

## International and National Principles and Area Based Local Application for Sustainable Coastal Development

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### Abstract

Managing urban development in coastal zones is important not only for the ecological quality of such zones, and also for sustainable coastal tourism. International and national principles of integrated coastal zone management (ICZM) need to interact with variable local realities if ICZM is to succeed. After briefly discussing how international experience informed national ICZM policy in South Africa, a case study is used to illustrate the need for local adaptability and implementation. The case study is of one local Conservancy's efforts to ensure estuarine quality and harmonious integration of urban development within natural coastal vegetation, where financial and other constraints otherwise determined an unfortunate reliance upon septic tank sewerage. The case illustrates the importance of drawing upon local voluntary efforts to adapt and implement national and international policies.

**Keywords:** Integrated coastal zone management; Conservancy; Coastal policy implementation and application

### Introduction

Internationally it has been recognized that urban development in coastal zones requires specialized, and often locally bespoke, management especially in terms of the interactions between socio-economic and ecological systems. Deriving from this, it has been recognized that well managed coastal settlements, and natural coastal qualities, enhance their tourism attractiveness [1].

South Africa's Integrated Coastal Zone Management (ICZM) Act of 2010 built upon Green and White Papers on sustainable coastal development, and included specific references to the need to pay attention to sub-regional variety in coastal management priorities [2]. Goble et al. [3] and other analysts [4] have however worried whether, despite good national policy and legislation, there exists the local capacity to implement it effectively.

This paper discusses first discusses how a body of international influence, combined with sensitivities to local circumstances, shaped the processes leading towards South Africa's Integrated Coastal Zone Management (ICZM) Act of 2010. Having noted that critics have pointed to limitations upon capacity for implementation of this legislation, we then proceed to examine a case of successful local voluntary mobilization to achieve its aims. The case is that of local Conservancy in the small town of southbroom on the Hibiscus coast area of South Africa where it contributed to the practical articulation of ICZM principles as they flowed from the South African ICZM policy work. The information has been derived by one of the authors who happened also to Chair South Africa's national coastal policy programme working in the field with the southbroom Conservancy over a period of several months. Here the ICZM Act, which had its origins in both South Africa's Department of Environmental Affairs and Tourism and Britain's Department for International Development, was used by local groups to both enhance tourism and residential quality prospects and enhance environmental standards. Possible lessons both internationally and for South Africa are considered in conclusion.

### International Influences and South Africa's ICZM Act

In the wake of South Africa's reintegration into the global community following the abolition of apartheid and the establishment of democracy, Britain's Department for International Development

(DfID) collaborated with the South African Department of Environmental Affairs and Tourism (DEAT) on a national coastal policy programme, which ultimately led to the South African ICZM Act of 2010. Over a hundred scientists and specialists contributed to the Green Paper on Sustainable Coastal Development, which also involved participation with scores of local community participants on various sections of South Africa's over two thousand kilometer coastline [5,6].

The Green Paper laid the public consensus foundations for the Act, and was conceived and produced as a product of wide civil society initiative funded by Britain's DfID, managed by a multi-stakeholder Policy Committee, of which government had just one member (others included environmental NGOs, trade unions, organized business, etc.). Several British coastal scientists made inputs into especially the core conceptual foundations of coastal management, as referenced in the Green Paper. Given that President Mandela's government had elected to build post-apartheid policies in such an inclusive manner, the Green Paper was however tacitly endorsed by government and published partly in their name in 1999 [6].

A year later, a White Paper followed along similar lines to the Green Paper carrying with it the formal endorsement of the South African Cabinet [2]. Amongst, the recommendations of the White Paper was recognition of the need for understanding the variable regional qualities and socio-economic roles of the South African coast, and the need for local voluntary associations to implement and give effect to the provisions of any national legislation deriving from it.

When the ICZM Act was eventually approved in 2010, the emphasis had shifted to giving the Minister of the relevant national department greater powers to avoid further coastal environmental

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degradation; but as independent specialists have since pointed out, in practice implementation have required effective local and often voluntary monitoring and evaluation of coastal issues [3,7]. One such case of local initiative is presented here in order to better understand the complexities of local implementation.

