeholders of their own interests and aspirations, it is vital that social maps are always described as draft representations of dynamic networks of social relationships. Regular updating acts recursively to both help capture and reflect the changing ways stakeholders perceive their own interests, values and aspirations over time, and to promote the learning and interactions among stakeholders that leads to such change (Lockie 2001). Together, these two phases will act to: enhance mutual understanding among stakeholders; develop strategies for stakeholder management; assist in alternative dispute resolution and environmental mediation between conflicting stakeholders; and incorporate multiple objectives within a decision-making framework (De Lopes 2001; McCreary et al. 2001; Ramanathan 2001).

There are two coastal stakeholder characteristics with significant methodological implications: (1) the formation of a range of industry, community and other interest groups seeking to represent coalitions of stakeholders around areas of perceived common interest; (2) the variety of spatial scales at which different stakeholders and interest groups operate. Existing interest groups and scales of operation gave a clear starting point for the stakeholder analysis but through the recursive process of social mapping – were not treated as inevitable or fixed.

### **Results and Discussion**

This section presents findings from the stakeholder analysis and social mapping, firstly by giving examples of conflict in Port Curtis and then by moving onto stakeholders' perceptions of the social and political issues they face in attempting to deal with such conflict. Finally, this section will present results from the social mapping exercise and the alternative perspectives on conflict and convergence of interest that it suggests.

#### *Phase 1 – Conflict in Port Curtis*

Most conflict in Port Curtis had at least some relationship with the multi-objective nature of demand for coastal resources. In analysing this conflict it is not our intention to judge the empirical validity of competing knowledge claims, nor to arbitrate over what trade-offs are appropriate in coming to decisions over appropriate courses of action. Rather, it is to highlight the social constructedness of all knowledge claims (that is, the relationships between knowledge, the social context in which it is developed, the values and aspirations of those involved, and the political interests it embodies) and the potential of techniques such as stakeholder analysis to improve the ecological rationality of decision-making (Dryzek 1990) by promoting dialogue and deliberation over goals and aspirations as well over the means to attain them. In some cases this may lead to the development of win-win solutions. In others it may simply sharpen stakeholders' understanding of who the true winners and losers are. In either case, a more robust platform for decision-making is founded and the likelihood of identifying and involving all those affected by a decision improved.

#### *Conflict over resource access and rights*

Resource access was a central area of conflict in relation to commercial versus recreational harvesting of a resource or access to a resource base. The concept of rights was conceptualized in two broad ways: first, rights of ownership and, therefore, control over use and management of a resource; and second, collective rights to access and use of a resource. Resolving resource access and ownership raises questions regarding who has access to a resource, when they have that access, and under what conditions (Reeve 2001). Clearly, there is considerable potential for specific groups either to be marginalized in the resolution of these questions or to have their own rights infringed by what may otherwise appear to be the rightful activities of other groups. This latter case is often evident when the activities of one group of resource users have off-site effects that reduce the quality of a resource for downstream users. The

effects of erosion on agricultural lands on downstream agricultural activities, fisheries and traditional Aboriginal uses provide one example. Somehow, rights of ownership and/or access by diverse groups need to coexist within some institutional arrangement.

Stakeholder analysis seeks to build a shared understanding between adversarial stakeholders to allow them to find common ground for negotiation and to recognize the value of cooperation. The data gathered with recreational and commercial fishers showed that both groups had considerable interests in, and aspirations to, protect fisheries resources from negative impacts caused by the activities of other stakeholder groups:

*"foreshore development and reclamation and destruction of mangroves and impact on habitats that might be considered unimportant for others but retention of mangroves and mudflats we see as important for fish nurseries"* [recreational fisher]

*"stop reclaiming every inch of ground just so industry can have a foot in the water or urban people can have a river front/coastal area"* [commercial fisher]

Yet despite the largely common values and concerns of these two groups, conflict over resource access and rights is ongoing and decline in fishing stocks often attributed by each group to overfishing by the other. One recreational fisher, for example, argued that:

