Developing New Guidelines for Riverfront Development in Malaysia

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Rivers and water are valuable natural resources for human life, for the environment and for national development. A riverfront development is already a well-established phenomenon internationally. In Malaysia, as the economy began to develop in the 1980s, so did the use of land along many of the riverfronts. The pressure of new technology coupled with urban population growth and urbanisation began to force a transition from water dependent industries to a variety of non-water dependent urban developments. Residential riverfront development has taken advantage of the land made available by changed land use and has incorporated the water amenities as a feature or "selling point" of the development. The development of riverfront land has occurred with limited federal, state, or municipal planning guidance and in some cases has added a cost in terms of flooding and pollution. Although some riverfront development projects continue to remain profitable and also maintain a successful public access component, many have not.

The aim of the current study is to identify the current practices of riverfront development in Malaysia and to evaluate the strengths and weaknesses of the regulations associated with riverfront development in Malaysia, and any subsequent barriers to development. This will allow guideline recommendations to be formulated to help ensure more sustainable development in crucial riverfront locations throughout Malaysia in the future. Data and information to undertake this research was obtained from in-depth interviews with government officers, property developers and the waterfront community (qualitative phase),

followed by a survey of property development companies through postal and email questionnaires (quantitative phase).

The results show that the most of the interviewees and the property development companies are familiar with waterfront development even though not directly involved in these projects. Only limited numbers of them are familiar with guidelines for riverfront development, while the rest have inadequate information about them. The majority of the interviewees and the property development companies do not support the riverfront development guidelines for many reasons such as weakness in policy administration and external interference. The findings also identified eighteens attributed to be used in assisting developers when undertaking riverfront development project in the future. This information will be used to develop recommended guidelines for best practice riverfront development in Malaysia.

Keywords: Guidelines for riverfront development, Riverfront, Riverfront development, Riverfront property.

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Glossary of Terms

To clarify terms used in this thesis a list of definitions of selected terms is provided below.

"Bursa Malaysia" is an exchange holding company approved under Section 15 of the Capital Markets and Services Act 2007. Bursa Malaysia operates a fully-integrated exchange, offering the complete range of exchange-related services including trading, clearing, settlement and depository services (Bursa Malaysia, 2009).

"Sustainable development" is defined as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* (Brundtland Commission, 1987).

"The waterfront" refers to land fronting on to water (Dong, 2004). Different words were used to replace the term waterfront: city port, harbour front, riverside, river edge, water edge and riverfront (Hoyle, 2002; Hussein, 2006; Mann, 1973; Tunbridge & Ashworth, 1992; Watson, 1986). The water itself is any type of water body such as a lake, the ocean, a river or a stream of all sizes (Breen & Rigby, 1994, p. 10). The waterfront zone is an area endowed with special characteristics and includes ecological, economic and social characteristics (Costanza, 1999).

"Waterfront development" usually refers to land reclaimed from water in order to create an extension of existing city centres (Butuner, 2006). Breen and Rigby (1994, 1996) considered that waterfront development may not necessarily need to directly front water, but may need only to look as if it is attached to the water. Waterfront development in this research refers particularly to any development in front of river areas.

"Waterfront governance" refers to the management system that consists of the legal and institutional frameworks necessary to maximise the benefits provided by the water zone and to minimise the conflicts and negative effects of activities (Post & Lundin, 1996). Every stage of the waterfront development process (setting objectives, planning and implementation) will involve as wide a spectrum of interest groups as possible to balance the diverse uses of the waterfront.

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Chapter 1
Thesis Introduction

This chapter provides the background for this study. It begins with a brief introduction to the riverfront development phenomenon in Malaysia. Research goals and objectives are defined and general research questions addressed. At the end of this chapter, the overall thesis framework is presented.

1.1 Introduction

Rivers and water are valuable natural resources for human life, the environment and national development. Hussein (2006) defined a river as "a copious stream of water flowing in a channel to the sea, a lake or another river". Mann (1973), however, sees a river as the "last open valley of the urban terrain, the last remaining path where man may re-establish his rights of access and enjoyment."

Almost 71% of the earth's surface is covered by water (Lalli & Parsons, 1993). Water plays an essential role in people's lives and has long been recognised as one of humanity's most important natural resources. In addition, as one of nature's most essential resources, water is widely used by people for settlement, public spaces and for recreation (Zhang, 2002). Despite the importance of rivers for settlement and public space, their biodiversity and traditional importance as sources of primary and secondary production, the contribution of rivers to energy cycles is now becoming better appreciated (Costanza, et al., 1999; Lalli & Parsons, 1993; Zhang, 2002). Indeed, the allure of water is powerful and universal.

The unique location of rivers at the interface between water and the land initiated the evolution of human society along the riverfront (Dong, 2004). History shows that many early human settlements owe their origin and prosperity to water and waterfronts, and including riverfronts, generally represent the focal point of settlements as a whole (Hoyle & Pinder, 1992). For example, in the history of human civilisation, Uruk, Eridu and Ur (to name a few) emerged as early settlements about 6000 years ago in Mesopotamia. Moreover, Babylon also developed and grew along the Tigris and Euphrates Rivers, recognised as very fertile valleys (Macionis & Parrillo, 2001).

Waterfronts are also important for transport and trade. Konvitz (1978) indicates that from pre-civilisation times to the present era of modernisation, water has served as transport modes for

facilitating economic growth at different rates. Therefore, the strong relationship between the waterfront and human society was established very early, and has been discussed extensively in the literature (see for example: Herzog, Herbert, Kaplan, & Crooks, 2000; Hoyle & Pinder, 1992; Wrenn, 1983).

The close association between cities and water has been known since the beginning of civilisation as most major cities are located on or near, a water body of some type. For example, the Yellow River, the Indus, the Euphrates and the Nile are the earliest main cities developed along rivers. The trend continues with many modern major cities developing along waterways such as Paris, London, New York and Tokyo (Dong, 2004). Moreover, for example in the United States, only six out of the 75 largest cities are not located on a significant body of water (Breen & Rigby, 1994). It can be seen from these examples that both water and the cities they serve constitute a fundamental element in the spatial organisation of economies and societies (Hoyle & Pinder, 1992).

Historically, the emergence of waterfront development in many countries was significantly associated with the maritime industry (Hoyle, 2001). Port cities have been characterised by innovation, enterprise and economic development. The establishment of port cities brought increased prosperity to the urban waterfront communities worldwide.

After waterfronts had been abandoned for a long time for different reasons, the waterfront redevelopment phenomenon began in the early 1960s. Even though waterfront cities are synonymous with port cities, Hoyle (2001) explains that the emergence of waterfront redevelopment is mainly but not exclusively associated with maritime activity. The phenomenon grew in the 1970s, accelerated in the 1980s (Breen & Rigby, 1994) and continues to the present day. So, viewed historically, urban waterfront development has undergone cycles of change over the years and the latest pattern is the conversion of major areas of industrial, shipping and transportation to more public endeavours such as residential and recreational.

Over the decades, many cities have successfully made this transition and the waterfront redevelopment phenomenon is popular throughout the world. Although the scale and type of redevelopment of waterfronts varies from city to city due to the patterns of original development, the basic physical configuration and urban form of each waterfront city should continue to respond to new and changing demands, while attempting to maintain its heritage and preserve its natural features.

1.2 Motivation for Conducting the Research

Urban waterfront development is already a well-established phenomenon internationally. Due to the decline of harbour sites and waterfront industrial areas in the second half of the 20th century, urban waterfront redevelopment started in North America, most notably, with Baltimore's Inner Harbour in the 1970s and has gradually spread to Europe and elsewhere since the 1980s (Gospodini, 2001). Many waterfronts have been transformed from working industrial ports into commercial, recreational and tourist areas. In addition, private developers began making profits by exploiting the waterfront's ambience in the marketing of their projects. As a result of both private initiative and public involvement, cities have gained valuable benefits from the redevelopment projects such as new parks, walkways and other recreational facilities (Craig-Smith & Fagence, 1995) . They provide a unique opportunity to reconnect what is special and remarkable about the river and to achieve a more sustainable and enjoyable quality of life.

After gaining independence in 1957, Malaysia struggled to achieve urbanisation and focused more on infrastructure developments (Menon, 2009). Similarly as with many other countries, the increase in population size in urban areas was faster than in rural areas. In fact, urban population growth in urban areas during the third period of urbanisation (1970 to 2000), especially after restructuring the boundaries of urban areas, increased rapidly, from 26.8% to 61.8% (Jaafar, 2004). The extended growth of urban areas is also a sign of the healthy Malaysian economy.

The rapid development and urbanisation over decades caused the Malaysian government to start including many waterfront areas in future development with the focus on more recreational use, while private property developers concentrated more on mixed-use development. The Kuching Riverfront, the Malacca Waterfront, the Glenmarie Cove Riverfront and the Kingfisher Cove Riverfront (to name a few) are examples of development projects that apply waterfront redevelopment phenomena in Malaysia. To date, interest in waterfront property is booming even when offered at high prices, as people want to live close to the water for recreation and aesthetic reasons.

However, in some cases, the implementation of these waterfront projects is driven more by investment needs rather than by community and environmental needs, with developers neither taking part in nor contributing to the government goals of sustainable water use. In addition, inadequate regulations and guidelines relating to waterfront development at every level of

government, is having a negative impact environmentally and socially such as water pollution and crime (Ali & Nawawi, 2009; Latip, Heath, Shamsuddin, Liew, & Vallyutham, 2010).

