

# **LAND SURVEY REPORT ON REHABILITATION OF MAWELLA CANAL**

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## INTRODUCTION

Mawella lagoon is located about 198 kilometers south of Colombo in the Tangalle Divisional Secretariat Division, Hambantota District in the Southern Province of Sri Lanka. Along the southern coastal zone there are small and large brackish and marine coastal lakes and lagoons. Among these is the Mawella lagoon with a surface area of about 91 ha (225 acres) with other unique coastal features. Its surroundings are the Kudawella blow hole, mangrove swamps, rocky headlands and wide beaches. Collectively, all these have a close relationship with the local community.

Due to sea-level fluctuations, during the Holocene Epoch, the southern coastal zone was subjected to regressions and transgressions resulting in the present coastal lakes, lagoons and configuration of the coastline (Katupotha, 1988a & 1988b). All these water bodies became marine, brackish or fresh intermittently due to secular climatic/sea level changes. Following such changes the fauna and flora of these water bodies adapted to such changes including the Mawella lagoon. The productivity of a lagoon is influenced by the decrease of population of fish, aquatic organisms, coastal and aquatic vegetation, periodic flushing, discharge of fresh water during seasonal rainfall – an of which were considerably high in the 1940s according to elderly inhabitants of the area.

After 1960s, however, the fishery productivity of Mawella lagoon degraded due to a number of factors. The existing canal which connected the lagoon and the sea gradually became impeded by a number of illegal encroachments, fillings and sand bar formation near the outlet (seaside). As a result, the natural water exchange system between the sea and the lagoon was completely cut off even during the rainy seasons. A temporary passage has been created by the community by breaching the impeding sand bar. The loss of constant connection with the sea has created problems to the lagoon. Declining salinity levels in the lagoon has created a nearly fresh water environment. According to NARA present salinity level of the lagoon is 3.1 and the pH value is 8.35 (NARA, 1999).

The recent study revealed that in the past the sea-lagoon connection contributed to a greater fish population and bio-diversity (Status Report, 1999). With the gradual

blocking of the canal and pollution, the population of the marine/brackish fish species declined and so did the daily catch. This situation has resulted in social and economic problems faced by the community.

The present problems arising out of the degraded state of the canal are as follow:

- Declining fish productivity
- Encroachments and fillings
- Increasing pollution of the lagoon
- Inadequate access to the lagoon
- Destruction of mangroves
- Lack of safe potable water

The above issues were further confirmed by secondary data and information collected from literature survey, focused group discussions with key stakeholders and field investigations.

The current situation of the Mawella lagoon and its surrounding coastal areas has also been identified in the Revised Coastal Zone Management Plan (1997) as high priority sites that require immediate management solutions to overcome the problems. Considering the significance of the prevailing issues, the Mawella lagoon and the Kudawella blowhole area were placed under the Hambantota Integrated Coastal Zone Management Project for action by the Special Area Management Programme (SAMP). Operations of the SAMP commenced in September 1998 with funding from NORAD.

The Asian Development Bank (ADB) approved a technical assistance programme to design and formulate a Coastal Resource and Management Project to be implemented by the Ministry of Fisheries and Aquatic Resources and Development (MFARD). The Mawella lagoon is included among the nine sites of Coastal Environment and Resource Management Component for implementation (Executive Summary, 1999).

## **AIM AND PURPOSE**

Though SAMP (sponsored by HICZMP) has undertaken the study and evaluation of the state of the Mawella lagoon and the Kudawella blowhole area, no funds have been made available for implementation of any project aimed at resulting the problematic issues. In response to a request by the Government of Sri Lanka, the ADB approved a technical assistance to design and formulate a Coastal Resource Management Project (CRMP) to be implemented by the MFARD in 1999.

The SAMP and the Resource Profile (initiated in October 1998) revealed many social and economic issues in relation to the Mawella lagoon. Most of these issues have arisen due to the disconnection of the sea from the lagoon and vice versa owing to impediments in the canal proper. The main social and economic issues are falling income of the fisher folk owing to very low daily catch of fish and increasing employments. The people of the area emphasized that if it is possible to rehabilitate the existing canal to link the lagoon to the sea, it would ensure the increase in a variety of fish, prawns and crabs as well as ensure the inflow of nutrients from the sea and vice versa. This study is a result of a request made by officials of HICZMP, NORAD and the CCD to conduct a preliminary survey along the canal to consider the rehabilitation of the canal. The main purpose of the survey is to:

- measure the current configuration (shape) of the canal
- measure the current configuration of the impediments

Results of this survey are shown in Figures 1 (Mawella Ela) and Figure 2 (Centre line Profile of Mawella Lagoon). Figure 1 shows that the mouth of the canal (seaside) is 30 – 40m wide, and about 700m long (towards the lagoon) with the canal breadth varying between 6 – 12m. Two narrow culverts (from Kudawella Road to Elagawa Road and from Main Road to Kudawella) are prone to flood waters during heavy rains. Figure 2 are showing the centre line profile of the lagoon indicate the configuration of the impediments. Though the sand bar is high at the mouth of the sea, many places in the canal and at the end of the lagoon is below msl. Rehabilitation of the canal, therefore,

with make it possible for sea water flow into the lagoon. Accordingly, rehabilitation of the canal and removal of existing obstacles (including the control of pollution and preventing garbage etc) will help to:

- make the lagoon productive by an increase in fish, prawns and crabs;
- increase the income of the people in the area; and
- provide employment opportunities

Thereby, alleviating are present difficult social and economic issues faced by the community.

## **METHODOLOGY OF THE SURVEY**

The survey and informal discussion with key stakeholders held between 23<sup>rd</sup> and 28<sup>th</sup> February 1999. The survey was conducted by a Licensed Surveyor using Topcon Digital Theodolite, Topcon Auto Level, steel & linen tapes etc.

## **PROPOSED ACTIVITIES UNDER REHABILITATION**

Under a rehabilitation programme of the canal the following would be taken into consideration:

- Reconstruction of the canal;
- Lining the canal with rubble;
- Constructing new wide bridges across the canal above flood level;
- Construction of out-fall structures at the sea;
- Acquisition of land to accommodate the increase in the width of the canal when reconstructing;
- Draining system to keep away silt and other washed material from flowing into the canal;

- Dredging of the lagoon to minimize the siltation of the canal (to permit permanent or temporary connection between the lagoon and the sea); and
- Monitoring of dumping waste and garbage and encroachment on the canal banks (by village level organizations or by a responsible local organization)

The cost estimate for the rehabilitation of this canal has to be assessed only after conceptual plans are completed.

## **REFERENCES**

- Executive Summary, 1999: Draft Final Report. Coastal Resource Management Project Sri Lanka (TA No. 3034-SRI)
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