*"The problem is anyone from Queensland with a fishing licence can turn up and fish there, we wouldn't have a problem with just the local Gladstone commercial fishing families being there. Because these other fishers don't have any identity with it they can fish it beyond, exploit it. Some sort of access rights – not just anyone with a commercial licence."*

While other potential causes of fish decline – including land reclamation and infrastructure development in critical fish habitats – were acknowledged by both groups, such complexities often were forgotten, along with the mutual interest of commercial and recreational fishers in addressing them. One commercial fisher summed up this situation by arguing that:

*"Recreational people are saying that commercial fishers have taken all the fish. The river system does not produce fish anymore."*

For the long-term sustainability of the resource, negotiation between these two stakeholder groups over the allocation of the fisheries resource is vital. Development and implementation of a Code of Practice will hopefully provide a platform for negotiation, resolution of disputes and produce some workable solutions to issues of resource allocation and access to fisheries in rivers and along the coast. To resolve the conflict a solution needs to satisfy the interests of both stakeholders.

*"[The] big issue facing recreational fishers everywhere is their relationship with commercial fishers – an uneasy relationship as two separate groups competing for the same*

*resource from quite different perspectives. Cooperation between the representatives of the two groups on certain issues, such as land degradation, runoff and agriculture. Other areas in which we are in direct competition is in access to the resource."* [recreational fisher]

*"Relationship between recreational and commercial interests can be strained due to some people holding extreme views to those who believe the two groups should be able to coexist and have mutual goals – care of the environment and the fish nurseries. Others can't see any shared basis as their aims are different"* [recreational fisher]

A mediation process between recreational and commercial fishers in Port Curtis over access to resources has enhanced relationships and led to the formation of an alliance (Gladstone Fishing Paternity). This alliance was formed to unite forces to fight against the damming of the Calliope River, the remaining undammed waterway and fish habitat in the catchment.

Another contentious issue raised by many stakeholders who use the coastal foreshore for recreation (fishing, camping) and cultural activities (traditional meeting places) was the loss of access to coastal areas and amenities. Port and industry development along the majority of the foreshore now prevents access and use of this area by the community. For many people in the community it has meant the loss of favourite fishing places and forced people to use boats to access to the harbour and waterways.

*"Important to maintain people's access to the coast area ... [but] unsafe to have people around rail lines and conveyors etc. potential hazard but people want access to the coast ... some people concerned about the access to the islands and being able to get access to the water to just recreate"* [State Government person]

The solution lies with restoring rights to the public to access and use parts of the foreshore, harbour and waterways to maintain an adequate quality of life and provide the opportunity for recreational activities. Restricting access to the coast and waterways to those individuals with boats unfairly disadvantages some parts of the community and creates private costs on individuals. Changes in people's welfare may also occur when they are required to incur costs in order to enjoy recreational activities elsewhere because they are no longer available locally (McGlashan & Williams 2003). Planning and implementation of adequately approved entry points to the coast and measures to deal with increased use of the coast from an expanding population is a starting point.

#### *Conflict over land use activities*

The State and Federal governments regard Port Curtis as the 'Queensland engine room of industry', and with good reason given the presence of the world's largest alumina refinery and Australia's largest aluminium smelter. Port Curtis has housed heavy industry

for over two decades and has now a strong industrial base and widespread community acceptance of industry as a positive feature for the economy and community (Lockie & Jennings 2002). However, the catchment is headed towards a more intensive level of industrial activity and evidence from the stakeholder analysis suggests a level of resistance to industrial growth from within community and existing industries. The basis of the resistance stems from a desire to retain the current quality of life and environmental condition in the region and maintain community support for existing industry. Other studies, including a recent community survey in the catchment, suggest that while the general community believe industry is essential to the prosperity of the region, continuing development will only be supported where this can be shown to compromise neither community safety nor environmental quality (Lockie & Jennings 2002). Consequently, conflict over development has often focused on the mitigation of discrete social and environmental impacts, and the local capture of economic benefits, rather than on the fundamental appropriateness of development to the region (Lockie et al. 2000).