The intensification of waterfront development in other countries, has led to increasing academic interest, reflected in a series of international conferences and major publications focusing on different aspects of the phenomenon (See for example Acosta, 1990; Breen & Rigby, 1994; Gaffen, 2004; Goodwin, 1999; Gospodini, 2001; Hoyle & Pinder, 1992; Hoyle, Pinder, & Husain, 1988; Latip, et al., 2010; Tsukio, 1984; Wrenn, 1983).

However, in Malaysia, waterfront development and associated environmental and social issues have not gained the same level of attention. According to Ali and Nawawi (2009), studies of urban waterfront development cases in Malaysia only emerged in the 1990s, and then they only assessed the social impact on waterfront environments. Therefore, this research aims to bring a new vision to waterfront development by incorporating economic development goals with community goals and the government's desire to achieve successful development practices. Incorporating the environmental, economic and social aspects with adaptable related regulations for waterfront development is the way to develop successful waterfront development practices that will benefit the population and subsequently, enhance the economic success of waterfront locations.

1.3 Research Questions

Understanding the waterfront development processes, recognising the players involved and identifying the critical factors affecting them will lead to practical models of waterfront development guidelines, with an emphasis on environmental, economic and social aspects. In order to accomplish those objectives, the following questions need to be answered:

(1) What are the past and current situations and the extent of waterfront development practice in Malaysia?

(2) How is waterfront development being adopted by other countries, especially developed countries?

(3) What variables determine "successful" waterfront development overseas and are these relevant and able to be applied in Malaysia?

(4) What are the barriers that constrain waterfront development in Malaysia?

(5) What are the mechanisms for the implementation of waterfront development at the level of the developer and the policy maker in Malaysia?

1.4 Objectives of the Research

The main reason for conducting this study is to improve the information about waterfront development in Malaysia, with an emphasis on the associated guidelines. This information will then be used to recommend new waterfront development guidelines to achieve more successful outcomes. The research objectives of this study are to:

(1) Identify current practices of waterfront development in Malaysia.

(2) Examine the approach taken overseas to waterfront development with an emphasis on available guidelines (for example, the Wellington Waterfront, New Zealand and the Singapore's Riverfront, Singapore).

(3) Evaluate the current regulations and guidelines related to waterfront development in Malaysia.

(4) Develop and recommend new guidelines towards more sustainable development of the waterfront in Malaysia.

1.5 Significance and Contribution of the Research

The first contribution of this study is to the body of knowledge about how to achieve best practice waterfront development specifically in the Malaysian context. With this attention on best practice, neighbourhoods can be reconnected to the water and to each other, the water quality can be improved and biodiversity can be rehabilitated. Waterfronts are valuable economic resources that should be conserved and managed appropriately.

The second contribution is to inform and educate Malaysian policy makers responsible for the control, development and administration of waterfront developments. These policy makers need to understand the importance of best practice waterfront development and how the critical aspects of waterfront development can be adopted and addressed through policy intervention. By explicitly considering the interactions and mechanics of waterfront development from an organisational, developmental and local context point of view, policy makers at the national and local levels can develop guidelines and policies to ensure that

future waterfront development maximises the social, cultural, environmental and economic aspects of the community.

The aim of the study is to provide guidelines for waterfront development. This study is also important for property developers as they can play a significant part in the quest for environmentally and ecologically successful waterfront development.

1.6 Scope of the Research

Waterfront development in this research refers specifically to the development of the riverfront. This study focuses on any riverfront development use such as residential, mixed-use development or recreational.

The exclusion of the waterfront development types, for example coastal development, is because in Malaysia, the coastal areas are generally managed in a sectoral in nature (Hussein, 2008; Mokhtar & Aziz, 2003). The executive and legislative functions relating to coastal zone management has determined by Federal Constitution 1957, either been delegated to Federal and State government or remained partly shared by both, with local authorities sometimes acting as a channel for the Federal and State government. This management approach is based on a tiered structure between the Federal and State Governments and the Local Authorities. At each level of government there are staffs responsible for playing the management roles of planning and coordination, implementation and enforcement, and developmental roles, within their jurisdictions.

This research aims to develop and recommend guidelines to be applied to riverfront development with consideration being given to environmental, economic, social and community impacts. In order to achieve this aim, the research will focus on guidelines and any strategies that may lower the barriers for implementing and encouraging best practice for waterfront development in Malaysia.

1.7 Organisation of the Thesis

This thesis will be organised into seven chapters. First, the current chapter introduces the topic and outlines, in very broad terms, the objectives and contribution the research makes. Following this chapter, the next two chapters focus on the literature review which comprises two main areas: the general practice of waterfront development (Chapter Two) and the Malaysian approach to waterfront development (Chapter Three). Both chapters provide an

overview of contemporary perspectives and issues as well as guidelines about successful waterfront development.

Chapter Four discusses the methods to be employed and the reasons for adopting more than one method as part of the research strategy. General background information and the context of the selected case studies, data collection procedures and data analysis are provided in this chapter. The chapter will also address reliability and validity issues related to data, as well as the sampling and design. From this, a working model is established to provide a basic framework for the research.

The following two chapters cover the analysis of the data which integrates and synthesises the data from a variety of sources as presented in the previous chapter (Chapter Four). Initially, the analysis will be divided into two chapters and will be conducted sequentially; the case study analysis – interviews and document reviews (Chapter Five) followed by the survey questionnaire analysis (Chapter Six). The interview data will be analysed using EXCEL and is followed by a questionnaire, the developments of which was based on the qualitative findings. The survey questionnaire data will then be analysed using the Statistical Package for Social Science (SPSS) software. Descriptive statistics, T-test analysis, Exploratory Factor Analysis (EFA) and Correlation techniques are used. These findings will provide the basis for developing the waterfront development guidelines for Malaysia. Finally, using the research objectives as set out in Chapter One, the data will be discussed and interpreted in detail in the last section of Chapter Six.

This research then concludes with a discussion of the research limitations, the implications and with recommendations for future research (in Chapter Seven).

1.8 Operational Framework

A three-stage research strategy is adopted in this study. This research starts by identifying the research problems, posing the research questions and setting the research objectives. This is followed by a review of the literature related to waterfront development, in order to develop the key issues. Conference papers, proceedings and theses, either in journals or from the internet, will be reviewed. The literature review will also include studies about successful implementation of waterfront development internationally. Based on the information generated from the literature review, the research questions and objectives of the study will be refined.

The second stage of the research is the data gathering stage. The first part of the second stage focuses on qualitative data collection. This involves a case study approach, selecting waterfront development projects implemented in Malaysia. Semi-structured interviews and document reviews are employed in this phase of the research with an emphasis on historical, current and future practices of waterfront development in Malaysia. Special attention is given to the guidelines associated with waterfront development as well as impacts resulting from the development. Respondents are selected from government officers at each level of government who are involved in selected waterfront projects, as well as property developers and waterfront communities. The final part of the interviews asks for recommendations from the respondents about guidelines for best practices for waterfront development in Malaysia.

The second part of the second stage involves quantitative data gathering. This includes the use of questionnaires that are based on the qualitative findings generated in the first part. The focus of the survey is to confirm the findings revealed from the first part of the data collection. Stratified sampling techniques are used to identify respondents for the survey questionnaire. Finally, 91 property development companies listed under Bursa Malaysia are selected for participation in this survey.

The final stage (third stage) of the research involves developing the guidelines for waterfront development in Malaysia. These guidelines are developed based on the findings revealed in the second stage (from both the interviews and the questionnaires).

A schematic illustration of the details of the research strategy planned for and implemented in the study is presented in Figure 1.1.

1.8.1 Research Activities

The overall activities involved in this research are as follows:-

(1) Identification of the research problem.

(2) Literature review – collecting relevant literature published locally and internationally.

(3) Refining the research questions – based on information generated from the literature review.

(4) Preparation and design of the semi-structured interview questions to explore the research topic – the qualitative approach.

(5) Pre-testing the interview questions to ensure clarity, effectiveness and robustness.

(6) Redesigning the interview questions based on pre-test feedback.

(7) Conduct interviews with selected respondents and review documents associated with waterfront development.

(8) Analyse the interview output and documents reviewed using EXCEL.

(9) Constructing the questionnaire based on the first phase (qualitative) findings – and preparation for the second phase of the data collection (descriptive approach).

(10) Distribute the questionnaire to selected respondents through stratified sampling by mail and electronic mail (e-mail).

(11) Data entry and data analysis – enter the quantitative data into the computer using SPSS software.

(13) Recommend new guidelines for waterfront development in Malaysia.

(14) Prepare for thesis writing.

(15) Submit the thesis.

(16) Seminars – the final recommendations of the research will be disseminated to relevant policy makers.

(17) Publish – findings will be reported locally and internationally through publications in journals, proceedings, books etc.