## Study Area

Southbroom is located about 100 km south of the major port city of Durban in one of the most densely settled parts of the South African coast [2]. Southbroom also has some of its most visually attractive estuaries, beaches and high levels of retention of natural sub-tropical coastal forest, most of which has been destroyed elsewhere along the KwaZulu-Natal coast of which it forms part (Figure 1). Southbroom is also unfortunately situated in the region of South Africa with the poorest estuarine ecological qualities, according to various studies, including recent published work [5]. These estuarine quality problems derive mainly from the effluents from human settlements near to the coast, many of which not only do not have modern sewerage systems, but also high population densities.

Ideally, if costs were not a consideration, older septic tank or non-existent sewerage systems need to be replaced in such settlements in order to achieve one of the goals of the ICZM Act, viz. enhanced water quality in estuaries. This is because the seepage from septic tanks tends to find its way through groundwater into adjacent estuaries. In the southbroom case study area, however, financial constraints combined with long-term, low-density, tourism-oriented and retirement settlement patterns have made the replacement of septic tank systems unaffordable. The most substantial of the southbroom area estuaries is on the northern borders of the town, most of which town lies twenty or meters above the estuary. None of the several hundred erven at southbroom are either directly on the estuary or beach (Figure 2), but most rather enjoy views of the sea on steeply raised land, those views often being partly occluded by substantial amounts of mature coastal vegetation and trees.

In coastal planning terms the southbroom area is relatively unique in South Africa in a number of respects. For example, there are actually three significant coastal estuaries (two smaller than that on the Mbizane River to its north), a Coastal Preserve including one of the most remarkably preserved coastal dune ecological systems in an 'urban'



Figure 1: Natural coastal vegetation on the KZN south coast near to southbroom.

KZN context, and a so-called Bush Buck Trail through a sub-tropical coastal forest.

In human settlement terms, southbroom contains mainly holiday homes or retirement homes which when at full capacity accommodate about a thousand people. Large lot sizes (circa. half acre) provided in the original Southbroom Town Plan recognized the need both:

- To protect the special character of southbroom's attractive, extensive and rich variety of indigenous Fauna and Flora and;
- To accommodate an effective and non-polluting application of the septic tank sewer system.

## Contemporary Development Challenges and Conservancy Response

The above mentioned relatively unique environmental and human aspects were however being threatened by uncontrolled development during the past decade, via proposals for densification, possible revised rules relating to sub-division, and possible revised floor area ratio (FAR) coverage rules. Fortunately, however, constraints upon densification were implicitly imposed by modest infrastructure and poor maintenance of the same within Southbroom. This included narrow roads, very little storm water management and the use of septic tank and conservancy sewage systems. In addition, members of the local conservancy mounted a campaign to protect their area from further environmental degradation.

Given emerging development pressures and past precedents in the KZN south coast area, it became urgent for the Conservancy in this relatively unique environment that southbroom residents and the relevant authorities acted quickly to avert possible serious damage to the ecological integrity of the area, especially its estuaries.

Dating back to at least the time of Dr. George Begg's internationally-cited doctoral thesis (in the 1970s) it had been known by planners that aspects of water quality have been literally "killing" KZN estuaries [5,8]. Sewerage from septic tanks has been a major contributor to this, and recent readings commissioned by the Conservancy and taken by independent experts in the southbroom estuaries and environs had shown such pollution to be unacceptably high in some cases. For this reason, it was concluded by the Conservancy that the burden of proof about not contributing to further estuarine quality decline should be placed on developers, whose EIAs should have a special clause on this.

They therefore studied the South African ICZM Act, and international precedents, and blended recommendations of both with local knowledge to come up with principles for environmentally sensitive coastal development in sub-tropical environments where it is not possible to supply water-borne sewerage (owing to topography and financial constraints, amongst other considerations).

## Local Policy Priorities

The emphasis Southbroom Conservancy wished to retain for their town was that of a high level of recreational and ecological quality, high levels of bio-diversity and low levels of environmental impact from future development. It was concluded that this could be achieved both by implementing their older-fashioned planning controls and extending them. Together with just a few such remaining places on the entire KZN coast, Southbroom thereby intended to contribute not only the environmental preferences of most of its own residents, but also to the attractive sub-tropical character of the wider region, which could serve as a basis for the Lower South Coast's (or sometimes