The most controversial development currently under way in the catchment centres on shale oil mining and manufacturing. While proponents of shale oil point to the low emissions it produces when used and its potential to restore Australia's oil self-sufficiency, opponents point towards a manufacturing and processing process that emits up to four times more carbon dioxide than conventional oil production (Heard 2002) and is responsible for a range of perceived impacts on the health and well-being of nearby residents. Increased emissions of carbon dioxide have resulted in the linking of this issue by opponents to discourses of global warming and, thus, to indirect impacts on the health of the nearby Great Barrier Reef.

Supporting project proponents in their venture to manufacture shale oil are Federal and State governments who want the resource developed and have lent considerable financial assistance. However, reflecting the wide range of issues believed to be associated with shale oil mining, adversaries have been drawn together from a diversity of sectors somewhat unique in the industrial history of Port Curtis. These include members of the local community, existing industries, national and international environment groups, and local government. From the stakeholder analysis it was evident the conflict had created greater awareness between stakeholders of the values they share in terms of long-term protection of local and global environments. Between some stakeholders this has initiated dialogue and cooperation in place of previous animosity or mistrust. Commercial fishers, for example, remarked that:

*"We share environmentalist's concerns over the oil shale industry development and the impacts from those operations"*

*"If any industry is going to be stopped through community effort it will be this one. The communities in Yarwun and Targinnie have banded together to fight the giant. We try to work with others to preserve the coastal environment and I will meet up with other people and network."*

#### *Conflict over governance*

From the stakeholder analysis emerged a greater depth of understanding of stakeholders' perceptions on the nature of problems and the difficulties they face in dealing with conflict that currently exists. This section presents stakeholder perspectives on governance and appropriate ways to deal with resource management conflicts.

#### *Institutional incompatibilities*

Centralized planning by large institutions is often criticized for limiting participation to consultation over the recommendations of expert agencies. Under such circumstances, it is unlikely to identify areas of conflict early enough to adequately consider alternative proposals without significant additional costs. Centralized planning may also fail to provide adequate mechanisms for stakeholders to negotiate over alternatives and to seek common ground. Seeking alternatives, however, is particularly challenging in this case due both to the sheer size of the State of Queensland and the large number of relevant agencies at all levels of government. Irrespective of the intentions of state agencies, many stakeholders perceive there to be significant barriers to their participation in decision-making, insensitivity to local conditions, and insufficient flexibility to respond in a timely fashion to changes in the region. Some employees of state agencies also perceive there to be a hierarchy of agencies that effectively prioritizes the development of natural resources over consideration and regulation of their social and environmental impacts.

*"there is always a clear hierarchy in government, the environment ... seems to be at the bottom [and the] main focus is for encouraging economic development in the state."*

Stakeholder analysis is not presented here as a panacea for these challenges, but as one way in which agencies and other stakeholders may move forward despite these concerns.

#### *Social and political issues*

Social and political issues relating to conflict in the coastal zone need to be understood and overcome. Many of the issues are not unique to the coastal zone but extend over the wider catchment and landscape of Australia. The social and political issues connected to the

coastal zone management are a result of the myriad stakeholders involved in a diverse range of land and resource uses, and the institutional arrangements and governance system.

There are many social issues (including cultural aspects) connected to the coastal zone contributing to conflict. For instance, coastal zone management is taken on a whole of catchment approach that automatically creates a divide between upper and lower catchment interests. As a consequence of the large geographical area and nature of the problems, planning frequently fails to link land use activities with consideration of their spatial and temporal dislocation of impacts. This has implications for social equity, with citizens being disadvantaged and impacted on by the activities and decisions of other stakeholders.

