UNIVERSITI TEKNOLOGI MARA

FACING CLIMATE CHANGE:
LOW CARBON URBAN WATERFRONT AT PUTERI
HARBOUR, JOHOR

NURAMIRA MOHD LAZIM

Topical report submitted in partial fulfilment of the requirements for the degree of Bachelor of Landscape Architecture (Hons.)

Faculty of Architecture, Planning and Surveying

July 2018
AUTHOR’S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi Mara. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student : Nuramira Mohd Lazim
Student I.D. No : 2014491542
Programme : Bachelor of Landscape Architecture (Hons.) – AP248
Faculty : Architecture, Planning & Surveying
Topical Report Title : Facing Climate Change: Low Carbon Urban Waterfront at Puteri Harbour, Johor.

Signature of Student : .................................................................
Date : July 2018
ABSTRACTS

Low carbon landscape can be defined as an incorporation of landscape design in responding to climate change. This global issue needs to be readdressed to overcome this challenge. The effect of our ignorance actions towards environment has resulted us in facing the impact of it. Global warming, flood, urban heat island, an increasing of sea level and many other environmental issues are caused by human activities. Many forests are being developed into hard surface and structure with no intention to replace them back. An urban waterfront is seen as a potential in mitigating some of the effects such as urban heat island due to its geographical location. Puteri Harbour as a developing urban waterfront area needs to take a careful measure in controlling urbanisation. The aim for this study is to design a sustainable waterfront through low carbon landscape. The goal of this study is to produce a design to reduce and control climate change effect and creating a tourist allurement. Other than that it is also to design a sustainable waterfront that is harmonious with its natural ecosystem. The methodology that was used in this project consists of several stages. These stages are inventory and analysis, site synthesis and design strategies to solve the issues. The approach that was used is low carbon landscape by Chon, Choi, You, Lee, Seok (2014) which act as a guideline throughout the study. The overall result will be shown on the landscape master plan. With several methods being proposed, Puteri Harbour will be able to reduce carbon emitted even with urban activities. It is also will become a tourist spot and enhancing community bonding in the area.
# TABLE CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
</tbody>
</table>

## CHAPTER ONE: INTRODUCTION TO TOPIC

1.1 Introduction                             | 1    |
1.2 Problem Statement                        | 2    |
1.3 Aim And Objectives                       | 3    |
1.4 Definition Of Terminologies              | 3    |
1.5 Significance Of Study And Contribution   | 5    |
1.6 Research Methodology                     | 5    |
1.7 Site Synthesis                           | 7    |
1.8 Design Development                       | 7    |
1.9 Chapter Summary                          | 8    |

## CHAPTER TWO: LITERATURE REVIEW AND RELATED REFERENCE CASES

2.1 Introduction                             | 10   |
2.2 Low Carbon Environment                   | 10   |
2.3 Urban Waterfront                         | 19   |
2.4 Reference Case 1: FPT City in Danang, Vietnam | 32   |
2.5 Reference Case 2: Pangyo New Town, Korea | 34   |
2.6 Reference Case 3: Barry Waterfront at Barry, Vale of Glamorgan | 37   |
2.7 Comparisons Of Reference Cases           | 40   |
2.8 Chapter Summary                          | 41   |

## CHAPTER THREE: INVENTORY AND ANALYSIS

3.1 Introduction                             | 42   |
3.2 Background of The Study Area 42
3.3 Inventory and Analysis 46
3.4 Chapter Summary 82

CHAPTER 4: SITE SYNTHESIS

4.1 Introduction 84
4.2 Issues of Site Study 85
4.3 Concern of Site Study 87
4.4 Opportunities Of Site Study 90
4.5 Site Synthesis 92
4.6 Chapter Summary 97

CHAPTER 5: FINDINGS, DESIGN IMPLEMENTATION AND GUIDELINES

5.1 Introduction 98
5.2 Design Statement 98
5.3 Design Goal And Objectives 98
5.4 Conceptual Development 100
5.5 Space Programming 114
5.6 Planting Strategy 115
5.7 Landscape Master Plan 117
5.8 Enlargement 01 119
5.9 Enlargement 02 142
5.10 Street 151
5.11 Promenade 152
5.12 Green Wall 153
5.13 Chapter Summary 154

BIBLIOGRAPHY 156

APPENDICES