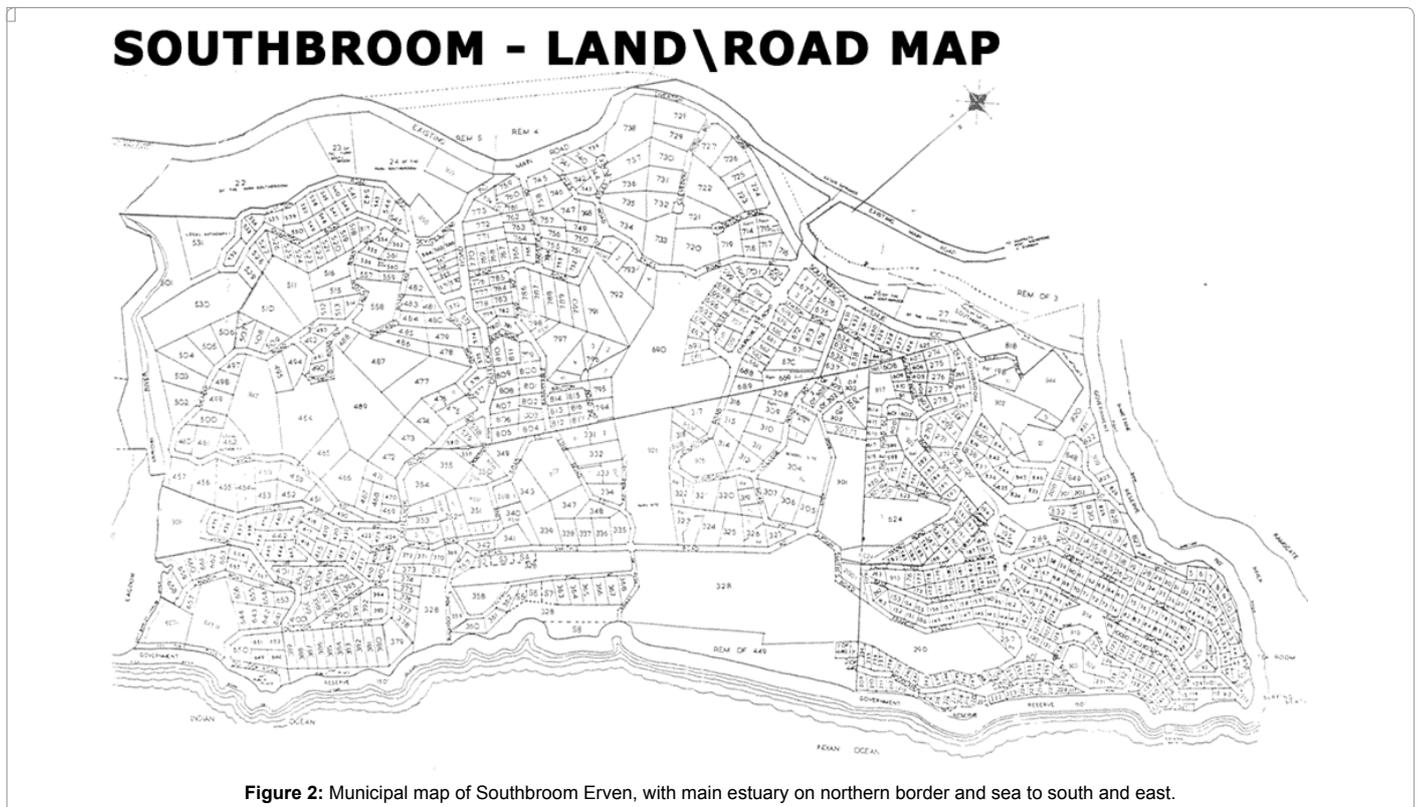


Figure 2: Municipal map of Southbroom Erven, with main estuary on northern border and sea to south and east.

called Hibiscus coast's) wider tourism attractions for decades to come. As South Africa's White Paper on Sustainable Coastal Development [2] pointed out, the Hibiscus coast area when viewed in a national context has both opportunities and threats: "The economy is based largely on seasonal leisure-based tourism and recreation. The Hibiscus Coast is well positioned to develop nature-based tourism, because of its proximity to Durban, warm coastal waters, reefs with high biodiversity and dense coastal thicket with a variety of fauna and flora. Although tourism infrastructure is well developed there is concern that development has not always occurred in a socially and environmentally sustainable manner".

In this regard southbroom has amongst important attributes:

- The Frederika Coastal Preserve (an important dune forest);
- The Bushbuck Trail (a walking through sub-tropical coastal forest);
- Three coastal estuaries surrounded largely by indigenous fauna and flora;
- An attractive golf course situated immediately adjacent and inland to the Frederika Coastal Preserve, and which – in the context of the local septic tank sewage systems - now functions as an important component of the groundwater and surface hydrological coherence of the southbroom area.

