

Strategic EIA for Identification of Potential Sites for Marinas, Ski Lanes and Bathing Areas for Mauritius

FINAL TECHNICAL REPORT

Executive Summary

1. INTRODUCTION

From 1991 to 2004, the number of tourists that visited the Island of Mauritius increased from 300,000 per annum to more than 700,000 per annum. This represents an increase of more than 100%. During that same period, the number of large hotels on the island jumped from 80 to 103. Practically all of these hotels are located on or close to the beach.

This rapid increase in the number of tourist arrivals has led to an increase in the demand for sea sports activities such as water skiing, diving, big game fishing and bathing, since the great majority of the tourists that come to Mauritius do so to enjoy the sea. The local population, too, more and more would like to enjoy the sea and feel the thrill of sea sports.

Today, the number of pleasure craft registered with the Authorities exceeds 3,000. However, despite the great number of pleasure crafts, there are no marinas to service their needs (except for larger boats which can use Port Louis harbour and a few others which scramble for shelter at Caudan Basin during cyclonic conditions). Meanwhile, the other activities are carried out without proper regulations and planning. There is, therefore, a need for the construction of a few marinas, as well as for proper zoning of the lagoons to clearly demarcate ski lanes, snorkelling sites and bathing areas in order to satisfy the expectations of the tourists and the local population.

However, if these developments are not properly planned, they will inevitably lead to the degradation of an already stressed marine environment, which would not only be detrimental to the country in general, but would jeopardize the tourism industry. Indeed, the tourism industry in Mauritius depends to a large extent on its coastal and marine resources. The environmental degradation of the beaches and the lagoons, which are currently the main assets of the tourism industry, would have a negative impact on the number of tourist arrivals.

In line with the policy of the Government to preserve the environment and, at the same time, respond to the rapidly growing demand of the tourists and the local population for sea sports facilities, the Ministry of Environment (MoE) commissioned a study to conduct a Strategic Environmental Impact Assessment (SEIA) to identify sites where marinas, ski lanes and bathing areas could be developed with least possible negative impacts on the environment and the marine ecosystem.

2. DEFINITION OF STRATEGIC EIA

A Strategic Environmental Impact Assessment (SEA) is a process for identifying and addressing the environmental, social and economic dimensions, effects and consequences of policies, plans and programmes (PPPs) and other high-level initiatives. The SEA should take place before decisions are made and preferably as a contribution to the formulation and development of plans or policies, rather than focusing only on the impact of their implementation. SEA aims at ensuring that environmental aspects are addressed and incorporated at decision-making levels prior to, or above, the project level i.e. at strategic decision-making levels.

3. AIMS AND OBJECTIVES OF STUDY

The overall aim of the project is to identify the best potential sites where marinas, ski lanes and bathing areas may be established, and to identify sensitive or vulnerable sites where such developments should not be permitted.

The objectives of the study were identified in the Terms of Reference as being:

- To identify the need and demand for marinas, ski lanes and bathing areas in Mauritius,
- To select the most appropriate sites where such facilities could be established with the least environmental disturbances taking into account socio-economic factors, and,
- To determine and assess the likely environmental impacts and to propose measures to mitigate the negative impacts and to maximise the benefits of such projects.

4. PROJECT TEAM

This SEIA study of marinas, ski lanes and bathing areas was carried out by a multi-disciplinary consortium comprising Mega Design Ltd of Mauritius (civil engineers), in association with Entech Consultants (Pty) Ltd (coastal engineers) and WSP Walmsley (Pty) Ltd (environmental scientists).

5. OVERVIEW OF MARINAS, SKI LANES AND BATHING AREAS

5.1 MARINAS

The concept of “marinas” sometimes also termed “small craft harbours”, is quite varied.

Marinas vary from large protected water bodies containing hundreds of boats to a ‘dry’ marina consisting of boat launching facilities and dry standing or boat garages only. Associated facilities are sometimes from the bare essentials to boat yards, boat repair services, boat sales etc. Marinas can also form part of a much larger development including residential and commercial components to dense waterfront development.

For initial classification and study purposes, marinas in Mauritius were classified into three categories as follows:

5.1.1 LARGE MARINA OR SMALL CRAFT HARBOUR

Typically this is a harbour of refuge where boats can remain during all weather conditions including cyclone events. Boats are typically moored on fixed or floating jetties. Consideration for efficient boat launching and retrieval will be necessary as well as a host of services. The water depth should typically be 4m chart datum to accommodate large yachts/keel boats. This marina should be fully protected by marine works such as breakwaters or natural protection i.e. closed embayment or estuary.



