


**FORMULATION OF STRATEGIES FOR  
THE REVITALIZATION  
OF  
WETLANDS IN SUSTAINABLE URBAN DESIGN  
WITH SPECIAL REFERANCE TO  
COLOMBO METROPOLITAN REGION-CORE AREA**

A history of architecture & social studies essay presented  
To

The Department of Architecture  
University of Moratuwa

 University of Moratuwa, Sri Lanka  
Electronic Theses & Dissertations  
Final Examination in M.Sc.(Arch)

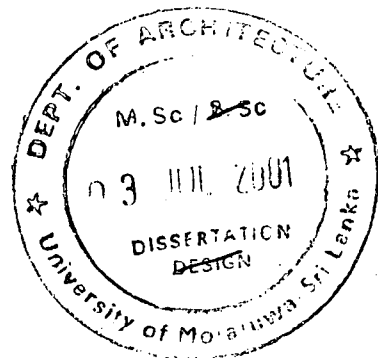
**LIBRARY**  
**UNIVERSITY OF MORATUWA, SRI LANKA**  
**MORATUWA**

72 "01"  
711.4:627.53  
(548.7)

TH

76190

B.H.C.M. De Silva.  
June 2001



University of Moratuwa



76190

76190



University of Moratuwa, Sri Lanka  
E-Repository: Theses & Dissertations  
[www.ub.mrt.ac.lk](http://www.ub.mrt.ac.lk)





University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

**ABSTRACT**

## ABSTRACT

---

*"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water" (Brian J Hudson, 1996: 117).*

They have enormous biological resources which can be described as the kidneys of the landscape. Unfortunately this valuable Eco-system has just become unpleasant and even sinister wastelands within an urban context, resulting enormous environmental problems, particularly floods.

*"Today many societies are learning the foolishness and cost of treating wetlands as a public enemy. Cities that have encroached on wetlands indiscipline manner to bear the tragedy and cost of avoidable flood and other environmental impacts" (Mitchell Breazley, 1993: 6)*

However, in the recent past , Wetlands have acquired a new dimension mostly due to the hard work done by ecologists and conservationists. An extensive wetland literature at both the technical, scientific has now been made and available on important ecological functions and values of them as a result of the above.

In Sri Lanka it is found many of such eco systems in urban areas, eco-systems, which serve utilitarian, recreational, landscape or experimental purposes. Among the wetlands in Sri lanka the low-lying flood plain marshes and related canal system found in CMR are unique. How ever most of these wetlands in CMR as at present merely acting as detention areas which store storm water came through natural drains. In this scenario properly functioning wetland system is an asset and also a 'Green lung' in the city structure of CMR.

On the other hand, as the wetlands are poorly treated due to social, political, economic and other reasons, CMR suffering from severe environmental problems particularly in the form of floods, as mentioned earlier. Even though relevant authorities prepare and implement several management approaches

and annually spend large sum of monies to maintain and keep wetlands in order, the wetlands continue to pollute and clog resulting several environmental hazards. Accordingly this has become a critical issue to be addressed urgently and also making a strong case for revitalization of the same.



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)





University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

## ACKNOWLEDGEMENT



## **ACKNOWLEDGEMENT**

---

Completion of this study would not have been possible if not for the help of many, who supported both physically and morally. Therefore I would like to express my thanks to the following persons who assisted me in numerous ways.

First I would like to express my gratitude to Dr. L.S.R. Perera for giving me the necessary guidance to start and carry on the study. Also I would like to express my thanks to Dr. M.S. Manawadu for being behind me to guide me throughout the process.

I would like to extend my thanks to Dr. R. Emmanuel, Mr. K.D. Fernando, Mr. P.K.S. Mahanama for the valuable comments they provide.

I would like to render my gratitude towards Arch. Nihal Fernando, Arch. Prasanna Wijethunga and the staff for giving their valuable support in all the ways.



University of Moratuwa, Sri Lanka  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)



I would also like to thank all my friends who helped me in all kinds of tasks from data gathering to preparing the document.

Last but not least let me thank my parents & Ayya for providing me with all the support to carry out all my task without any lapse.

B.H.C.M. de Silva.

## **Chapter brake down**

---

Abstract	ii
Acknowledgement	iv
List of Illustration	vii
<b>Chapter One : Introduction</b>	
1.1 Back ground of the study	01
1.2 Issue	03
1.3 Need of the study	04
1.4 Research objectives	06
1.5 Method of study	
1.6 Scope and limitations	09
<b>Chapter Two : Wetlands in an urban context and their relationship with the man and his built environment.</b>	
2.1 Definition of wetlands	10
2.1.1 Types of wetlands	10
2.2 Importance of wetlands as a sensitivity zone in an urban context.	11
2.2.1  Historical back ground of wet lands.	13
2.2.2  Physical use of wetland	14
2.3 Wetlands and its relationship to the urban landscape and built environment	23
2.4 Wetlands in a city and its contribution to the urban community activities	26
<b>Chapter Three : Viability of utilization of wetlands in urban context.</b>	
3.1 Utilization of wetlands in the urban historical context.	29
3.2 Use of wetlands in restructuring Urban Voids.	32
3.2.1 Case study of Gothenburg in Sweden.	33
3.2.2 Sustainable development approach.	37
3.3 Urban wetlands related development trends.	39
3.3.1 Amsterdam.	39
3.3.2 Netherlands.	42
3.3.3 Holland	44