An emergent walking trail through vegetation around and within the southbroom town area itself [7]. Nowhere in the world does good town and regional planning suggest that all places should be the same in functional character. The Mpenjati-Southbroom Town Plan in Outline had been developed to preserve that uniqueness. This older but still current Town Planning Scheme included provision for an Amenity Reserve at the beach; a significant element of Active Open Space (the

golf course); and coastal Conservancy Areas limited to portions of the dunes and portions of river-courses (including the Bushbuck Trail) and estuaries.

Otherwise most of the remainder of southbroom is zoned for various levels and densities of residential use and (appropriately) small residuals of mixed use, provision for public buildings and miscellaneous other uses. However, the southbroom Conservancy went further and suggested that southbroom should endeavour to ensure that, beyond the existing Amenity Reserve, Conservancy Areas and Active Open Space zones, the entire area of southbroom from the high water mark should be designated as a Controlled Area (special consent being required for development); and the full extent of the river valleys, estuaries, beach and dune zones designated as Environmental Priority Areas in terms of the ICZM Act of 2010. In addition, the Conservancy envisaged applying International Best Practice development principles as set out in the final section of this article ([www.southbroom.org](http://www.southbroom.org)).

### Drawing from Other International Experience

The White Paper on Sustainable Coastal Development amongst other South African government policy documents referred to the need to follow international best practice in respect of low impacts upon flora and fauna of development designs [2]. It was suggested to the southbroom conservancy that one model which could lend specific content to building regulations there could be the design guidelines recently adopted by the government of Mauritius, following recommendations made to them by the international planning firm Halcrow. A key principle there was that existing and future development should occur in sympathy with nature, and wherever possible should be partially obscured from adjacent sites by sub-tropical vegetation.

In more specific urban design terms, it was suggested that in future southbroom adopt principles drawn from the Mauritian Government's design guidelines to [9]:

- Keep development under the sight lines of topography and vegetation, and;
- Stagger development to integrate it with the landscape and maximise views.

Mauritius had in the past experienced some coastal developments which were unsympathetic to their coastal environments, and yet there has been much pressure to develop hotels and holiday homes on the coast [10]. It is for this reason that the Mauritian government commissioned leading design specialists to make recommendations on the integration of structures especially in relation to natural coastal vegetation, although monitoring of local compliance may be in doubt there.

The Southbroom Conservancy concluded in respect of the specifics of their context that the guidelines for new developments should be:

1. Throughout the controlled area, building footprints should occupy no more than 25% of the entire site, and buildings to be no more than two storeys (each of 3 meters in height). Overall, Floor Area Ratios or FARs of a maximum of 0.25 should apply).
2. No indigenous plants above 1 metre in height should be removed in area 2 metre from the footprint of the approved building plan of a new building area, without the express written approval of the relevant authority.
3. In all new development in a controlled area, roofs should be constructed of natural materials including tile, wood, thatch, slate with the possible exception of non-natural materials which give off a natural appearance.

In addition for the purposes of discussion within the southbroom community for new developments, the following were proposed:

1. Within 250 meters of high water mark no development should be allowed in which the height of the roof exceeds the height of the highest indigenous plants currently on site (over 6 meters in height), and which will not be removed during construction; and throughout the 1 km Controlled Area, this same rule shall apply in the case of the highest of all trees/plants on site (over 6 metres in height), unless without the express approval of the relevant authority under exceptional circumstances.
2. On the seawards/landwards side of any slope, any development which has an existing building upslope of it may not blatantly obscure the views from the highest floor of that existing building.

It was proposed that appropriate penalties should be imposed by the municipality on any property owner and/or developer who violates these provisions.

It was further suggested that for all existing development, the following rules should be applicable:

1. Throughout the Controlled Area existing indigenous plants of more than 1 m in height shall not be destroyed or removed without the express consent of the relevant authority.
2. Any intended building extensions should be subject to the same rules as those recommended for new development.
3. Any re-roofing should be in accordance with the rules recommended for new development.

Again, it was proposed that relevant penalties must be imposed

upon those who fail to comply. Finally, it was suggested that the Municipality should be approached to investigate possible methods of encouraging and possibly incentivising landowners to allocate for conservancy use undeveloped portions of their land which abut existing conservancy areas. This would expand indigenous areas and promote wildlife movement throughout southbroom.