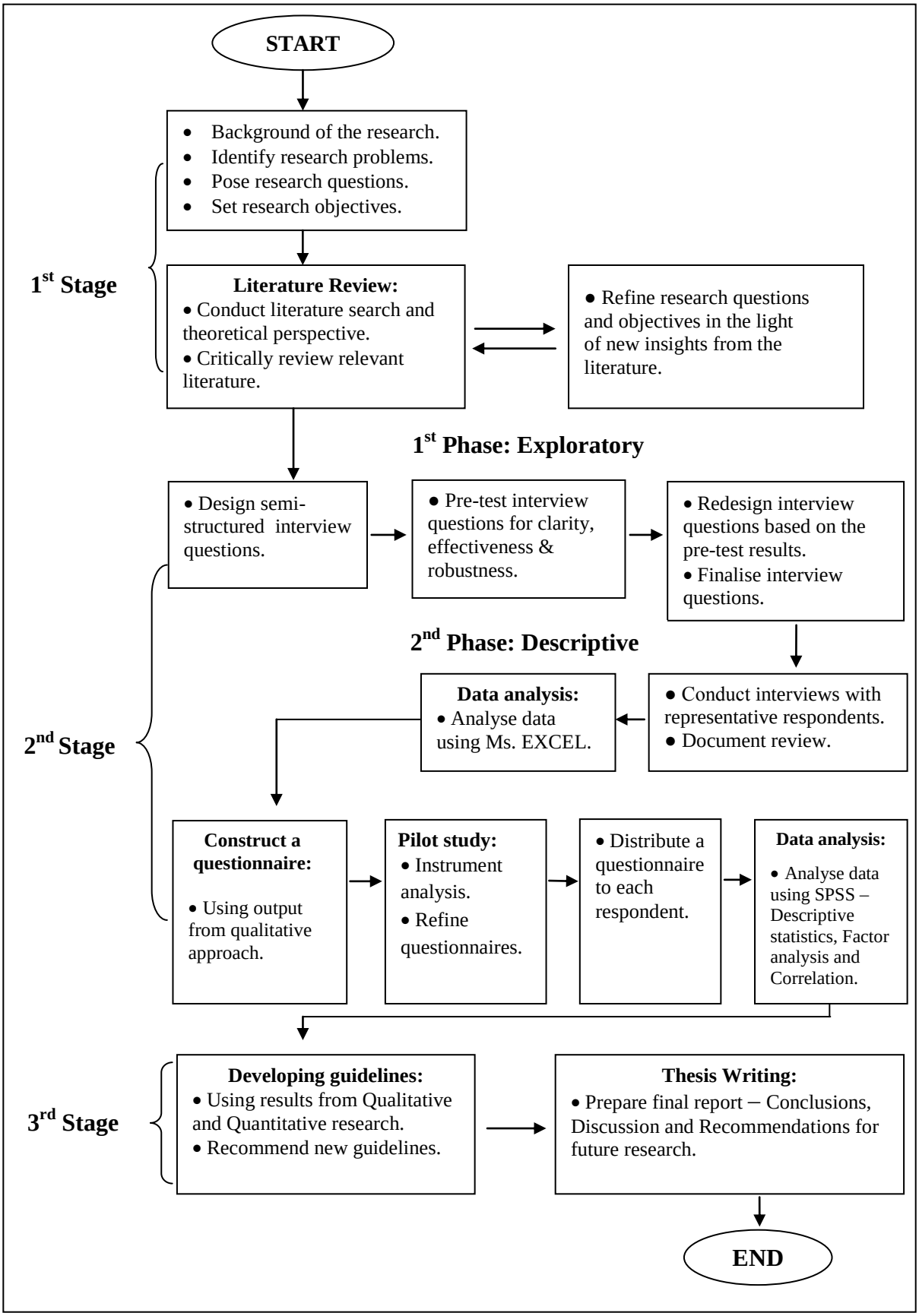


Figure 1.1: Research strategy

Chapter 2

Waterfront Redevelopment: Issues, Trends and Principles

> "Wherever in the world, as an incident of the highway and wharves along its riverbanks, a city has provided opportunity for the people to walk and sit under pleasant conditions where they can watch the water and the life upon it, where they can enjoy the breadth of outlook and the sight of the open sky and the opposite bank and the reflections in the stream, the result has added to the comeliness of the city itself, the health and happiness of the people and their loyalty and local pride."
>
> (Torre, 1989)

The aim of this literature review is to become familiar with some theoretical perspectives on waterfront development. The chapter begins with an introduction to the importance of the waterfront and then outlines the definitions of waterfront and waterfront development. Next, information on the evolution of waterfront development, the waterfront development process and the principles behind successful waterfront developments practices is covered. The implications and effects of the transition of waterfront areas from ports and shipping industry domination to multidimensional uses such as recreational, mix-use and housing, is discussed. The last section summarises the chapter.

2.1 Introduction

Water has been a valuable natural resource from the time of the growth of early settlements up until the present day. When considering its various functions, for example for transportation and trading, for agricultural production and as natural defence, water has long been recognised as a most important natural resource for human life, for the environment and for national development. Therefore, in many countries around the world, the water edge areas developed earlier than other areas and became a favourable location for the development of cities (Wrenn, 1983).

At the end of the 19th century waterfront areas were places where settlements originated and were dominated by industrial activities. According to Craig-Smith & Fagence (1995), for the last 200 years waterfronts were mostly used for manufacturing, for water supplies, for drainage, for sewage treatment plants and for electricity generation. However, due to several factors such as rapid industrialisation, improved shipping technologies and changes in society with the need for increased recreational activities, new port zones have been required to cater for this scale of industrial activity. Therefore, in the mid 20th century, new port zones were

developed and port facilities in the centres of cities began to move to outer city zones and consequently, large amounts of unused property along the waterfronts were left (Breen & Rigby, 1994; Butuner, 2006; Peter, 1993).

In the second half of the 20th century, particularly in the 1970s, waterfront redevelopment emerged, with numerous waterfront areas undergoing a transition from abandoned spaces to commercial, residential and recreational areas (Bruttomesso, 1993; Butuner, 2006; Sairinen & Kumpulainen, 2006). For example, Maryland began its famous redevelopment project converting old and underused waterfront properties into economically viable space. Inspired by this successful story of a waterfront redevelopment initiative, many other small and large scale developments followed; for example, in Sydney, Australia, London (UK) and in Portland, Grand Haven and Michigan (USA) (Breen & Rigby, 1994). Bear in mind that most of the waterfront redevelopment throughout the world shares some common goals such as redefining the waterfront's position in the urban context, remaking the urban image, regeneration of the economy and improving social patterns (Butuner, 2006; Sairinen & Kumpulainen, 2006).

Clearly, waterfront redevelopment over the decades has changed waterfronts in terms of layout, function, uses and social patterns. Increasing demand for recreational activities became a determinant in the development of waterfronts, and waterfronts were mostly designed as new public open spaces of cities that were totally different from their former structures.

In the next section, the definition and early history of the waterfront is discussed, followed by a look at the future of waterfront development as well as a brief discussion about the principles behind successful waterfront development practices internationally.

2.2 Waterfront and Waterfront Development

The waterfront is a zone of interaction between urban development and the water and a waterfront area is considered to be a unique and irreplaceable resource where it interfaces between land, water, air, sun and productive plants (Wrenn, 1983). Moreover, Zhang (2002) characterised waterfronts as a place integrating land with water and having a natural attraction to people. In fact, water edges are most attractive water features for human settlement and in most countries the land in front of water developed earlier than the inland areas.

A more detailed definition by Guo (1998, as cited in Dong, 2004, p. 7) describes a waterfront as the point of interface where land and water meet, within 200 to 300 metres from the water line and 1-2 kilometres of the land site and within 20 minutes walking distance. By being an interface between land and water, the waterfront zone is an area endowed with special characteristics. The special features and functions of waterfront areas are described in Table 2.1 below.

Table 2.1: Special characteristics of a waterfront zone

Characteristic	Description
Ecological	The waterfront zone is a dynamic area with frequently changing biological, chemical and geological attributes. The waterfront zone includes highly productive and biologically diverse ecosystems that offer crucial nursery habitats for many marine species.
Economic	The waterfront contributes significantly to human welfare, both directly and indirectly and, therefore represents a significant portion of the total economic value of the planet.
Social	The waterfront zone is socially important for global transportation, open access and common property and is a unifying element in the cultures of each country.

(Source: Costanza, 1999)

In the development context, waterfront development have various interpretations depending on the characteristics of the sites and the cities (Dong, 2004). Butuner (2006) sees waterfronts as land to be reclaimed from water in order to create an extension of existing city centres.

Breen and Rigby (1994, 1996) considered that waterfront development may not necessarily need to directly front water but may need only to look as if it is attached to the water. They believed that a property with a commanding view of water, can be considered as a waterfront property. Similarly, Ryckbost (2005) sees waterfronts as any property that has a strong visual or physical connection to water with the water itself being any type of water body such as a lake, the ocean, a river or a stream of all sizes (Breen & Rigby, 1994, p. 10).

For example, in China, developers classified two types of waterfront development. The first is called a “borrowed” water view which integrates buildings into an existing water system and, the second is called a “created” water view which includes man-made lakes and any other

water body (Murray, 2003). In this context, by being an interface between land and water, a waterfront is considered an important resource that offers great opportunities to a city.

Therefore, waterfront development is best represented as a development directly fronting water for any purpose and the water components can include river deltas, coastal plains, wetlands, beach and dunes, lagoons and other water features.

The following sections will discuss the changing structure of waterfront characteristics and their integration with city development.

2.2.1 Why the Waterfront?

Over recent decades, waterfront development and redevelopment have evolved with a focus on historic preservation and recreation. During this time government and private sectors have begun to incorporate waterfront planning and design into their development projects. In particular, the patterns of development are changing by connecting land, water and air and landscape aesthetics to land development planning. According to Gaffen (2004), the growing focus on redeveloping urban waterfronts can be attributed to several factors, that include:

(1) Awareness of the natural environment and smart growth

Increased awareness of the natural environment along the water areas and preservation of waterfront resources gave a new direction to new aspects of waterfront redevelopment. The increased awareness of the natural environment has significantly helped to improve the quality of the natural environment as well as improve water quality and subsequently, encouraged many uses at waterfronts such as recreational activities and water based entertainment.

