ABSTRACT

Consultative structures are often suggested as a means of facilitating resolution of issues in multiple use management through developing consensus and facilitating cooperation. The advantages and limitations of this approach are explored through the history of the Cockburn Sound Management Council. Set up in 1999, the Cockburn Sound Management Council (CSMC) is a quasi-legislative advisory body dealing with complex and contentious issues relating to environmental protection, fisheries, aquaculture, industrial development, naval facilities and reclamation. Cockburn Sound is the most heavily used marine embayment in Western Australia and has seen significant environmental change over the last fifty years, including the loss of more than 80% of its seagrass beds. The challenges faced by the CSMC have lead to the development of novel strategies for the structure and management of the CSMC, community reporting and in developing consensus. Significant successes have been achieved, including the widespread adoption and acceptance of a credible Environmental Management Plan for Cockburn Sound. Co-operative approaches, however, have limitations when dealing with complex issues such as incremental environmental loss and long term planning, and these limitations are also considered.

Keywords: Multiple use; co-operative management; environmental reporting

INTRODUCTION

Conflict between fishers and other users of coastal environments areas was originally restricted to geographically limited areas, such as those identified for port development. It is now widely recognised that there is significant and increasing human pressure on coastal (Harvey, 2003). A wide range of issues need to be considered for effective environmental protection and management of coastal zones and associated water catchments (Chung, 1993). Successful fisheries management cannot be seen as a functionally separate activity from participation in the management of diverse uses of the coastal environment and catchment areas.

Conflict between the fisheries sector (including traditional, commercial and recreational extractive use) and other uses of coastal and catchment environments such as industrial development, agriculture and urban expansion are typically resolved through administrative or political intervention. Markets and rights based mechanisms are used relatively rarely in conflict resolution. One exception is Japan where there have been long standing statutory arrangements for compensation of commercial fishers affected by industrial and port development (Kalland, 1996). Another more limited exception is in Western Australia where commercial fishers affected by marine parks, seen as a re-allocation to passive uses, have a statutory right to compensation (Kaufman, 1999).

Interest in cooperative management can be seen as deriving from recognition that neither pure regulatory or market regimes are likely to be sufficient as solutions to the tragedy of the commons (Haward, 2000). Top down planning, and associated administrative or political action has significant defects. Amongst these defects is the encouragement of rent seeking behaviour by interested parties. Solutions generated through political processes may fall significantly short of optimising the overall benefits to the community of the use of a resource. Even when more venal political considerations are excluded from decision making processes the diversity and complexity of rights and interests in relation to coastal environments makes it hard for governments to assess the optimum use in the face of claims of conflicting use groups. Proposed solutions may also fail to allow for the dynamic nature of the issues faced, by the time a plan has overcome all hurdles to its implementation it may already be obsolete.
One mechanism of involving a wide range of interests in problem definition, problem solving and solution implementation is through developing co-operative management mechanisms. Ultimately co-operative management can be seen as a pragmatic response to complex social problems,

“Pragmatism means that stakeholders who want to secure their interests must learn to solve the problem they face. The knowledge of solutions implies forms of conduct that have practical consequences that benefit the affected interests (Di Norcia, 2002)”

‘Co-management’ has been a term used in fisheries literature to describe “an arrangement where responsibility for resource management is shared between Government and user groups” (Sen, 1996). For the purposes of this paper the term ‘co-operative management’ has been used to indicate the incorporation in consultative processes of broad community participation. In the context of this paper The use of the term ‘cooperative management’ as an alternative to the term ‘co-management’ is preferred in the context of this paper rather than extending the concept of ‘use’ and ‘user’ to include almost any connection with resource management, however tangential.

These issues and partial solutions are considered in the context of the development of co-operative environmental and multiple use management systems in relation to Cockburn Sound in Western Australia.

**COCKBURN SOUND**

Cockburn Sound, is located some 20 km south of the Perth-Fremantle area (Figure 1a), is the most intensively used marine embayment in Western Australia. Western Australia’s main industrial area is located along the Eastern Foreshore and since 1955 liquid waste was discharged into the waters of Cockburn sound. Environmental studies of Cockburn Sound in the 1970’s identified a large range of industrial discharges entering Cockburn Sound and the widespread death and loss of seagrass beds. Although direct industry discharges were reduced following those studies, by the late 1980’s water quality in Cockburn Sound showed further deterioration.