## Conclusion

Many policies on Integrated Coastal Zone Management, and associated legislation, lack follow-up capacity for implementation, especially in fast growing, middle-income developing countries, and sometimes national capacity enhancement strategies are initiated in this regard. However, in the South African case, with its several thousand kilometre coastline, and multiple competing demands on state resources, local voluntary efforts are often the key to successful implementation. Possibly the guidelines established for southbroom could be of practical relevance to other coastal towns in subtropical contexts facing developing pressures, especially those with estuaries and with septic tank sewerage, and where it is not possible to replace such systems, and where eco-tourism is an important economic priority.

Locally, monitoring of the effectiveness of the southbroom initiatives should however continue, since as Ehler [11] has pointed out, monitoring is a critical component of the ICM policy cycle, and "ICM initiatives should be characterised by clear goals accompanied by quantifiable objectives". The Southbroom Conservancy did establish such goals and quantified them, but it should now be incumbent upon those tasked with the responsibility in terms of South Africa's ICZM Act to determine whether and how much positive impact has been achieved. But who exactly would that be?

As Chevalier [12] has recently concluded in respect of ICZM in general in South Africa:

"As much as ICM needs to take a birds-eye view, it is necessary to complement this approach with a thorough understanding of issues relevant to specific coastal areas. The collection and analysis of data on local socio-political, bio-physical, cultural and economic conditions are needed to achieve successful integration".

A question that arises here is that, given the apparent dearth of capacity to monitor that Chavalier [12] and Goble et al. [3] amongst others both allude to, whether the Conservancy itself should not be the responsible management agent, mandated by the Municipality. Beeharry et al. [10] note similar capacity challenges in Mauritius. Celliers et al. [13] note "(SA's ICZM) Act and the international literature are virtually silent on the most effective institutional arrangements to progress towards ICM within municipalities. Their study therefore advocates a "bottom-up" or examination of a number of internal institutional arrangements." One such bottom up approach was the initiative of southbroom Conservancy as discussed here [14].

Although we are recommending further monitoring to determine effectiveness, in comparison to most other places where no such initiatives have been taken, it seems probable they will have had positive impacts. If so, should the role/s of similar local NGOs not be further empowered, not only in South Africa, but elsewhere?

## References

1. Phillips MR, House C (2009) An evaluation of priorities for beach tourism: Case studies from South Wales, UK.
2. Republic of South Africa (2000) White paper on sustainable coastal development. Department of Environmental Affairs and Tourism, Pretoria.

3. Goble BJ, Lewis M, Hill TR, Phillips MR (2014) Coastal management in South Africa: Historical perspectives and setting the stage of a new era. *Ocean Coast Manag* 91: 32-40.
4. Colenbrander D, Bavinck M (2016) Exploring the role of bureaucracy in the production of coastal risks, City of Cape Town, South Africa. *Ocean Coast Manag* 2: 1-16.
5. Van NL, Adams JB, Bate GC, Forbes AT, Forbes NT, et al. (2013) Country-wide assessment of estuary health: An approach for integrating pressures and ecosystem response in a data limited environment. *Estuar Coast Mar Sci* 130: 239-251.
6. Republic of South Africa (1999) Green paper on sustainable coastal development. Department of Environmental Affairs and Tourism, Pretoria.
7. Celliers L, Colenbrander DR, Breetzke T, Oelofse G (2015) Towards increased degrees of integrated coastal management in the City of Cape Town, South Africa. *Ocean Coast Manag* 105: 138-153.
8. Begg G (1979) Policy proposals for the estuaries of Natal. Natal Town and Regional Planning Report 43: 1- 39.
9. Government of Mauritius (2004) Coastal development guidelines.
10. Beeharry Y, Makoondlall CT, Bokhoree C (2014) Policy analysis for performance assessment of integrated coastal zone management initiatives for coastal sustainability. *APCBEE Procedia* 9: 30-35.
11. Ehler CN (2003) Indicators to measure governance performance in integrated coastal management. *Ocean Coast Manag* 2: 335-345.
12. Chevalier R (2015) Promoting the integrated governance of South Africa's Coastal Zone. Occasional Paper 218, South African Institute for International Affairs, Pretoria.
13. <http://www.southbroom.org/frederika.htm>
14. Shi Y (2017) Coastal management and implementation in Taiwan. *J Coast Manag* 20: 1-7.