In addition, local governments are starting to re-examine the importance of smart growth, particularly the minimisation of urban sprawl, a proven culprit in many pollution problems. In order to achieve the objectives of smart growth, developers are required to follow approaches that include the provision of mixed land uses, taking advantage of compact building design, developing a range of housing opportunities and choices, fashioning walk-able neighbourhoods, preserving open spaces, strengthening and directing development towards existing communities, making development decisions that are predictable, fair and cost-effective and encouraging community and stakeholder collaborations in development decisions.

(2) Preservation and adaptive reuse

Many cities throughout the world have been developed at the waterfront. With the preservation and adaptive reuse (regeneration) of abandoned historic buildings, vacant waterfronts space and adjacent areas along the waterfront has been an increase a property values and an improvement in the waterfront environment and neighbourhoods. Also, the preservation and regeneration of abandoned buildings and vacant waterfront spaces has enhanced the waterfront community identity and encouraged community pride.

(3) Federal assistance

The redevelopment of waterfronts requires large amounts of funds. The development also requires a major change in the pattern of use and the image of the waterfront. A stronger focus by government institutions on urban renewal has made possible much waterfront development and redevelopment. Federal governments can assist waterfront development and redevelopment through the management and provision of sufficient funds. For example, according to Wrenn (1983), federal government can encourage waterfront development through taxation policies such as tax incentives, special tax districts, tax abatements and tax increment financing.

(4) Tourism industry

Waterfront areas have special features that are able to attract local residents and also tourists around the world. The growing popularity of waterfronts contributed income to the local government. Increased numbers of visitors and increased demand on the facilities and accommodation is a main contributor to waterfront development and redevelopment. Therefore, maintaining the number of visitors and the beauty of waterfront environments is important for enhancing the tourist industry.

(5) Recreation activities

One of the special characteristics of waterfront areas is that they offer opportunities for outdoor recreation. The growing popularity of water based entertainment and increased demand for recreation areas from the public has triggered governments to develop and redevelop waterfront areas for public use.

2.2.2 Waterfront: From Vibrant to Vacant

Historically, a location close to a water area was an important factor in the decision to locate a settlement. There were several advantages of the water location such as for fulfilling basic human needs of transport and for drinking water and for trade development. In many riverfront cities, the water was used mainly for the transportation of goods and so the waterfront became focal points for related activities such as trade, industry, drainage, sewage treatment and recreation, as well as for human settlement.

The improvement in shipping technology, the changes in society, the expansion of city sizes, and the industrial revolution (from the 18th to the 20th centuries) resulted in a decline in the value of waterfronts (Butuner, 2006; Tsukio, 1984). In the mid 20th century, all industrial activities and port facilities were moved to the outer zones of cities and the waterfront was no longer economically or environmentally attractive, except for shipping, storage and heavy manufacturing (Butuner, 2006; Craig-Smith & Fagence, 1995). Less dependence on the waterfront industries reinforced the decline of waterfronts, from a position as the economic heart of the city to becoming eyesores and subsequently, to the disappearance of the integrated port-city model of the 19th century (Craig-Smith & Fagence, 1995; Dong, 2004).

These areas were abandoned for many years until local governments began to recognise waterfronts as areas with potential for development. Increasing demand for recreational activities, coupled with this development potential became determinants in the redevelopment process. The next section discusses how the redevelopment took place in many abandoned waterfront areas.

2.2.3 Waterfront Redevelopment: Moving Waterfronts from Vacant to Vibrant

> "With renewed interest in revitalizing their waterfronts, many cities are turning their attention to parks and green spaces as critical elements to success."
>
> (Greco, 2008)

After decades of remaining abandoned, governments decided to initiate a massive redevelopment of waterfront properties (Ryckbost, 2005) and consequently, initiated the world-wide era of waterfront revitalisation. The urban waterfront redevelopment phenomenon of our time began in the 1960's, bloomed in the 1970s, accelerated in the 1980s (Breen & Rigby, 1994) and continues to the present day. Most of the waterfront redevelopment has occurred in the larger context of urban renewal (Gospodini, 2001).

The first attempt at a waterfront revitalisation process emerged in the 1960s in Baltimore and was followed by Boston and San Francisco (USA), and from the 1970s to 1980s, waterfront development was specifically focused on North America and Europe. Experience from these successful examples contributed to a rapid spread of interest in this development concept, to cities in Australasia and Japan (Breen & Rigby, 1994; Hoyle, 2001). Moreover, some Newly Industrialising Countries (NICs), Islamic Cities and Less Economically Developed Countries (LDCs) commenced looking at potential waterfront development in the 1990s (Hoyle, 2002).

Waterfront areas have undergone a large transition (See Breen & Rigby, 1994; Hudson, 1996), with the current waterfront redevelopment trend attributable to a number of factors, namely: (1) Technological changes post World War II, which led to the abandonment of thousands of hectares of land along waterfront areas, (2) The historic preservation movement, (3) Heightened environmental awareness and water clean- up, (4) Consistent pressure to redevelop central city areas, and (5) Public (state, federal, and municipal) urban renewal and related assistance (Craig-Smith & Fagence, 1995; Hoyle & Pinder, 1992; Sairinen & Kumpulainen, 2006). These factors have combined and brought about dramatic changes to abandoned waterfronts (or their earliest uses for shipping, storage and ship building) to contemporary waterfronts for present and future generations (Butuner, 2006; Sairinen & Kumpulainen, 2006).

The scale and purpose of waterfront redevelopment are different in each city due to the original pattern of the cities and their development. Basically, most waterfront revitalisation throughout the world have similar aims namely, redefinition of the waterfront in the urban context, the re-imaging of the urban city and the regeneration of the economy (Butuner, 2006).

As a result of the shift to post-industrial economies and after governments removed the negative effects of abandoned waterfronts such as pollution, waterfronts became suitable land to build on for recreation and leisure, with tourism becoming the most popular concept for contemporary waterfront. The benefits of this transition included the generation of income from the private development and growing the tourism industry with the flow on to the community through a stronger economy and access to the new amenities such as recreational facilities (Acosta, 1990; Butuner, 2006; Craig-Smith & Fagence, 1995; Krausse, 1995; Tunbridge & Ashworth, 1992; Zhang, 2002).

The prominent achievement of waterfront revitalisation has led to an increase in the interest of academics and professionals in waterfront revitalisation topics. The studies have focused on the process of waterfront revitalisation and identifying the successful principles behind those achievements (see Acosta, 1990; Breen & Rigby, 1994; Butuner, 2006; Fitzgerald, 1986; Goldrick & Merrens, 1990; Goodwin, 1999; Gospodini, 2001; Hoyle, 2000, 2002; Hoyle & Pinder, 1981, 1992; Hoyle, et al., 1988; Tsukio, 1984; Wrenn, 1983). However, few waterfront studies have focused on policy issues, in general.

In the Malaysian context, most studies have focused on waterfronts in terms of coastal zone development, rather than other water bodies such as rivers and lakes (see Mokhtar, Ajlouni, & Elfithrie, 2008; Mokhtar & Elfithri, 2005; Muhamad, Toriman, Aiyub, & Jaafar, 2005; Noh, 2005 for examples). Previous studies have emphasised the effects of the redevelopment process on the environmental, social and economic issues, rather than investigating the development processes and the regulations and guidelines behind the development (for example see Ali & Nawawi, 2009; Shaziman, Usman, & Tahir, 2010). Therefore, this research is necessary to investigate specific principles and/or guidelines in order to maintain and enhance waterfronts in Malaysia.

2.2.4 The Term "Waterfront" and "Waterfront Development" in this Research

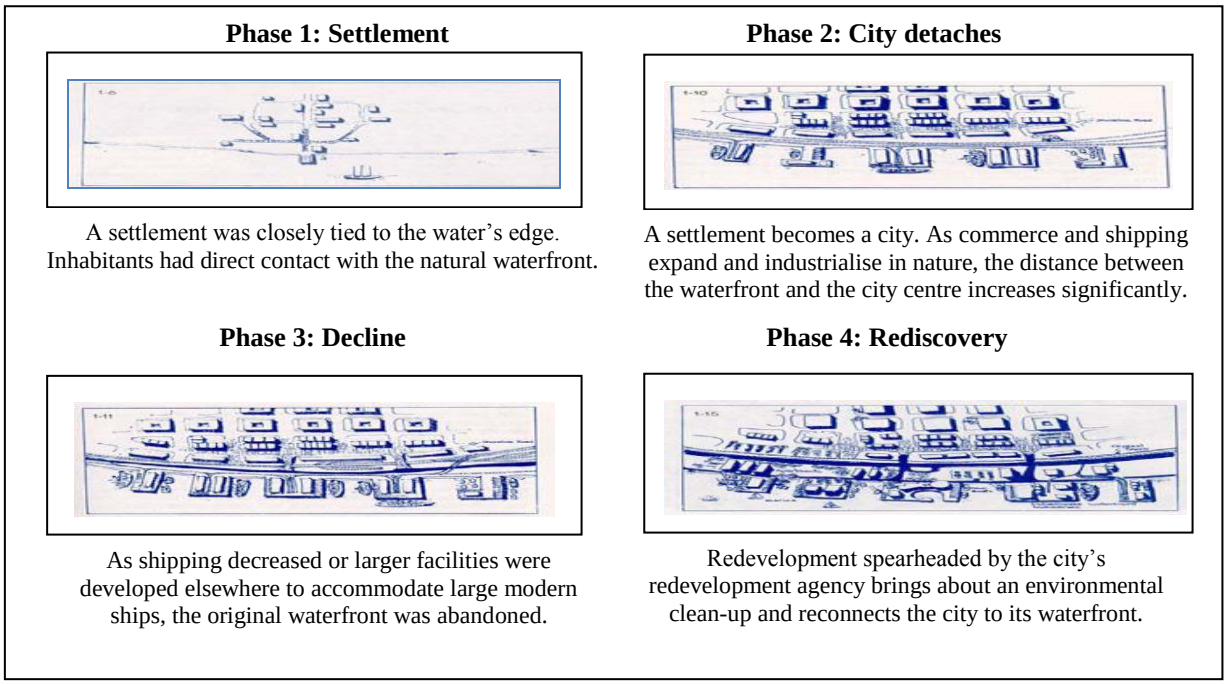
In this research, waterfront development is used to represent such terms as waterfront revitalisation and waterfront rehabilitation. The word (re) development is only used when it is necessary to differentiate between the redevelopment of a previously built-up area and a new development on a new site.