Past management approaches in Cockburn Sound tended to be sectoral, focusing on one use at a time, leading to the fragmentation of legal and management responsibilities within and between government agencies, industry, user groups and the broader community. Problems are especially likely to occur where government departments are functionally oriented and focused on a particular client base. For example, convincing a department, whose role is to foster industrial development, to consider the impacts on recreational fishing and beach access arising from industrial expansion.

Public consultation processes for a significant harbour expansion in Cockburn Sound the late 1990’s reinforced the view of a need to establish improved mechanisms for management. In 1998 the Environmental Protection Authority of Western Australia advised the government that:

“..there is a need for a workable and clear mechanism for marine-use planning and management (beyond the state system of Marine Conservation Reserves) that is ecosystem based and takes into account multiple-use and equity issues(among users and generations). Also, terrestrial planning needs to give adequate consideration to the links between land-base activities and the quality of near shore marine waters. The need for adequate statutory management arrangements to address multiple-use and environmental issues affecting Perth’s waters, particularly Cockburn Sound has never been greater (Environmental Protection Authority 1998)”.

2
Cockburn Sound

With its sheltered waters, diversity of marine life and close proximity to Perth's southern suburbs, the Sound is highly valued by the community for recreational and commercial purposes such as swimming, sailing, fishing, aquaculture and tourism.

The embayment also provides a safe shipping anchorage and a protected setting for significant maritime facilities for the State's major industrial and ship building complexes and Australia's naval forces.

The hinterland of Cockburn Sound supports a full range of land uses including urban, rural, industrial, defence and nature conservation. The population in the catchment is projected to increase by over 30% within the next ten years

(Cockburn Sound Management Council, 2002)

Establishment and Structure of the CSMC

The Cockburn Sound Management Council (CSMC) was established in August 2000 to coordinate environmental planning and management of Cockburn Sound and its associated catchment (Figure 1b). The Management Council has 26 members who represent the community; recreation and conservation groups; industry; and Commonwealth, State and local governments. The CSMC is a quasi-autonomous body. Legally it is constituted as a sub-committee of a state environmental agency, but in practice it is largely independent. A modest ongoing budget for administration was provided by the state of Western Australia as well as some funds in relation to environmental monitoring and reporting.

When the CSMC was formed it was bound by detailed Terms of Reference governing its operations, effectively the Terms of Reference are its constitution. The CSMC was required to proceed only through the development of consensus amongst its members. In the event that consensus failed and a deadlock reached then the issue could be referred to a high level Ministerial committee constituted of Ministers of affected portfolios. The Terms of Reference did not give the CSMC the legal power to compel action and it relies on its role in publicly reporting as to environmental performance as a form of moral pressure. During its first three years the CSMC was given a specific role in relation to the development of a long term Environmental Management Plan. That Environmental Management Plan was to be given legal authority through its incorporation into an Environmental Protection Policy. An Environmental Protection Policy is a special statutory instrument having the status of subsidiary legislation (Western Australian Environmental Protection Act 1986. Part III)
A key role of the Cockburn Sound Management Council was to integrate divergent uses of the Sound so as to reach an acceptable balance of outcomes across the full range of uses and users. The CSMC supported principles of ecosystem integrity, wealth generation and resource use, equity, and a participatory framework for decision-making. The incorporation of the catchment and run-off areas of Cockburn Sound removed a major failing of many coastal marine management measures, being a lack of co-ordination with affecting land use (see area within the bold black line in Figure 1b). Groundwater contamination from both point sources and diffuse sources is believed to be a major impact on the environmental conditions in Cockburn Sound especially in relation to seagrass health as direct emissions into Cockburn Sound from industry have declined (Cockburn Sound Management Council, 2002).