Tension frequently may be found over responsibility for resource degradation, access and rights to scarce or limited resources, and cross-sector boundary impacts. This is particularly the case in relation to spatially 'mobile' resources such as water allocations. Changes in water flow regimes through the use of infrastructures are particularly prominent in debates over the impacts of those regimes, and associated sediment and nutrient loads, on fisheries. Attribution of blame for complex problems creates conflict that can be heightened by negative media representation. Diffuse land impacts on reefs and coastal areas from urbanization and agricultural practices, for example, are believed by commercial fishers to be ignored often in favour of sheeting home blame to the fishers. In the absence of strong scientific evidence to the contrary, perceptions remain unchanged and conflict situations occur.

*"why we are coping the brunt of the blame – coral dying or fish are not there. Not looking at the origin of the problem. Impact on the Great Barrier Reef from urbanization and farming methods was not being taken into account"* [commercial fisher]

Within a single resource sector there can be conflict between resource users over resource rights and access arrangements, as is the case in the fisheries sector between commercial and recreational fishers. Often stakeholders will only make investments to sustain the resource if they have sufficiently secure and long-term rights to the resource so that they know they will reap the benefits of their investment. Finally, there is the public versus private issue over interests and compensation payment when private rights are taken or infringed upon.

In the industrial sector, there is pressure on individual operations and industry as a whole to prevent any detrimental impact on the community and the surrounding environment. Acceptance by 'the community' is viewed by industry to be crucial for continued

operating. When a single industry threatens the image of industry as a whole and attracts negative media coverage the potential for conflict arises. This is of particular concern for airborne and water pollution, which can make it difficult for compliant industries to prove they aren't the polluters. The location of industries in close proximity to one another, without adequate buffers, causes further problems when workers in neighbouring industries are exposed to pollutants.

A further dimension is the cultural issue, of which there are two parts: firstly, the rural-urban population base and the differences in values, interests, and aspirations between these two communities; and second, the cultural divide between Indigenous Australians and Europeans and the marginalization of Aboriginal interests and culture since European colonization.

Frequently decision-making processes ignore cultural differences between stakeholders, treating the collective as a homogenous entity. A poor level of understanding of Aboriginal people and their culture by expert agencies organising consultation processes does little to build respect and trust between stakeholders or to secure their commitment to participating. Often the expectation is placed on Aboriginal people to cross the cultural divide by adopting and adapting to bureaucratic and European approaches.

As traditional owners of the country, Aboriginal people have particular Native Title rights conferred through parliament and the courts. These rights are limited often to access to land and negotiation over its development, with no special status afforded to Native Title holders or claimants beyond being labelled as yet another 'stakeholder' group to be consulted. Currently, the form and extent of Native Title is subject to considerable legal and legislative challenge, particularly in relation to water resources. Aborigines have many associated socio-economic issues (e.g. employment, housing, social welfare) that are tied to the environment, which influence and limit their ability to be involved in natural resource management.

Within the formal political sphere, the three levels of government are responsible for numerous institutional arrangements crossing multiple regulatory jurisdictions. Many stakeholders believe this to result in regulatory duplication, confusion and conflict. In Central Queensland, many stakeholders believe that strong State Government support for agricultural viability and industry development precludes significant regional influence and input. While State Governments have principal constitutional responsibility for the management of natural resources, local government authorities are increasingly being required to align many of their own planning and management roles with State coastal management priorities. Within Queensland, this

has been formalized through the Integrated Planning Act, raising, according to some stakeholders, issues of funding and capacity within local government:

*“under the new Integrated Planning Act [local government] are required to incorporate State interests into all of the planning processes and decision-making processes—which is new and devolving in some ways of responsibilities down to local government – in a negative context or ensuring local government plans where most development activities occur recognize and incorporate State interests into their decision-making process.”*

*“The responsibility being placed down to local government is fairly significant and often they do not have the expertise or the funding to do it properly.”*

The interconnectedness of the waterways in the upper catchment and estuarine and coastal areas means several local government authorities may have jurisdiction over a river system, with varying levels and types of natural resource management and protection plans and limited cross-boundary collaboration. The issue is that no single body/organization takes sole responsibility for the health of the river, but each local government authority utilizes, impacts on it and regulates it. This leads to abrogation of responsibilities, displacement of blame and, finally, conflict. Most stakeholders recognize the current institutional arrangements and governing system is anything but simple and encompassing of a genuinely integrated collaborative approach.