Waterfront development in this research refers to any development in front of rivers. The exclusion of other waterfront development types, for example coastal development, is because in Malaysia, the coastal areas are generally managed in a sectoral in nature (Hussein, 2008; Mokhtar & Aziz, 2003). The executive and legislative functions relating to coastal zone management has determined by Federal Constitution 1957, either been delegated to Federal and State government or remained partly shared by both, with local authorities sometimes acting as a channel for the Federal and State government. This management approach is based on a tiered structure between the Federal and State governments and the Local authorities. Each level of government is responsible for the planning and coordination, implementation and enforcement, and development within their jurisdictions.

2.3 An Evolution of Waterfront Development

Waterfronts are widely regarded as a frontier for contemporary urban development, attracting investment and publicity (Malone, 1996). Sydney, London, Amsterdam, Hong Kong, Tokyo, Toronto, Osaka, Kobe and Dublin are examples of cities that have gone through the waterfront development process. Therefore, understanding the historical context of waterfront development is important because the historical context is a stimulant to modern development. The pattern of waterfront development is summarised in Figure 2.1 below.

It is apparent that each city has a different waterfront character, scale and pace due to variations in the typical waterfront evolution pattern. One factor is common though, urban waterfronts changed dramatically due to social and technological factors.



(Source: Wrenn, 1983)

Figure 2.1: Pattern of waterfront development

2.4 Actors in the Waterfront Development Process

The development process has been divided into stages and every stage involves several actors who play important roles in contributing to a successful development. According to Wilkinson & Reed (2008) there are eight actors involved in a land development process. Table 2.2 summarises the actors involved in the land development process and the roles played by them in the process.

Table 2.2: Actors involved in the land development process

Actor	Role
Land Owners	Involved directly or indirectly in the land development process. Land owners may be individuals, corporations, public authorities or charities. In some cases, landowners are the developers for the entire project or some part of it.
Developers	Government and private companies or a combination of them. Invest money and make a direct profit from the development process. In some cases, the developer also plays the contractor's role and has the additional risks associated with the development process.
Public sector & Government agencies	Involved directly in the developments process as decision makers and policy providers. In many developments, they act as the financier, developer and investor.
Building Contractors	Employed by the developer to construct the development with a direct financial profit objective. Carry out specialist activities within the development process, commencing at a time of maximum commitment and risk.
Planners	Divided into two broad categories; political and professional. Mainly to encourage development and prevent undesirable development.
Financial Institutions	Financial institutions act as the financial provider if the entire development does not use the developer's own capital. Can be; a pension fund, an insurance company, a bank or other financial intermediary. Two main types; short term (covers the cost during the development process) and long term (covers the cost of holding the completed development as an investment.
Agents	Intermediary parties who bring together some of the main actors in the process of selling/leasing the completed development. Widely employed by developers to link the area between the developer and the occupier/purchaser. Involved in the development process and obtain direct profit through fees charged for professional services.
Professional teams	Developers employ several professionals to advise them at every stage of the development process. This team may include; planning consultants, valuers and surveyors, architects, project managers, engineers, solicitors, accountants, objectors and occupiers.

(Source: Wilkinson & Reed, 2008)

A waterfront development project usually becomes a large scale development known as a mega project, that requires following several different regulations (Goodwin, 1999; Wrenn, 1983). Similar to other developments, waterfront development requires the involvement of many parties that include the government, developers, private investors, community groups, tourists and recreationalists (Goodwin, 1999; Hoyle, 2000; Wrenn, 1983; Yarnell, 1999). Each of them has a varying influence in the development project. The variety of stakeholders involved in the waterfront development process is summarised in Table 2.3 below.

In most cases, the government is responsible for initiating and facilitating the waterfront development process and that requires government involvement at every level; federal, state

and the local authority. For example, the government is responsible for providing a proposal that includes an establishment concept or theme, and a setting of the scale and sequence for the project. Additionally, proper planning and good documentation is important for raising investors' confidence to invest in the waterfront project (Yarnell, 1999).

Table 2.3: Stakeholders in the waterfront development process

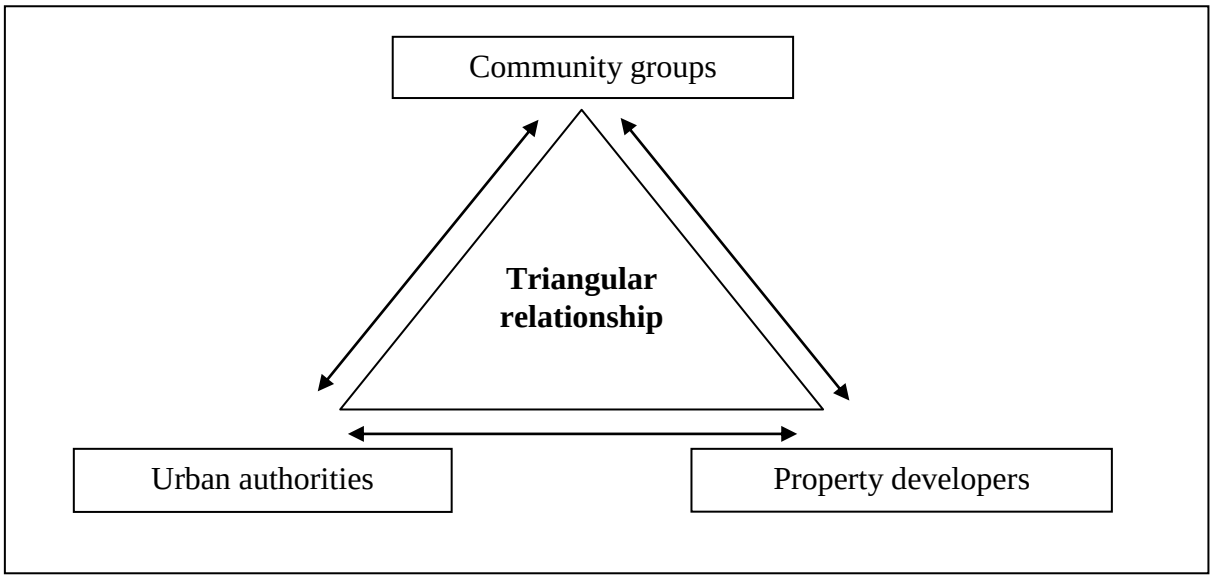
Stakeholder	Role
Governments, institutions and agencies	Higher level government may be involved to play important leadership, policy-setting and regulatory roles. The role of government is critical during the planning and design process. The government's role includes; to establish a development theme for the waterfront, set the scale, quality, and sequence of projects, and to ensure that a long-range perspective remains over the development decisions.
Private investors	Private investors include private sector and non-governmental organisations. Public-private partnerships and private-non-governmental organisation partnerships are important for initiating waterfront development and for moving along the development process. The private sector is important for stimulating property development and investment. The more extensive the scale of the development, the greater the dependence on private investment.
Communities,[1] tourists and recreationalists	Communities, tourists and recreationalists are users of waterfront development. Communities have multi-directional relationships with governments and in some cases are involved in decision making processes. Relationships can be top-down or bottom-up approaches. Inclusions of these groups into government agendas are important in achieving the fundamental objective of the waterfront development – to enhance the quality of life.

(Source: Craig-Smith & Fagence, 1995; Dong, 2004)

In addition, Hoyle (2000) identifies the relationship of the three actors involved in the waterfront development process, and the relationship is called the "Triangular relationship". Figure 2.2 illustrates the actors involved in the waterfront development process and the relationship between them.

Relationships and collaboration between parties is important to achieve successful waterfront development as well as to maximise economic benefits and to maintain public access, water and views and to preserve the health of the natural environment (Goodwin, 1999; Hoyle, 2000; Yarnell, 1999). Even though not every actor is involved in each stage of the development process and while some are only involved in a part of an area or indirectly involved, a contribution from them however is important to the success of the development process.