An Interim Environmental Management Plan (‘the Plan’) was adopted in November 2002 and received Ministerial approval in early 2003. The Plan achieved a consensus support of the wide range of organizations represented on the CSMC and has been the base for the actions of the CSMC since its adoption. In a recent State budget ongoing funding for the operations of the CSMC extending for another five years have been confirmed with increased funding from 2005.
Administrative Measures Adopted by the CSMC

A number of key internal administrative and process related rules were adopted by the CSMC in its inaugural year that are likely to have contributed to the success of the development and adoption by consensus of an Environmental Management Plan. Twenty six members constitute a large group for effective decision making. It is accepted in general management literature that large groups require “elaborate rules and procedures in order to organise group tasks and control the flow of information” (Engleberg, 2000). At its first meetings the CSMC addressed three key issues in relation to its internal processes; firstly changes in group membership, secondly openness and transparency in relation to information and finally the employment of professional staff.

Firstly in relation to issues relating to group processes a number of key policies were adopted by the CSMC at its first meetings. Most of the twenty six CSMC members were nominated by or sourced from organisations such as local communities, interest groups, state departments, local governments. Although the CSMC adopted strict rules in relation to conflicts of interest there remained a significant risk that members would retain the orientation and perspective of their originating group, impeding development of the required consensus. Management and behavioural literature is replete with commentary on the formation of effective groups. One of the simplest models is that of whereby groups are classified as going through five key stages of development; forming, storming, norming, performing, and adjourning (Tuckman, 1977). These stages reflect the evolution of the group over time as relationships are built through repeated interaction. Every time existing members are replaced and new participants introduced there is a risk that the development of the group overall will be set back. The group might failure to reach the ‘performing’ stage of group development, moving from internal concerns to performing the task at hand. Strict formalities were adopted by the CSMC in relation to appointment and replacement of members to reduce turnover of members. For example, contrary to normal practice in Western Australia, members had to attend in person to vote and could not appoint proxies to represent them or their originating organisation.

A second issue was the matter of openness and transparency. The CSMC adopted a rule of full disclosure. Accordingly all proceedings, correspondence and meetings of both the full council of the CSMC and the CSMC’s smaller executive committee were open to public scrutiny. Only extremely limited exceptions were allowed for information that was of a confidential nature. This disclosure rule proved to be useful in relation to the requirement that CSMC had to work through consensus. The consensus rule simplistically and strictly applied would have given each of the twenty six members a personal veto. To create a workable set of decision making processes the CSMC re-defined consensus to mean consensus on the broad direction of the environmental and multiple use programs being proposed. The full disclosure rule meant that a member would have to carefully consider potential negative publicity that might result should they declare that consensus had broken down, potentially reflecting badly on the organisation with which they are affiliated. Full disclosure can act as a restraint on pursuit of narrow sectoral goals and disclosure provides an increased incentive for co-operation.

A third issue in relation to a large group is the possibility of ‘free-riding’ whereby the incentive for individuals to participate is low, leading to a relative few to bear the burden of advancing the interests of the group. In this case CSMC’s budget was sufficient for a modest (two person) staff. The staff provide the ability to maintain continuity and for action to be carried forward without undue reliance on voluntary efforts of individuals on the CSMC. Given that it was intended that the CSMC sustain a comprehensive and complex program of environmental action a professional and impartial staff can be seen as an important ingredient.
Initial Tasks – Mapping Uses/GIS

At its inception the multiple use objective given to the Council appeared to be an extra-ordinarily difficult to meet given the intensity of competing uses in a confined area. An OECD publication (Chung, 2003) noted that “a bay can be developed for intensive industrial use or for tourism, but rarely for both”.

In first approaching its role in coordinating and facilitating multiple use the CSMC established separate working groups for each of the four main uses of Cockburn Sound and its foreshore. The objective was to provide development of a base set of information for consideration of multiple use and to swiftly delineate areas of current or potential conflict. Each working group described and mapped the individual uses developed management objectives and strategies, and determined compatibility within and between uses. None of the current uses was found to inherently cause a level of environmental impact or community conflict that would require total exclusion of the use from Cockburn Sound and its foreshore.