*“to date [local government planning] haven’t addressed issues of infrastructure in the land-sea interface. Area most difficult because of the jurisdictions that overlap and it creates a complex responsibility arrangement.”*

The presence of the Great Barrier Reef along the Queensland coast adds more stakeholders. Despite the general attribution of responsibility for natural resources under the Australian constitution to State governments, the Great Barrier Reef is managed by a statutory body established by the Federal Government. This body is charged with numerous responsibilities that must be reconciled with State Government’s development and resource agencies’ agendas and involvement in land activities impinging on the Reef’s unique environment and world heritage values.

*“we recognize our function is to protect and conserve the Great Barrier Reef to do so effectively we have to ensure activities adjacent to the reef need to recognize how their activities may impact on the Great Barrier Reef.”*

#### *Phase 2 – Social map of congruence and conflict*

Social mapping was applied to firstly discover areas of congruence or shared values and aspirations, and secondly to identify conflict. When the coastal zone values for the Port Curtis stakeholders were collectively

examined the shared values centred on maintaining water quality, fisheries, and protecting natural systems and habitats including, in particular, coastal features such as mangrove, wetland and seagrass areas and the Great Barrier Reef. Stakeholder values also coalesced around the recreational attributes and functional values offered by the Port Curtis coastal zone.

The Port Curtis stakeholders were organized into six categories to recognize their different activities and interests in the coastal zone as part of the social mapping exercise. These categories were natural resource management, government, resource provider and transport, regional development, primary producers and organizations, and community. Distinguishing between the various stakeholders allowed a clearer picture of the values held by the different individuals, groups and organizations.

#### *Clarification of values*

On the surface there was considerable consensus over the key values that should guide coastal management, with clear evidence that stakeholders have internalized, and were committed to, discourses of sustainability and sustainable development.

When social mapping of the stakeholders’ coastal zone values was completed a number of key values were identified for the various stakeholder categories. While the collective examination of the Port Curtis stakeholder values identified water quality as a key value, on closer examination this key value was absent for the community and natural resource management stakeholder categories. Similarly, preserving natural systems and habitats was not highly valued by the primary producer and regional development stakeholders. Fisheries values were strongly expressed by most of the stakeholder categories, except for natural resource management. Clarification of the values using social mapping has delivered a better insight into understanding the various stakeholders and identified other values of importance for the individual stakeholder categories, such as recreation, tourism, aesthetics, cultural aspects and economic expansion (see Table 1). Many of these quality of life values were overlooked in the broad analysis of stakeholder values. By using stakeholder analysis and applying social mapping it is possible to adopt a more proactive approach to avoiding and resolving conflict between stakeholders by identifying areas of congruence and incompatibility.

#### *Clarification of aspirations*

Stakeholders also need to elaborate and reach agreement on what is meant, in practice, by terms such as ‘healthy’, ‘sustainable’ and ‘natural flow rates’. Terms such as ‘healthy’ and ‘natural environmental flows’ were used by stakeholders but with little specificity



**Table 1.** Stakeholder Key Values for the Port Curtis Coastal Zone.

Natural resource management	Government	Resource provider and transport	Regional development	Primary producers and organisations	Community
Preserve natural system and habitats	Water quality	Water quality	Fisheries	Sustainability	Preserve natural system and habitats
Mangroves, wetlands	Preserve natural system and habitats	Water quantity	Economic expansion	Clean water and air	Economic expansion
seagrass	Sustainability	Fisheries	Aesthetics	Fisheries	Sustainability
	Function value	Mangrove, wetlands, seagrass	Cultural aspects	Water quality	Minimal – zero impact
	Mangrove, wetlands, seagrass fisheries	Preserve natural system and habitats	Marine environment and reef		Quality of life
	Community participation	Port facility and harbour recreation	Water quality		Fisheries
	Recreation		Maintain future resources		River health
			Tourism		Ecological service value

attached to them. Discussion and agreement on these terms is necessary to prevent later conflict during implementation of decisions. Stakeholders in the lower catchment attribute sediment loads and the ‘health’ of the river to upstream activities impacting on the river. There is a need to investigate further what stakeholders perceive as ‘healthy’ and whether this varies across sectors. Industries based on, or reliant upon, the river for extraction of resources or use of the water, had major concerns for water quality and ensuring future ‘health’ for economic viability of individual resource users.