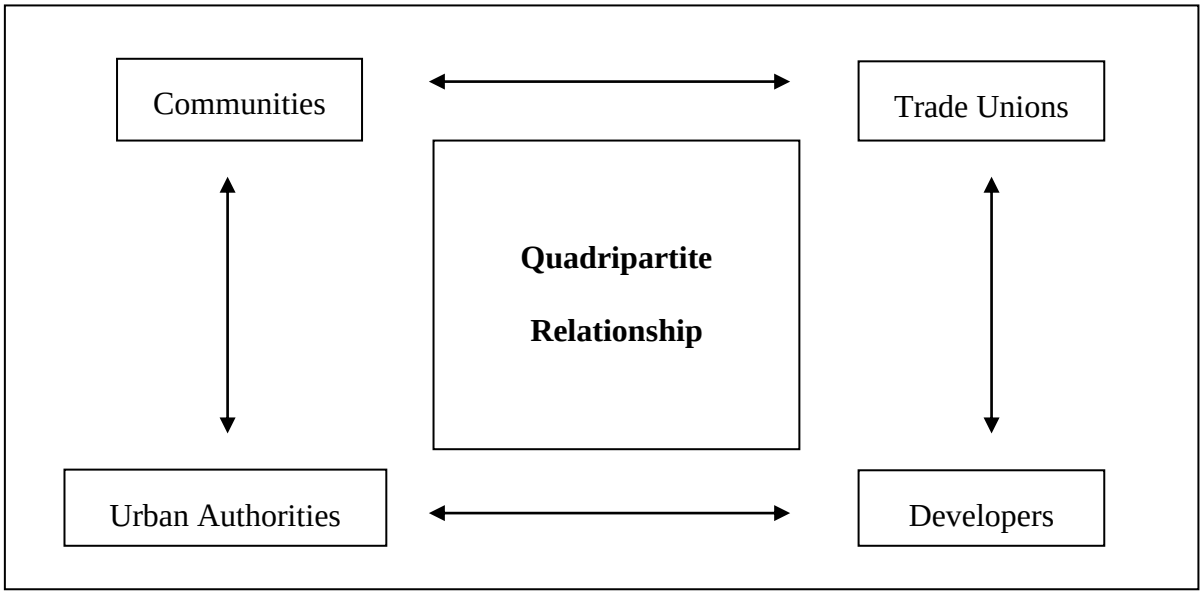
1 A "community group" refers to an unofficial association established by a number of people (normally many) which has opinions that are not necessarily similar to those of the government (Hoyle, 2000).



(Source: Hoyle, 2000)

Figure 2.2: Participants in waterfront development – Triangular direction

In addition to the "Triangular relationship", Hoyle (2000) designed another model, the so called "Quadripartite relationship". This model includes the involvement of trade unions in supporting community groups. Figure 2.3 presents the "Quadripartite relationship".



(Source: Hoyle, 2000)

Figure 2.3: Participants in the waterfront development – Quadripartite direction

Even though the involvement of actors varies throughout the development stages, the relationships between them are important for successful waterfront development. Clearly, all parties need to agree or reach a consensus before a development can commence and proceed.

2.5 Successful Waterfront Development Projects

Waterfront development history shows that major waterfront development occurred primarily in the 1970s (Butuner, 2006; Torre, 1989). Presently, there are thousands of successful waterfront developments around the world, with most of them sharing the same principles and functions. Table 2.4 provides a few examples of successful waterfront projects.

Table 2.4: Examples of successful waterfront development projects

Project's name	Description
Baltimore	The earliest example of urban renewal waterfront in America. Baltimore was an example of using public investment to assist a private one. The development process can be divided into three stages; Charles centre, Inner Harbour and Market centre. Baltimore's success was attributed to the following aspects; networking between public authorities and private organisations and the innovation of a quasi-public agency. Three methods of design control were adopted; establishing an Architectural Review Board, holding design competitions and private developers required to meet design parameters set by public authority.
Boston	Boston's waterfront development consisted of four projects; Charlestown Navy Yard, Harbour Point, Rowe's Wharf and South Seaport District. Project aimed to integrate city fabric with waterfront while maximising public benefit. Three public authorities were established; Massport, Boston Redevelopment Agency (BRA) and Commonwealth of Massachusetts. Boston's success was attributed to the following aspects; strong public leadership and partnership and amendment of Chapter 91 – which standardised both procedures and independence among the three public authorities.
London	The London Docklands was developed in 1981 in one of the world's largest urban regeneration projects. The London Docklands Development Corporation (LDDC) was established as the regeneration agency for the Docklands urban development area and worked to secure the regeneration of the London Docklands. LDDC managed a massive development program. A huge area of the Docklands was converted into a mixture of residential, commercial and light industrial space – the Canary Wharf project (Britain's tallest building and the establishment of a second major financial centre in London) was the clearest symbol of the success of the London waterfront development.

Project's name	Description
Amsterdam	Discussion on waterfront redevelopment in Amsterdam (involving the Eastern Docklands and the rest of the southern IJ-Waterfront) began in the early 1980s, and was followed by the formal planning process for the IJ-Waterfront in 1984. The redevelopment of the Eastern Dockland has received international recognition – attributed to its creative master plans. The redevelopment was divided into five stages. he redevelopments was a series of high-density, moderate-rise communities on the water, thus remaking an historic and cultural bond with the water. The project received a subsidy from the central government. A real public-private partnership developed and was implemented by the independent public authority – Project Management Bureau. A variety of public authorities and private organisations were involved in the development process.
New Zealand	Interest in the transformation of Wellington's Waterfront grew in the 1970s and 1980s. The joint-venture agreement to develop the waterfront was signed in 1986 by the Harbour Board and the city Council. Wellington's Waterfront was owned by the Harbour Board and the city Council but the redevelopment were run as a wholly-owned separate company. The development of public space on the waterfront was estimated to have cost nearly NZD 40 million dollars. Wellington's Waterfront encouraged public involvement through the development process. The Wellington Waterfront vision – "Wellington's Waterfront is a special place that welcomes all people to live, work and play in the beautiful and inspiring spaces and architecture that connect our city to the sea and protect our heritage for future generations." There are five themes to Wellington's Waterfront; historical and contemporary culture, city to water connections, promenade, open space and diversity. Wellington's Waterfront consists of five individual areas and they are North Queens Wharf, Queens Wharf, Frank Kitts Park, Taranaki Street Wharf/Lagoon and Chaffers. Over the past two decades, Wellington's Waterfront has become a world class waterfront after a series of developments and redevelopments have taken place.

(Source: Malone, 1996; Torre, 1989; Wang, 2003; Wellington City Council, 2001)

Experience from several case studies from the United Kingdom, the United States of America and other European countries, shows that in any strategy and design for waterfront development, there are three key elements for success that should be taken into account. These are: (i) the development framework – master planning and implementation, (ii) the

delivery mechanism – public-private partnership and timing and marketing the development, and (iii) the outcome – economic and social balance (Wang, 2003). In addition, in many cases, the initial development plan is considered a main factor towards the success of waterfront development (Shaw, 2001; Wang, 2003). When designing a good development plan for a waterfront, three fundamental characteristics are involved; land-use patterns, public access and city context and all three need to be considered.

The next section discusses specific principles that need to be taken into consideration when developing waterfront projects. Bear in mind that the location and size of waterfront projects varies but each development requires a similar process and shares the same principles and objectives.

2.5.1 Principles for Successful Waterfront Development

Parallel with the growing popularity of waterfront redevelopment is the necessity to have full consideration and attention given to several principles for maintaining the public's interest in the waterfront area and for protecting the waterfront itself. According to Torre (1989), development along the waterfront area should meet human and water body needs. Torre (1989) stated:

> "It is impossible to occupy every square foot of waterfront space with people places and festival market places. Establishing a successful balance of uses will enable all facilities under consideration to be realised to at least some degree, to come to life and to avoid the death of waterfronts because of disagreement."
>
> (p. 10)

It is important to take advantage of the amenities and to balance public participation in order to maintain waterfront uses. For this reason, connections between the water and the public, as well as defining attributes that fundamentally shape the character of a waterfront area, are later incorporated into the waterfront development process. Torre (1989) determined that the success of a waterfront development is only achieved once it can function on all levels and benefits all stakeholders. Torre (1989) expressed his view on successful waterfront development as follows:

> "No matter how unique or exciting is a riverfront development, it can only be successful if it functions on all levels. From regional access and circulation, to adequate parking capacity, to ease and comfort of pedestrian movement, to the visitors' overall experience, all levels must sequence successfully as well as meeting the capacities on peak activity days."
>
> (p. 38)

Therefore, in order to achieve the specific aims of a successful waterfront development, Torre (1989) identified 10 elements recommended to be taken into consideration while planning a waterfront development, as presented in Table 2.5 below.

Table 2.5: Elements for successful waterfront development

Elements	Description
Theme	"Theme" means a unifying idea, image or motif developed throughout a work (Concise Oxford English Dictionary, 2009) Significantly important to maintaining people's loyalty to a waterfront area. Theme is designed in the initial stages and mainly to control future spatial analysis, land use materials, scale and meaning. Determined with several considerations; climate, layout, design, land use of development and project's culture and history.
Image	"Image" means a representation of an object (Concise Oxford English Dictionary, 2009). The implementation of the theme creates the image. Image could give a perception of the future waterfront project, and good images have become benchmarks for other projects.
Authenticity	"Authenticity" from the word authentic means undisputed origin or genuine (Concise Oxford English Dictionary, 2009). Maintaining authentic values in the waterfront area and areas surrounding them is important for a successful waterfront project.
Function	Pedestrian access to lively outdoor eating areas and entertainment centres gives visitors the chance to enjoy the water environment, along with convenient services for residential and working districts.
Public perception of need	The combination of theme, image, authenticity, environmental and financial should include public consideration to avoid environmental problems.
Financial feasibility	A waterfront is considered feasible once it is packaged, designed, promoted, managed and operated effectively. The key fundamental is a waterfront concept that leads the financial assessment, not the reverse.
Environmental approvals	Inter-agency meetings are required sequentially to determine the environmental impact of the waterfront development. Approval from various agencies is required. As a rule of thumb; for every acre of impact, two acres of mitigation must be provided.
Construction technology	Use cost-effective and environmentally friendly materials for construction; pressure treated wood is recommended.
Effective management	Proper management must include a number of different sources of expertise, and coordination between them is very important – no matter whether for public or private waterfront development.
Beginning the project	Combining all the elements listed above will result in a comprehensive, balanced and self contained waterfront project. Updated current information on waterfront areas is needed. Participation from all responsible groups including the public is important at every stage of development. Organisational management; establish a waterfront committee and include

Elements	Description
	representatives from the government authority to make the process effective. Maintain momentum; create anticipation and marketing and then maintaining momentum until project completion is important. Plan an opening celebration; celebration illustrates a commitment to the development.