(Source: Granger Bay, V&A Waterfront, Cape Town – Entech Coastal Engineers)

5.1.2 MEDIUM MARINA

Typically, this marina is limited to shallow draft boats. This type of marina can typically be associated with resort development and has limited boat related service facilities. Ideally systems for launching and retrieval of boats are provided as well as possible dry storage. The typical depth should preferably be 2m and not less than 1.5m chart datum. Marina protection works could be limited to minor structures or existing natural embayments.



Marina at St. Gilles, Réunion Island

5.1.3 SMALL MARINA

This marina essentially could consist purely of a well-designed boat ramp for launching and retrieval of boats and dry standing/garage or stacking racks for boats. This marina could be club operated and could make provision for trailer launching of speedboats and small yachts with retractable keels. Water depth could be shallow but preferably not less than 1 m chart datum.



Marina at Trou Fanfaron, Port Louis

The typical components of a fully-fledged marina are as follows:

- A basin of sufficient depth protected either by natural means or manmade breakwaters, land reclamation, dredging or extensive reshaping of the land environment.
- Within the basin a marina normally has fixed or floating docks for the mooring of boats.
- The docks provide a range of services such as electricity, fresh water, communications, cable TV, fire fighting, locker boxes, solid waste containers and sometimes sewage pump out.
- At a central location further services for boats include fuelling, sewage pump out, water supply, gas supply, slops removal.
- Further facilities for boats include launching ramps, finger jetties for straddle carrier or other lift out mechanism e.g. derrick crane.
- Land facilities related to boats specifically include boat storage, boat yard, repair shops, hull cleaning, carpentry shop, rigging shop, electronic sales and repair etc.
- Additional land facilities typically consist of an extensive variety of facilities, shops and services.



Floating docks for boat mooring

5.2 SKI LANES

Water skiing is both a leisure activity as well as an established and recognised sport. For competition skiing, i.e. slalom courses, jump events, trick skiing and /or bare foot skiing, very special requirements are needed which are normally only feasible on specially constructed inland lakes to provide ideal conditions. For competition and specialty skiing areas it is thus considered highly unlikely to find such locations within the lagoon areas of Mauritius.



Water Skiing

The typical components and requirements of ski lanes are summarized as follows:

- Calm water area with a minimum size of some 5 ha and preferably 10 to 15 ha, protected from wind and with no underwater obstructions;
- Suitable length and width of relatively shallow water for exclusive use of skiers and preferably zoned as such;
- A minimum water depth of 1m chart datum but preferably 1.5m.
- All amenities related to power boating such as clubhouse, boat launching, boat storage, parking, etc.

5.3 BATHING AREAS

Going to the beach or to the sea means a lot of different things to different people. For some it is a family outing, for some it may be a chance to swim and snorkel, for others it is a chance to exercise. Clean water of optimum depth is only one parameter constituting a good bathing area.

The typical components of a bathing area are:

- A water activity area bounded by the water line and the 1.5 m depth contour. This is the depth at which most people are still able to touch bottom and feel safe.
- A dry recreational area bounded by water line and backshore edge, often defined by the vegetation line or hummock dunes and pioneer plants.
- Backshore area from dry recreational area to the next natural or manmade boundary such as a fence or road providing space for parking, amenities and picnic areas.



Bathing Area at Blue Bay

The physical requirements for bathing areas can be summarized as follows:

- Bathing area at least 30 m wide, preferably no more than 60 m
- Bottom free from dangerous obstacles or sharp objects
- Bottom firm but ideally soft to touch (like sand)
- Dry recreational area typically some 30 m wide with minimum width 10 m
- Backshore area typically some 120 m wide
- Average carrying capacity for public beaches vary from 4 to 6 persons per meter length of beach (i.e. 5 to 8 m² per person for 30 m wide beach)
- Capacity depends on combination of swimmers, 'dry beach' users and backshore capacity, i.e. picnic area
- Density of use can be regulated by limiting the provision of parking

6. STUDIES UNDERTAKEN AND METHODOLOGY USED

In order to achieve the study objectives, the following activities were undertaken over a period of one year:

- A national survey was conducted to ascertain and quantify the current and expected demand for marinas, ski lanes and bathing areas.
- A comprehensive data collation programme was undertaken in order to obtain as much baseline environmental data as possible. This included published and unpublished reports and documents, maps and aerial photographs and images. The corollary to the data collation programme was a gap analysis to identify areas with no or insufficient data.
- A situation analysis was undertaken of the existing marinas, ski lanes and bathing areas.
- A legal and policy review was carried out to identify the relevant Acts and Policies;
- A Geographic Information System (GIS) was set up to map the baseline data for the coast as well as to graphically illustrate the existing infrastructure relating to marinas, ski lanes and bathing areas. This system will be transferred to MoE to assist with future planning.