3.3.4	Singapore	44
3.4	Revitalization of wetlands in sustainable urban design	47
<b>Chapter Four : Wetlands in Colombo Metropolitan Region.</b>		
4.1	Historical background and importance of the city of Colombo	49
4.1.1	Rebirth of a new capital on the ancient location.	51
4.1.2	Development approaches for city of Colombo.	51
4.2	Colombo Metropolitan Region and the area of CMR.	53
4.2.1	Mission of CMR.	53
4.2.2	Ecological zoning in CMR.	54
4.2.3	Environmental sensitive areas in CMR	55
4.3	Core Area of CMR.	58
4.3.1	Vision of Core Area.	58
4.3.2	Objectives of Core Area	58
4.3.3	Environmental strategies of Core Area	59
4.4	Wetlands in Core Area.	59
4.4.1	Wetlands and their existing function.	62
4.5	Viability of revitalization of wetlands in the Core Area.	68
4.5.1	Viability of wetlands as a natural drainage system	69
4.5.2	Viability of wetlands as recreation areas	72
<b>Chapter Five : Strategies for revitalizing Wetlands in Core Area.</b>		
<b>-CMR</b>		
5.1	Concept	77
5.2	Formulation of strategies	77
5.2.1	Environmental issues	77
5.2.2	Valuation	78
5.3	Revitalizing strategies of wetlands in terms of potential uses	82
5.3.1	Wetlands as a natural drainage system	82
5.3.2	Strategies of wetlands as recreation space	93
Conclusion		99
Bibliography		102



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

## LIST OF FIGURES



## LIST OF FIGURS

- 1 Some wetlands type 11
- 2 Aftermath of flooding in Khartoum, Sudan levels of the river Nile are well known. Pressure of space has made these newcomers occupy the lowest ground with the result. 12
3. Varies types of wetlands, shown in the diagram have different hydrological signatures
  - A. Estuaries
  - B. Mangroves
  - C. Flood plains
  - D. Flooded forests13
4. The mangrove forest of the Sundarbans in India and Bangladesh, for ex. Breaks storm waves, which often exceed 4 m in high. In recognition of their protective functions over last 10 years Bangladesh Government has planted vast area of mangroves to protect embankments and farms. 16
5. The village of Dixocove in Ghana, make full use in their wetlands 16
6. Cutting peat in Caithness Scotland. 17
7. A party of tourists in big cypress swamp of the Florida Everglades. 18
8. Graceful progress across Burmese lake 19
9. Women carrying fishing baskets to a wetland site in Botswana 19
10. Bustling river traffic near the town of Mopti, central Mali 20
11. The Mekong river near by cultivation areas 21
12. The Mekong River in Thailand 21
13. Floating Market place in Bangkok 22
14. A typical section of a rural setting. 23



15. Typical section of urban setting.	24
16. In cities man made structures capturing almost all the natural environment.	25
17. A moat around the fortification of Sigiriya for defense purposes	31
18. Industrial and commercial development obstruct the accessibility towards and the nature by physically and visually	31
19. A 'lost space' Abandoned wetland in the city	32
20. The original plan of Gothenburg – Walled city plan with a grid of Canals lay over rectangular urban block.	34
21. The diagram shows the space In isolation. This has connection of Lost its identity lost its identity	36
22. Proposed infill development re-establishing the city to its waterfront.	36
23. Nothing on the site responds to the water front	37
24. Proposed infill to restructure the space	37
25. Sustainable development model of Jacob & Sadler (Source : UNESCO-UNEP, 1992)	38
26. Living over water in Entrepot-West.	40
27. 'Primary Green structure' of Amsterdam	40
28. GEUZENVELD	42
29. Singapore stated slums and squatters	45
30. Singapore- a tiny country which needs to plan ahead and to care fully manage land use.	46
31. Example Simpang A vision for new water front settlement.	47
32. Land filling in and around the area	64
33. On going land filling activities near Diyawanna Oya	64
34. Housing scheme in Atthidiya marsh	65
35. Waste dumping on Atthidiya marsh along the road	66
36. Royal park condominium	68



37. Demand curve – recreational participation in the core area	76
38. Valuation example for a Sri Lankan Urban marsh	81
39. Guidelines for construction in flood prone area.	84
40. Ecological Zones	85
41. Abounded Canal and related wetland behind Sethsiripaya completely neglected due to no physical and visual connection	94
42. The canal/wetland at Nawala Rd. A great potential to have such a path the integrate congested industrial context, open ministry and other areas.	95
43. Recreation along the Bosbaan in the Amsterdam's Bos	96
44. Such a potential can be address to these situations - canal at three bridge junction	98



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