- **Natural and Cultural Heritage Uses**
  - Foreshore habitats/uses
  - Marine habitats/uses
  - Indigenous heritage
  - European heritage

- **Recreational and Commercial Uses**
  - Fishing
  - Water sports
  - Coastal uses
  - Nature-based tourism
  - Aquaculture

- **Industrial Uses**
  - Heavy industry
  - Marine construction
  - Ports and harbours

- **Defence Uses**
  - Shipping
  - Shore-based facilities

Using a Geographical Information System (GIS) to overlay the spatial characteristics of each of the four main use categories, members of the Management Council then determined the priority uses in specific “management areas” for Cockburn Sound (Table 1) and identified areas where there is potential for conflict between uses.

**Use of GIS in resolving spatial conflicts**

The assessment of priority uses and compatibility between uses involved subjective judgements and as such provided only a broad guide for managing multiple uses. The assessment of areas and uses of Cockburn Sound, however, allowed for development of a joint understanding of the key issues such as community access to the Eastern foreshore of Cockburn Sound, while enabling more effective and precise discussions between interest groups multiple use.

Participants became more confident as to the process through the identification of key areas of importance (primary use), while still acknowledging the legitimacy of the interests of other user groups (secondary use). The maps and associated charts were also a key communication tool, both for members back to their interest groups and by the Council to the broad community. An additional benefit was that the identification of key areas and zones has provided a sound base to assist in reporting back to the community as to the environmental health of Cockburn Sound.
Table 1: Multiple Use Planning for Cockburn Sound and its Foreshores (Cockburn Sound Management Council, 2002)

<table>
<thead>
<tr>
<th>Management Areas</th>
<th>Garden Island</th>
<th>Rockingham</th>
<th>Kwinana</th>
<th>Challenger Beach/Cliffs</th>
<th>Jervoise Bay</th>
<th>Woodman Point</th>
<th>Central Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Use</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ (Cliffs)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Recreational</td>
<td>✓R</td>
<td>✓</td>
<td>✓R</td>
<td>✓ (Beach)</td>
<td>✓G</td>
<td>✓</td>
<td>✓G</td>
</tr>
<tr>
<td>Industrial</td>
<td>I</td>
<td>I</td>
<td>✓✓</td>
<td>G</td>
<td>✓✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Defence</td>
<td>✓✓</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>✓</td>
<td>N/A</td>
<td>✓</td>
</tr>
</tbody>
</table>

- ✓✓ **Primary Use**: Priority use for a management area.
- ✓ **Secondary Use**: Use compatible with primary use and management area.
- ✓R **Restricted Use**: Use restricted within a management area by legal constraints.
- G **Gap in knowledge**: Additional information required to assess compatibility with other uses and/or management area.
- I **Incompatible**: Use incompatible with other uses and/or management area.
- N/A **Not Applicable**: Assessment of use is not relevant.

Adoption of EMP

In December 2001 a draft Environmental Management Plan was adopted by the Council and distributed for public comment. In addition a number of open meetings were held at which the draft Plan was discussed (in conjunction with the legislatively based draft Environmental Protection Policy). An Interim Environmental Management Plan (the Plan) was adopted in November 2002 (Cockburn Sound Management Council, 2002). The Plan was identified as ‘Interim’ as the consultation and adoption processes had outpaced the corresponding legislative processes relating to the Environmental Protection Policy.
The Plan consists of five parts:

1. Protecting the Environmental Values of Cockburn sound
2. Facilitating Multiple Use of Cockburn Sound and its Foreshore
3. Integrating Management of the Land and Marine Environments
4. Co-ordinating Research and Investigations

All recommendations made in the Plan where accompanied by a statement as to excepted outcomes, expected impact on water quality, the agency responsible for the action and expected status after five years.

The Plan received support from the Minister of the Environment in early 2003. As the Plan does not have specific legislative backing its implementation requires the voluntary co-ordinated efforts of its members. In this context it can be seen as a ‘purely’ co-operative management plan.

Outcomes and Operation of the Plan since 2003.

