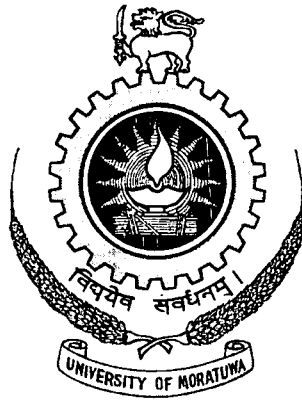
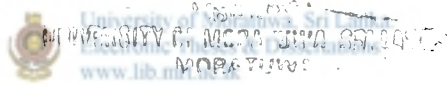


LB/DON/75/03



THE STUDY OF THE FEASIBILITY OF WATER TRANSPORTATION IN COLOMBO METROPOLITAN REGION



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This thesis was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Science.

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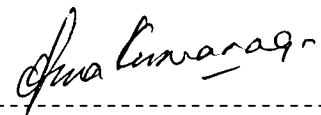
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DECLARATION

The work included in this thesis in part or whole, has not been submitted for any other academic qualification at any institution.



G.L.D.I. De Silva



Prof. Amal S. Kumarage

ABSTRACT

The rich history of water-based transportation that existed in the past in the country has diminished over the years. The waterways that were used mainly for freight transportation are neglected and under utilized. Thus a transport infrastructure, which is readily available for use is an asset for the transport planners, searching for alternatives to ease the ever-increasing congestion on roads where mere expansion of infrastructure has become difficult.

The objective of this thesis was to investigate the technical and financial feasibility of a waterborne public transportation system on existing inland waterways in the Colombo Metropolitan Region. The research starts by first looking abroad, where inland water transports systems are more familiar concept to find on what capacity they operated. Secondary the study area was defined so that continues waterway links can be formed. Data on physical parameters were gathered on which water way systems in the CMR were identified. A complete technical feasibility on five selected waterway systems were presented under which the two systems; Wellawatte – Kirillapone Canal and Biera Lake were identified as meeting the criterion defined for technical feasibility, out of which the former system was selected as the best route for a public transport system in CMR. Non-availability of demand estimation models and vehicle operating costs for boats deprived a complete assessment on financial feasibility.

The conclusion arrived is that it is technically feasible to make a connection over water, certainly in the in Wellawatte- Kirillapone link where the daily passenger movements are considerably high. Its financial feasibility depends on the estimation of demand and operational parameters for the ferry service, which require further research.

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LIST OF ABBREVIATIONS

| | | |
|----------------|---|--|
| β | - | Mode independent parameter. |
| ADT | - | Annual Daily Traffic |
| CKE | - | Colombo Katunayake Expressway |
| CMC | - | Colombo Municipal Council |
| CMR | - | Colombo Metropolitan Region |
| CMRSP | - | Colombo Metropolitan Regional Structural Plan |
| D_T | - | Total Travel Distance |
| ESCAP | - | Economic & Social Commission for Asia and the Pacific |
| h | - | Headway |
| h_c | - | Headway of Canal service |
| h_b | - | Headway of Bus service |
| F_B | - | Fare in Bus |
| F_b | - | Fare in Boat |
| F_T | - | Total Far |
| GC_i | - | Generalized cost of travel by Mode i |
| GC_1 | - | Generalized cost of travel by mode 1 |
| GC_2 | - | Generalized cost of travel by mode 2 |
| LHI | - | Lanka Hydraulic Institute |
| n_B | - | Total number of bus links used in travel. |
| O-D | - | Origin Destination |
| P_1 | - | The proportion of trips by mode 1 |
| P_2 | - | The proportion of trips by mode 2 |
| SLLRDC | - | Sri Lanka Land Reclamation and Development Corporation |
| T_B | - | In Vehicle time in Bus |
| T_b | - | In Vehicle Time in Boat |
| T_T | - | Total in Vehicle Time |
| TT | - | Transfer Time |
| UDA | - | Urban Development Authority |
| VOT | - | Value of Time |
| VOC | - | Vehicle Operating Cost |
| VOC_{Demand} | - | The feasible vehicle operating Cost of boat |
| VOC_{Supply} | - | The supply vehicle operating Cost of boat |
| WT_T | - | Total Waiting Time |