Stakeholders were concerned for water quality in waterways and coastal areas, but for different reasons and to satisfy their own interests. In general, stakeholders may hold similar values and broad aspirations but they seek different outcomes from their activities and actions. Industries and state government development agencies valued good water quality for economic reasons connected to attracting industries and minimising costs of operations. The potential for conflict resides in the dependency on upstream stakeholders to maintain and not diminish the quality of the water for downstream users.

Similarly, the elusive and overused term ‘sustainable’ requires discussion on how to achieve and operationalize this long-term goal at local and regional scales. Another dimension for consideration in decision-making is inter-generational equity, and managing the environment for current and future generations. Reaching agreement on the time-frame of decisions and the implications for current and future generations and the environment appear to be harboured under the ‘sustainable’ banner with little specificity or thought. Many of the established industry stakeholders expressed a strong stewardship ethic for maintaining the environment, with a view to inter-generational equity. One industry stakeholder stated how their company aspired to “*keeping it as pristine as they can for their children and future generations*”.

Sustainable resource use may be interpreted from an industry or agricultural perspective as economic

sustainability and long-term financial viability of the resource and prosperity. A favoured term by industry draws on the lexeme coined by Elkington (1997), the ‘triple bottom line’. This is used to refer to the three prongs of social, environmental, and financial accountability. These multi-dimensions of sustainability (or ‘bottom lines’) are directly tied to the concept and goal of sustainable development. Whilst industry stakeholders are more concerned with the outcome of their production activities from the perspective of “ensuring our negative impacts are outweighed by our positive impacts, so there is a net positive” and meeting the ‘triple bottom line’ to satisfy their shareholders, other stakeholders take a different view; particularly when they are negatively impacted and are not recipients of the positive impacts. Alternatively, ‘sustainable’ from an ecological perspective may support ecological values of preserving the current environment.

Stakeholders tended to express very broad aspirations for the coastal zone that lacked detail and did not focus on long-term futures or specific time periods. A possible explanation for this may be the lack of attention given to visualising and verbalising long term goals in current planning processes and consultation. The outcome of this has negative repercussions as decisions are made and the realities of outcomes become evident leading to conflict. In addition to the undefined language and terms used by stakeholders mentioned above. These problems are inclined to create significant challenges for planning and the development of a shared vision.

On closer examination of the stakeholders’ aspirations within their respective stakeholder categories it was found that most stakeholders aspire to maintain the current environment, reflecting perhaps satisfaction with the current level of development and environmental change. Also prominent for many stakeholder categories was the call for capped development in the future and improved efficiencies in resource use. Many stakeholders, including some current industries, indicated a strong desire for no further industrial development to

occur in the catchment with emphasis on retaining the current quality of life. Underpinning many of the aspirations expressed by the stakeholders was the need for a more strategic approach and better planning for the coastal zone. One government person summed up the problem expressed by most stakeholders in that the current approach was “*Ad hoc ... [piecemeal approach] a scattergun approach. Result is ‘death by a thousand cuts’, still losing bits of the coast, bits of mangroves*”. Likewise, an industry representative stated the following about the situation in Port Curtis.