(Source: Torre, 1989)

In addition, Bertsch (2008) determined that for any use of a waterfront area, a water plan should be developed before the land plan, to maintain an economically viable waterfront. Therefore, he recommended several principles that must be included while developing plans for waterfront areas, as follows:

(1) Accessibility – the waterfront should not be isolated or separated from the development, so that the public can access the waterfront easily (convenient means for visitors to access the waterfront area).

(2) Integrated – integration of the history, culture and existing architecture are recommended for new waterfront development.

(3) Sharing benefits – a balance between public benefit and developer profitability must be found. A public-private partnership is essential for realising the inspiration of the design.

(4) Stakeholder participation – the involvement of multitudes of interested parties is compulsory: government agencies, developers, community organisations, environmental groups and the public all have a stake in the developments of a waterfront property and all must be involved in the process.

(5) Construction phase – breaking down a huge project into several phases and allowing all stakeholders and the general public to see this provides a vision for the future.

Thus, apparently, the harmonies of waterfront development could be achieved through combinations of people, nature and technology (Mann, 1973).

2.5.2 Principles for Sustainable Waterfront Development

Waterfronts are one of the most valuable resources for the country – being limited, precious and non-renewable assets. To secure long-term growth of the resource, it is important for waterfront areas to be used strategically to maintain their economic value and enhance their

specific features or image (Bruttomesso, 2006). For this reason, Bruttomesso (2006) recommended 10 principles for securing excellence in waterfront redevelopment projects. The sustainable[2] principles are presented in Table 2.6 below.

Table 2.6: Principles for sustainable waterfront development

Ten principles for a sustainable waterfront development	Secure the quality of water and the environment. Waterfronts are part of the existing urban fabric. The historic identity gives character. Mixed-use is a priority. Public access is a prerequisite. Planning in public-private partnerships speeds the process. Public participation is an element of sustainability. Waterfronts are long term projects. Revitalisation is an ongoing process. Waterfronts profit from international networking.

(Source: Bruttomesso, 2006)

2.5.3 Sustainable Governance of Waterfront Development

Duxbury and Dickinson (2007) observed that between the years 1990 and 2000, the number of people moving to the water's edge increased from 2.0 billion to 2.3 billion and this number is forecast to increase to about 34% by the year 2025. The increasing population growth at the waterfront has also increased the demand for supplies of clean water, as well as for tourism, recreation and infrastructure development. Thus, this continued strain on the waterfront requires a set of principles for governance that will ensure its future is sustainable. These principles are required to mitigate both adverse impacts on the environment from human activities as well as the adverse impact of environmental changes on human populations.

Achieving an integrated waterfront management system involves a process of governance that consists of the legal and institutional framework necessary to maximise the benefits provided by the water zone, and to minimise the conflicts and negative effects of activities (Post & Lundin, 1996). This is seen as a comprehensive approach which, when considering all the sectoral activities that affect waterfront resources, does not exclude dealing with the

2 The widely accepted definition of sustainability is that proffered in the Brundtland Report which states; "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Commission, 1987)

economic, ecological, social and environment issues. Therefore, through this management, every stage of the waterfront development process (setting objectives, planning, and implementation) will involve as wide a spectrum of interest groups as possible to balance the diverse uses of the waterfront.

In response to the increasing pressure on the waterfront, in 1997, six principles for the sustainable governance of waterfronts were developed that incorporated various disciplines and stakeholder groups (Costanza, et al., 1998; Costanza, Cumberland, Daly, Goodland, & Norgaard, 1997) and were known as the Lisbon principles.[3] Table 2.7 summarises the basic guidelines for administering the use of common natural and social resources. Incorporating all the principles is recommended to achieving sustainable waterfront development.

Table 2.7: Principles for the sustainable governance of natural and social resources

Principle	Description
Responsibility	Access to environmental resources carries attended responsibilities to use them in an ecologically sustainable, economically efficient, and socially fair manner. Individual and corporate responsibilities and incentives should be aligned with each other along with broad social and ecological goals.
Scale-matching	Ecological problems are rarely confined to a single scale. Decision making on environmental resources should: - Be assigned to institutional levels that minimise ecological input. - Ensure the flow of ecological information between institutional levels. - Take ownership and the actors into account. - Internalise costs and benefits. Appropriate scales of governance will be those that have the most relevant information, can respond quickly and efficiently, and are able to integrate across scale boundaries.
Pre-cautions	In the face of uncertainty about potentially irreversible environmental impacts, decisions concerning their use should favour caution. The burden of proof should shift to those whose activities potentially damage the environment.
Adaptive management	Given that some level of uncertainty always exists in environmental resource management, decision-makers should continuously gather and integrate appropriate ecological, social, and economic information with the goal of adaptive improvement.
Full cost	All of the internal and external costs and benefits including social and ecological, of

3 The Lisbon principles were developed during the workshop held in Lisbon, Portugal, on 7-9th July 1997, sponsored by the Independent World Commission on the Oceans (IWCO) in conjunction with Luso – An American Development Foundation. The Lisbon principles were designed following the Stockholm (1972) and Rio (1992) United Nation meetings and involved the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment.

Principle	Description
allocation	the alternative decisions concerning the use of environmental resources, should be identified and allocated.
Participation	All stakeholders should be participated in the formulation and implementation of decisions concerning environmental resources. Full stakeholder awareness and participation contributes to credible, accepted rules that identify and assign the corresponding responsibilities appropriately.

(Adopted from: Costanza, et al., 1997)

However, these core six principles are not limited to waterfront resources (including all environmental resources). Therefore, taking the Lisbon principles as a guide, Duxbury and Dickinson (2007) recommended principles for the sustainable governance of the waterfront. In particular, these principles highlighted the waterfront issues, such as coastal disasters. Table 2.8 presents these particular principles.

Table 2.8: Principles for the sustainable governance of the waterfront

Principle	Description
Sustainability	The use of natural capital within the water boundary should be sustainable and achieved in an efficient and socially equitable manner.
Adaptive Management	Decision makers should have the ability to integrate ecological, social and economic information and to have the flexibility to cope with changes in the environment.
Participation	Stakeholder participation is vital in the decision making process regarding environmental resources.
Integration	Decision making should integrate policy, with input from the scientific community.

(Source: Duxbury and Dickson, 2007)

Clear and coherent principles and/or policy are the main challenges for the development of cities in order to be sustainable. The implementation of and the aims of the interventions should not be contradictory (Yossi & Sajor, 2006). However, this would require more effort particularly relating to the management of budgets and the working time of government officers. Therefore, in making more integrative approaches, participation by relevant stakeholders such as external experts, non-governmental organisations and community based organisations is encouraged and this helps to address the constraints of government institutions.

In addition, Yossi and Sajor (2006) agreed that good collaboration and coordination between different government authorities and external stakeholders (as mentioned above) is important

for waterfront development projects. Also required is the willingness of cross boundary government authorities to make a commitment to work together in the planning and development process. Moreover, the willingness of governments to include public participation (i.e. riverfront communities) in the development process would maximise the waterfront developments benefits.

2.6 Chapter Summary

This chapter served as a review of waterfront development and provided the theoretical basis for the research problem. The definition of a waterfront was explained. The emergence of waterfront development and redevelopment were disussed, as well as the interrelated factors in the transition of waterfronts from industrial areas to unused spaces.

Waterfront revitalisation was then explained and several attributes of the transformation were discovered. Significant achievements from the international perspective were also included as examples. Then, the actors participating in the waterfront development process were discussed.

The literature dealing with the principles for successful waterfront development practice was also explained. Considering multiple principles relating to successful waterfront development practice is important and possibly could facilitate better decision-making towards developing guidelines for best practice in waterfront development, specifically for Malaysia.

Chapter 3

The Emergence of Waterfront Development in Malaysia

This chapter provides the context for understanding waterfront development in Malaysia. It also presents the background of waterfront development in Malaysia to provide the reader an overview of the complex nature of waterfront development in Malaysia. Information about the evolution of waterfront development in Malaysia is included, followed by the processes and actors involved at each stage of development. Waterfront governance and regulations associated with waterfront development are then discussed.

3.1 Introduction

Rivers make a huge contribution of social importance, to global transportation, as an element in cultures and traditions, as a resource for primary and secondary production and for biodiversity; while the contribution of the river to energy cycles is now beginning to be better appreciated (Costanza, 1999; Weng, 2005).

In Malaysia, from earliest times, civilisations have been established along the banks of rivers. Rivers hold prominent places in human society. In fact, in Malaysia, settlements have historically developed along river banks, hence many urban cities in Malaysia such as Kuala Lumpur, Terengganu, Malacca, Kuantan, Kota Bharu and Kuching were established after the waterfront settlements had developed (developed on river edges or river valleys) (Andaya & Andaya, 2001; Weng, 2005). As a consequence, some of the villages are named after the rivers that run through them, namely “Sungai Rengit, Sungai Mati and Sungai Kapal in Johor (Yassin, Eves, & McDonagh, 2010).