As noted above, monitoring and reporting on environmental outcomes in Cockburn Sound is an integral part of the CSMC’s operations. The Plan does not give the CSMC the ability to impose legal sanctions. Without an accompanying Environmental Protection Policy compliance with the Plan is solely generated through the consensus support of its members and public awareness and opinion. Communication with the public is therefore a critical part of the CSMC’s operations. The CSMC set for itself the ambitious goal of providing real time updating of key environmental information and the use of web based tools to assist in the presentation of complex issues. The first step towards these goals was to integrate existing environmental information collected by existing government agencies and organisations, usually collected for a specific and narrow purpose. The second step was to work with government agencies, industry and researchers to identify gaps in that information and to collect additional information to fill those gaps. The final step is reporting back to stakeholders and the community.

In reporting to the public environmental agencies must chart a course between oversimplification and over complexity. The CSMC resolved to adopt a ‘Report Card style’ approach. The Report cards built on similar approaches in Australia (Moreton Bay Waterways and Catchment Partnership, 2002). It was resolved, however, to develop the concept further and specifically link assessments to recommendations for remedial action. A number of the members on the CSMC were concerned that merely reporting on environmental performance could give the impression that the CSMC would consider itself to be fulfilling its role, even if the environmental objectives were not being met, so long as deterioration was reported accurately.

The Report Cards:

1. Report as the criterion used for assessment
2. Assess performance and outcome
3. Advise as to the appropriate action

There are three general outcomes possible out of a Report Card assessment; continue general monitoring, increase level of investigation and finally remedial action. Maps prepared to support the reports these outcomes are represented in the use of the ‘traffic light’ colours green, yellow and red respectively (Cockburn Sound Management Council, 2003).
It is acknowledged that there can be a range of levels of involvement by non-government from minimal consultation to substantial delegation (McConney, 2003). Some techniques of public consultation have been criticised as ‘mere tokenism’ (Halseth, 2003). Allocation of responsibility, enhanced accountability and direct reporting to the public are essential functions of the CSMC and what elevates its operations beyond minimal or ‘mere’ consultation.

Not all interest groups are satisfied with the voluntary nature of the Plan. In its submission on the adoption of the Plan the local recreational fishing body (Recfishwest 2002) expressed its concern that:

“the (Plan) does not appear to have the necessary level authority to ensure its objectives are met.”

It was originally intended by the State government to enhance the level of authority of the Plan through a statutory planning instrument, known as an Environmental Protection Policy (Environmental Protection Authority, 2002). Environmental legislation in Western Australia provides that an Environmental Protection Policy binds government departments and that they must have regard for the Environmental Protection Policy in relation to any decision they may make.

Advice to the CSMC in May 2004 was that there were delays in adoption of the Environmental Protection Policy amongst other reasons, due to difficulties in relation to drafting the specific enforceable environmental provisions. It is likely that these delays reflect the difficulty of drafting provisions that require as a matter of law for environmental outcomes as opposed to more narrow traditional approaches to regulation where specific activities are licensed such as pipeline waste disposal or groundwater extraction.

Should co-operative management fail to result in a consensus it is not certain as to what the outcome might be, especially in the absence of an Environmental Protection Policy. The Plan’s effectiveness depends to a great extent on the efficacy of the CSMC in its communication and reporting processes so as to inform the community as to environmental performance. In the end responsibility for ensuring that environmental objectives are actually achieved falls onto the state departments, local governments and the other organisations represented on the Council.

Further Developments/Success of Co-operative Approach

Preliminary research into the operations of the CSMC (Middle, 2002) suggests that it has achieved a broad level of support by stakeholders and is:

“a useful model for regional coastal planning and management in the State, providing adequate resources are made available to address stakeholder concerns”

In May 2004 the CSMC was advised that an enhanced budget (from 2005) would be provided, one of the few environmental projects that secured additional funding in that round of the State budget process.

Since the adoption of the Plan a number of positive developments have suggested that the Plan has been well accepted and that the CSMC is indeed facilitating environmental management of Cockburn Sound. One of the most positive developments for the CSMC was the adoption by three relevant local governments of co-ordinated Local Planning Policies relating to development. The policies were designed to supplement and not supplant existing decision making processes of government. The policies supported the decision making processes of local councils in imposing appropriate environmental protection conditions on residential and small scale industrial development potentially impacting on Cockburn Sound. The area covered by the policies represents more than 40% of the catchment for Cockburn Sound. The coordinated nature of these policies created mutual reinforcement for their environmental objectives and prevents potential developers from attempting to bargain for lowest common denominator environmental conditions relating to environmental protection.
Challenges to Co-operative Approach

The operations of the Council, the consensus approach and the application of the Plan have been most challenged by two overlapping issues, cumulative incremental environmental impacts and port developments affecting the seashore. There are strong pressures for industrial development resulting from the strong economic advantages of co-location of industrial facilities in the Kwinana/Rockingham region (Sinclair, 2002).