*“In my view coastal decision-making should be a part of a broader strategic approach to decision-making based on catchments. Because things that end up here often started somewhere else, usually higher up in the catchment. If one entity or group had responsibility catchment wide then I think there would be much greater understanding of cause-effect and the implications of catchment land use decisions would be much easier to visualize and, therefore, manage. As it is, we have a collection of agencies with differing responsibilities and a lot of it seems to be poorly visioned, a lot of the decision-making seems to be knee jerk and a little bit political. It doesn’t seem to take place within any broad pre-agreed structure. So there is not sequential land use plan for Port Curtis for example.”* [industry representative]

This aspiration comes as large new industrial operations and infrastructure development are planned for the coastal strip and those stakeholders, even current industry, express their reservations and concerns for maintaining an adequate quality of life. Along with these concerns was a belief that there is a limit or ‘saturation point’ to the level of industrial development on the coast.

*“if we are to have Gladstone as a good place to live then development of the type that we have had has to reach a saturation point at some stage, it can not keep on developing at the rate that it has.”* [Local Government Authority representative]

Of particular interest to coastal managers is the desire by only the natural resource management and community stakeholders to have legislative change, statutory protected areas and stronger stakeholder organizations in the future. This result indicates stakeholders perceive a deficiency in the current legislative framework to adequately manage the coastal environment and provide protection to valuable habitat areas. It may suggest a preference by these stakeholders for a stronger command and control approach to coastal zone planning and management. The current stakeholder environment in Port Curtis is strongly dominated by industrial, port and economic development interests, often to the exclusion of the smaller and less resourced natural resource management and community groups and individuals. The desire for a stronger organizational base by these stakeholders may reflect their disquiet

about the often *fait accompli* nature of many development proposal decisions by the time they are publicized for consultation, or the intent of these stakeholders to influence the direction and magnitude of environmental change in this rapidly expanding industrial area.

#### *Identifying hidden conflict*

The other area of social mapping was identification of problems and other areas of conflict previously unidentified. Results indicated some deep divisions beneath an apparent consensus among the majority of stakeholders about what key values and aspirations meant in practice. These became more apparent when a typology of all the stakeholders was constructed using the interview data. This identified five broad groupings (i.e. conservationist, marginal conservationist, steward/custodian, marginal developer, pro-developer) and ensuing ‘value’ profiles. These values fitted along two parallel continuums of biodiversity and the natural ecosystem in the coastal zone, and development activity and impact level.

The areas associated with conflict were between support for preservation versus development and production. Stakeholders aspired to a level of development and production ranging from zero impact through to minimal impact, sustainable impact to major impact.

*“zero discharge management system – all our liquid waste are able to be recycled back and have a zero discharge operation”* [industry representative]

*“would like to see zero outfall and impact from places.”* [State Government employee]

*“Aim is not to halt development of the coastal resources but to minimize the impact of development along the coast.”* [GBRMPA employee]

Such diversity in aspirations for ecosystem protection highlights the need for all stakeholders to agree on an ‘acceptable’ level of impact. The two sides of the conflict can be constructed as preservation of natural coastlines, intertidal areas and ecosystems versus the reclamation, infrastructure development and location of industry on the water’s edge. Conflict in future planning is likely as stakeholders seek to find agreement on ‘acceptable’ impact levels and trade-offs between conservation and development become inevitable.

*“Finding a balance between infrastructure development, recreational fishers and commercial fishing.”* [recreational fisher]

Unfortunately, the current decision framework for coastal zone planning fails to reach consensus on defining the common ground and does not support the negotiation of trade-offs. Another associated area of conflict within Port Curtis and involving State Government decision-makers centred on reaching agreement on what is an ‘acceptable’ level of industry in the

catchment and the determination of 'acceptable' impacts which recognize community well-being and quality of life values. Instead of identifying and detailing what is 'acceptable', many stakeholders espoused rhetoric about making decisions and management "to minimize harm and protect the coastal values" [industry]. However, in reality this was either not being practiced or was failing in its implementation.