6.1 MARINAS

For marinas, a systematic process of site selection was adopted, which involved the following tasks:

- Obtain a short list of potential sites based on key criteria such as passes, navigation, natural shelter, water depth and land availability. This resulted in a list of 22 sites, including the existing harbour facilities at Port Louis and the proposed development at Anse Jonchée;
- The MoE requested the study team to add a further 8 and later another 4 sites to the short list, as sites for which proposals have been received, giving a total short list of 34;
- Field surveys were undertaken by the multi-disciplinary study team of the short listed sites and each site was evaluated in terms of a number of criteria under the broad headings of marine engineering, infrastructure (including land availability), socio-economics, marine ecology and terrestrial environment;
- The coastal area was divided into six 'envelopes' to ensure that marinas would be provided at strategic locations, roughly equidistant from each other around the coast.
- A scoring and weighting system was adopted to provide a relative score for each site and the sites were ranked;
- The highest ranked site in each envelope was identified as one of the six candidate sites;
- The selected six sites plus Anse Jonchée were then analysed in greater detail, to take into account *inter alia*, the hydrodynamics and actual/potential risk of erosion both *in situ* and on nearby islets and beaches, the geomorphology of shoreline, the marine and terrestrial habitats and a coastal evaluation including a general bathymetry, bottom sedimentation study, water quality, etc.

- Conceptual plans were developed for each site, (except for Anse Jonchée, for which the developer's plans were used), together with a discussion regarding the site's sensitivity and vulnerability. In addition, a Preliminary Environmental Impact Assessment was prepared for each site to highlight the key issues and to make broad recommendations for the studies required in a full EIA and EMP if the site were to be developed.

6.2 SKI LANES

For ski lanes, the process of site identification, assessment and recommendation involved the following tasks:

- The presence of existing ski lanes was established.
- At existing ski lanes the back up services and types of activities undertaken was determined.
- It was established that the ski lane sites are linked to the hotel industry and in close proximity to a specific hotel or group of hotels.
- Site observations were made and discussions held in order to evaluate the existing ski lanes.
- The ski lanes were evaluated in terms of a number of criteria.
- A scoring and weighting system was adopted to provide a relative score for each site and the sites were ranked.

6.3 BATHING AREAS

For bathing areas the following methodology was used for site identification, assessment and recommendation:

- A site reconnaissance was undertaken to gain a general perspective of the beaches and related bathing areas.
- Specific details of all the existing proclaimed public beaches were obtained in the form of 1:2500 map extracts.
- Field surveys were undertaken of all 88 proclaimed beaches to assess a broad range of criteria.
- The beaches were then rated on a number of criteria and on the overall beach quality as well as on bathing quality.
- An overall classification of beaches into different classes was subsequently carried out and recommendations made to improve infrastructures and safety.

7. REPORTING

Reporting comprised the following:

- Preparation of a Technical Report, plus supporting information in appendices.
- Preparation of separate guidelines on:
 - Construction and implementation of marina projects;
 - EIA and EMP report preparation for marinas, ski lanes and bathing areas;
 - How to assess EIA reports;

- Dredging;
- Cyclone protection.

8. FINDINGS AND RECOMMENDATIONS

The main findings of the study and recommendations made have been expounded in the main report under the following headings:

- Baseline Data
- National Survey and Demand
- Strategic Assessment of Potential Sites
- Site Specific Assessments
- EIA of Anse Jonchée
- Guidelines for Project Implementation

8.1 FINDINGS FROM DATA COLLECTION AND NATIONAL SURVEY

- (a) From the site reconnaissance and desk studies, it was possible to collate sufficient background data for the strategic identification and assessment of marinas, ski lanes and bathing areas.
- (b) For the site-specific assessment, detailed surveys have been undertaken at selected locations and where information was inconclusive or non-existent.
- (c) From the development strategy and policy statements, it is quite clear that development should concentrate on the upgrading and refurbishment of existing infrastructure prior to considering green field sites especially in the coastal zone.
- (d) It is also apparent that there is a general presumption against major new developments along the open coast unless in the national interest or unless suitable alternatives cannot be found.
- (e) In addition, the policy statements state that it is an absolute requirement that all development in the coastal zone and outside existing residential and / or tourism zones

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