Environmental approval policies in Western Australia tend to concentrate on the merits of individual projects in isolation from each other, although some limited modelling of joint impacts was recommended in relation to recent port developments. One of the inaugural reports that lead to the creation of the CSMC was Bulletin 907 of the Environmental Protection Authority (1998). The Environmental Protection Authority noted the risk to the overall integrity of the environment in Cockburn Sound from the cumulative impacts of development projects. Projects while considered individually may not have a significant impact, but in the aggregate may have a significant impact on Cockburn Sound. It is against this backdrop that the adequacy of the Plan, the Guidelines contained in and the co-operative mechanisms supported by the Council will be tested.

Contributing to community concern is the prospect of a major port development affecting significant areas of the Eastern foreshore. The Western Australian recreational fishing lobby expressed concern that the “seemingly inexorable march of industrial expansion will continue to reduce the options for multiple use planning” (Recfishwest, 2002). A partial response to these concerns was included in the Plan in an environmental offsets policy titled ‘Guidelines for Developments Affecting the Shoreline and Seabed’ (Cockburn Sound Management Council, 2002). This provided that developers should; take all reasonable steps to minimise impacts, but that where significant impacts remain offsets should be sought and finally the adequacies of those offsets should be measured against an appropriate set of criterion. As of the date of this paper it is uncertain as to whether the Guidelines adopted in the Plan will be effective in ensuring that further loss of community access is restrained or whether the interests of those desiring access are properly incorporated into development approvals.

A further challenge to the long term effectiveness of co-operative effective environmental will be familiar to fisheries managers. In the absence of a strong regulatory regime and appropriate property rights the success of co-operative management can be self-defeating in the medium term. In the event that co-operative actions and efforts of existing participants lead to improvements in the environment one of the effects is that opportunities and incentives are created for new entrants (in a somewhat different context see McConney, 2003 p 21). The result is that the benefits of co-operative management are at risk of being eroded by new entrants.

The mere possibility of new entrants reduces incentives for voluntary action. For example in relation to Cockburn Sound the estimated direct discharge of nitrogen from industry was reduced from 2000 tonnes a year in 1978 to about 300 tonnes in 2001(Cockburn Sound Management Council, 2002). The significant cost of this reduction fell largely upon existing industry participants. Opportunities have arguably been created for new industrial expansion at the expense of existing industry. In the event of expansion by new entrants the final result may be the same level of environmental outcome as if the pre-existing entrants limited their efforts to the lowest level of compliance legally required.
Conclusions

Co-operative management involving multiple use has a substantial role in developing novel arrangements that minimise conflicts and encourage the development of consensus approaches in relation to increased pressures on coastal environments and the water catchments that affect them. Co-operative management requires support in the form of modest government financial assistance and substantial community and interest group participation. Even with this support successful action requires careful consideration of the challenges in organising and sustaining co-operative management structures. Despite successes the challenges faced by the CSMC in relation to incremental losses and the impacts of major projects suggest that co-operative multiple use management should not be seen as a panacea to all conflicts. There remains a significant role for additional measures such as regulatory and market based measures. In the long run well defined management regimes with a mix of regulatory and economic instruments will be necessary in Cockburn Sound to support co-operative measures developed through the CSMC.

Final Word

In 2004 a tourist dive charter operating in waters adjacent to the industrial strip in Cockburn Sound won the Australian National Ecotourism award for its dolphin tours.

REFERENCES


Kaufman, B. Geen, G. Sen, S (1999) Fish Futures: ITQs in Fisheries FERM Canberra


ENDNOTES

The author is the Inaugural Chair of the CSMC. This paper draws freely on the work of the staff, members of and consultants to the CSMC and their contribution is acknowledged and thanked.