Also valued by stakeholders in the Port Curtis catchment were coastal aesthetic values, human health and vibrant communities. What stakeholders perceive as acceptable is transient, as pointed out by one –

*"what is unacceptable now may be acceptable in the future with changes and improvement in technology".*

*"the attitude in the past has supported more room for industry and to get more industry. Now they are more aware that there is a limit to industry in one area and the impacts"* [community member]

*"think in some instances there should be certain things that are not acceptable to occur - from an impact on the coast, natural resources or social impact. There are some things that are just not appropriate to occur or have here. Community should be able to chose what they want."* [State Government employee]

New industry stakeholders are exploring the capacity of the coastal system to determine how resource use can be maximized and what level of industry can be supported:

*"we need to know how far we can push the system ... so we can allow development and we can allow shoreline reclamation ... allow industrial activity up to the water's edge as long as you can ensure it doesn't pollute or interfere"*

Other stakeholders, however, within the Port Curtis community want the coast protected from further development, both industrial and urban:

*"stay the way it is ... see people kept back from the coast so coastal processes can carry on. Keep industry development back from the coast and conserve the coastal zone"*

Others want existing industries protected from what they believe to be the negative impacts of new or expanding industries:

*"The mud crab industry is being pushed out as we have to go further up the coast to get away from the reclamation and wharfs and industry – they always have to have one foot in the water instead of being put back in the bush."*

Further investigation is needed to distinguish the various 'saturation' or 'maximum capacity' levels for local community, the coastal environment, and State Government development agencies in relation to industrial expansion and associated infrastructure development (e.g., port development). The anticipated disparity in levels between the three will lead to further conflict over whose interests should best be served – the local community, the environment or the wider state and national community.

### *Rationalizing representative structures*

Outcomes from the social mapping exercise have also proven to be valuable for informing the development of a new participatory structure and decision framework in the Port Curtis catchment. Understanding of the stakeholders and what attributes are shared among them is being used to devise a more efficient and rational participatory structure to complement the design of a regional decision framework. Rationalization of the multitude of advisory groups and committees on which stakeholders serve will be reduced to a minimum set. This will reduce demands while increasing the quality of participation and hopefully improve the ability of these deliberative forums to genuinely increase common understanding and promote long-term goals.

### **Conclusions**

In the coastal zone, conflict between land uses (industry and agriculture) and resource users (commercial and recreational fishers) has occurred, in part, due to planning and institutional arrangements that provide insufficient opportunities for negotiation over development and the mitigation of social and environmental impacts among all impacted stakeholders. According to many of the stakeholders interviewed, trade-offs over production and conservation have been made by many with little regard for their impact on other stakeholders. In the absence of forums for mutual deliberation and negotiation it is difficult for individual stakeholders not to take the view that they have 'rights' of access and use of coastal resources on which others cannot infringe. Where such forums have developed, however, it is evident that many existing stakeholders are willing to take steps to coordinate their activities with others around notions of shared interest.

Conflict in Port Curtis was constructed around stakeholder values and interests in the coastal zone, and perceptions of impacts and the allocation of blame. Stakeholder analysis and social mapping were advantageous in being able to identify stakeholder attributes to inform stakeholder and researcher understanding of the social landscape and the conflict that was both evident and hidden. Social maps of stakeholder attributes re-interpret base information to provide clarity to a multi-stakeholder situation and gave insight into values, interests and objectives shared by different stakeholders.

Development of a stakeholder management framework that rationalizes representation and consultative processes will aid in reducing stakeholder conflict and progress coastal zone management. The outcome seeks to produce collective action in the context of diversity whilst being cognizant of the values, interests and

aspirations of all stakeholders. The success of coastal zone management is contingent on stakeholder conflict management. Stakeholder analysis makes visible the many areas of hidden conflict, and provides stakeholders with an opportunity for them to voice concerns and issues that are documented and expressed in the context of the overall picture. The understanding gained by stakeholders through stakeholder analysis and the profiling and mapping of stakeholder attributes paves the foundation for conflict resolution and prevention. As the stakeholder environment changes, new understandings are built and stakeholders learn to foster greater understanding, trust and respect. The methods applied in this study complement existing conflict resolution approaches and are an important pre-planning tool where there a plurality of interests exists in a landscape of multiple uses.

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