After the waterfront areas were abandoned for many years, Malaysia has begun to redevelop these areas (along the riverbanks) and Kuching city in Sarawak has been selected to initiate this project. The Kuching Riverfront was proposed in 1989 by the Chief Minister of Sarawak, mainly for recreational purposes, and permission for the development to proceed was granted in September 1993. The project was fully funded by the State Government of Sarawak and managed by the Sarawak Economic Developments Corporation (SEDC) (Sarawak Economic Development Corporation, 1990). After completion in 2003, the Kuching Riverfront became a benchmark for waterfront development projects in Malaysia. To date, more than fifty

waterfront development projects have been developed in Malaysia, such as the Malacca Waterfront, the Kuantan Waterfront and Kota Kinabalu Waterfront.

The next section discusses how river functions shaped Malaysian life, the emergence of waterfront development and the evolution of waterfront development in Malaysia.

3.2 The River and Its Economic Importance

In Malaysia, rivers have been used for multiple purposes such as, for food, as a defensive barrier and for human settlement (Malaysian Department of Irrigation and Drainage, 2009c) History shows that many towns and cities in Malaysia were established near water areas including ex-mining areas. For example, the city of Kuala Lumpur which is located at the confluence of the Sungai Gombak and the Sungai Klang, was developed from the village of a tin ore mine (Shaziman, et al., 2010).

Malaysia has 189 river basins of approximately 57,300 kilometres in length. Of those, 89 are located in Peninsular Malaysia, 22 in Sabah and 78 in Sarawak (Keong, 2006). Most function as river basins and 30 function as reservoirs that supply the 28 million people living in Malaysia with clean water (Malaysian Department of Irrigation and Drainage, 2009b). Water resources are used in various ways by societies throughout the world. For example in Malaysia, water resources are used as the water supply for the Malaysian population, as irrigation for agriculture, as a source of food, as a natural habitat for flora and fauna and to support biodiversity (Keong, 2006; Weng, 2009). Table 3.1 below summarises the economic importance of rivers to Malaysia.

According to Keong (2006), demand for domestic water in Malaysia will increase in the future alongside increases in the population and national development growth. For example, according to Malaysian Department of Irrigation and Drainage (2009a), water demand is predicted to almost double from 2010 to 2050 (16,176 million litres per day in 2050 compared to 8,814 million per day in 2010). Thus, rivers are living entities that play a huge role in people's lives, in the environment and in natural developments and their functions will remain unchanged in the future (Malaysian Department of Irrigation and Drainage, 2009b).

Table 3.1: Economic value of rivers in Malaysia

Economic Value	Description
Source of drinking water	In Malaysia, rivers provide 97% of the water supply. Among the 189 river basins, 30 function as reservoirs supplying the 28 million people in Malaysia with clean water.
Agricultural	Rivers are used to irrigate crops and plantations.
Industry	Industries need water to manufacture products.
Livelihood	Many local communities depend on the resources provided by the river for food (fish) and income.
Transportation	Rivers were the main form of transportation before other forms of transportation were invented.
Biodiversity	Rivers are home to a wide range of plants and animals that live both in and around the river. Forty percent of all fish species are freshwater varieties.
Domestic use	Without rivers, the only other source of freshwater is rainwater.
Recreational	Rivers are widely used for recreational purposes. Left in their natural state, rivers and surrounding forest areas are ideal for picnics, camping and canoeing.
Religion	Rivers are used in numerous religious ceremonies and festivals because water is considered the purest resource on earth.
Human settlement	Malaysia's rivers shape the life of the communities along their banks. Many towns and cities in Malaysia are located close to rivers.
Renewable energy	In recent years, rivers have become increasingly important for hydroelectric power and for industry.

(Source: Abdullah & Mahmood, 1999; Keong, 2006; Malaysian Department of Irrigation and Drainage, 2009c; Yassin, Eves, & McDonagh, 2009)

3.3 Urbanisation in Malaysia

This section discusses the social and spatial growth and changes in Malaysia since colonial times.

Malaysia, formerly known as the Federation of Malays (in Malay, the word, "Persekutuan Tanah Melayu", means literally the Federation of Malaya) is a country located in Southeast Asia and consists of thirteen states and three land mass components; the Peninsular Malaysia and Sabah and Sarawak in Borneo. The Federation of Malays became independent on the 31st August 1957 and Malaysia was formed in 1963, after the British colonies of Singapore and the East Malaysian states of Sabah and Sarawak joined the Federation (Lepoer, 1989). Malaysia has a total land size of 329,847 square kilometres; the land comprising 328,657

square kilometres and the water 1,190 square kilometres (Central Intelligence Agency, 2010; Malaysia Constitutions, 2006).

3.3.1 Emerging Urbanisation of Malaysia

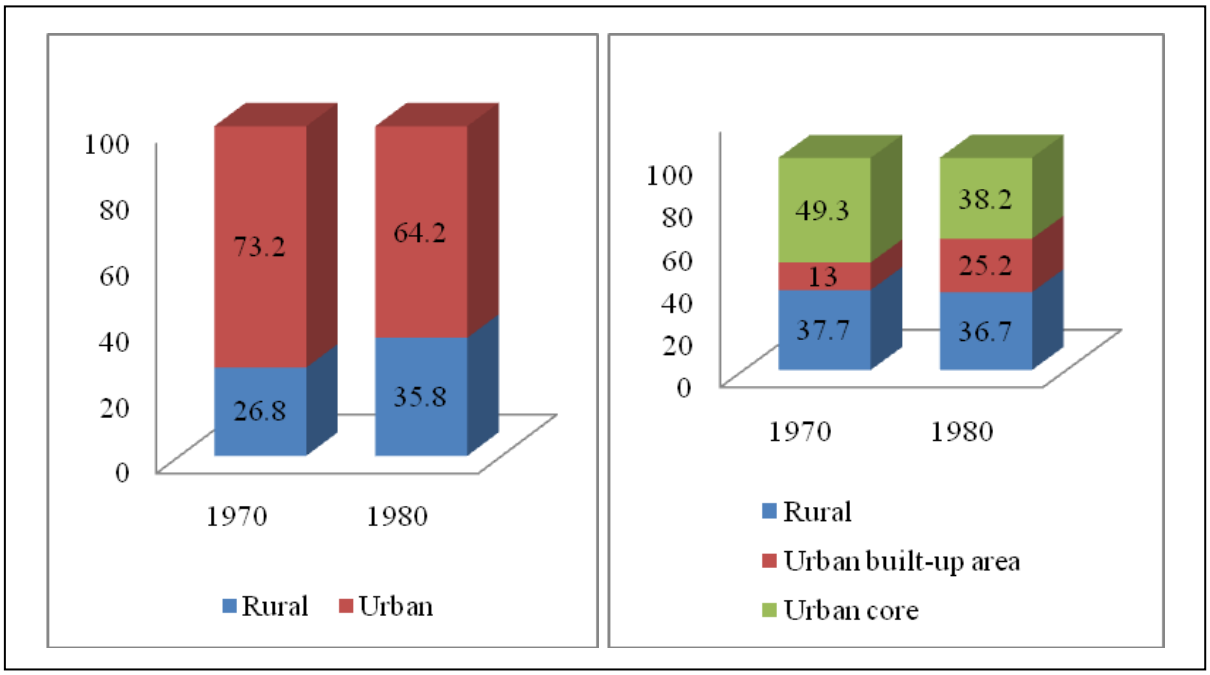
Over the past decades, both the scale and pattern of urban growth in Malaysia has increased continuously. As well as the positive growth of the Malaysian economy and its rapid development, the gradual increase in rural to urban migration was the main factor for urbanisation in Malaysia. According to Jali, Stillwell, & Rees (2006), the migration patterns in Malaysia can be divided into two stages; between 1986 and 1991, and between 1995 and 2000. Migration levels dropped during the second period possibly because of economic decline and the currency crisis. Table 3.2 presents the urban and rural population in Malaysia between 1950 and 2030 (forecasted).

Table 3.2: Urban and rural population in Malaysia (1950-2030)

Year	Total population (,000)	Urban population (,000)	% Urban	Rural population (,000)	% Rural
1950	6 110	1 244	20.4	4 866	79.6
1955	7 000	1 639	23.4	5 361	76.6
1960	8 140	2 165	26.6	5 975	73.4
1965	9 502	2 842	29.9	6 660	70.1
1970	10 853	3 631	33.5	7 222	66.5
1975	12 258	4 615	37.7	7 642	62.3
1980	13 763	5 787	42.0	7 977	58.0
1985	15 677	7 197	45.9	8 480	54.1
1990	17 845	8 891	49.8	8 955	50.2
1995	20 363	11 326	55.6	9 038	44.4
2000	23 001	14 212	61.8	8 790	38.2
2003	24 425	15 617	63.9	8 808	36.1
2005	25 325	16 479	65.1	8 846	34.9
2010	27 513	18 768	68.2	8 745	31.8
2015	29 563	20 998	71.0	8 565	29.0
2020	31 580	23 218	73.5	8 362	26.5
2025	33 479	25 351	75.7	8 128	24.3
2030	35 191	27 324	77.6	7 867	22.4

(Source: Jali, et al., 2006)

In addition, Jaafar (2004) indicated that redefining and extending the boundaries of urban areas[4] also changed urbanisation levels dramatically. For example, the restructuring of urban boundaries, which includes built-up areas with urban characteristics, has resulted in large increases in the levels of urbanisation, accounting for 61.8% in 2000. Figure 3.1 illustrates the level of urbanisation before and after the redefinition and reconstruction of urban boundaries in Malaysia.



(Adopted from: Jaafar, 2004)

Figure 3.1: Distribution of population by stratum in Malaysia, 1970 and 2000

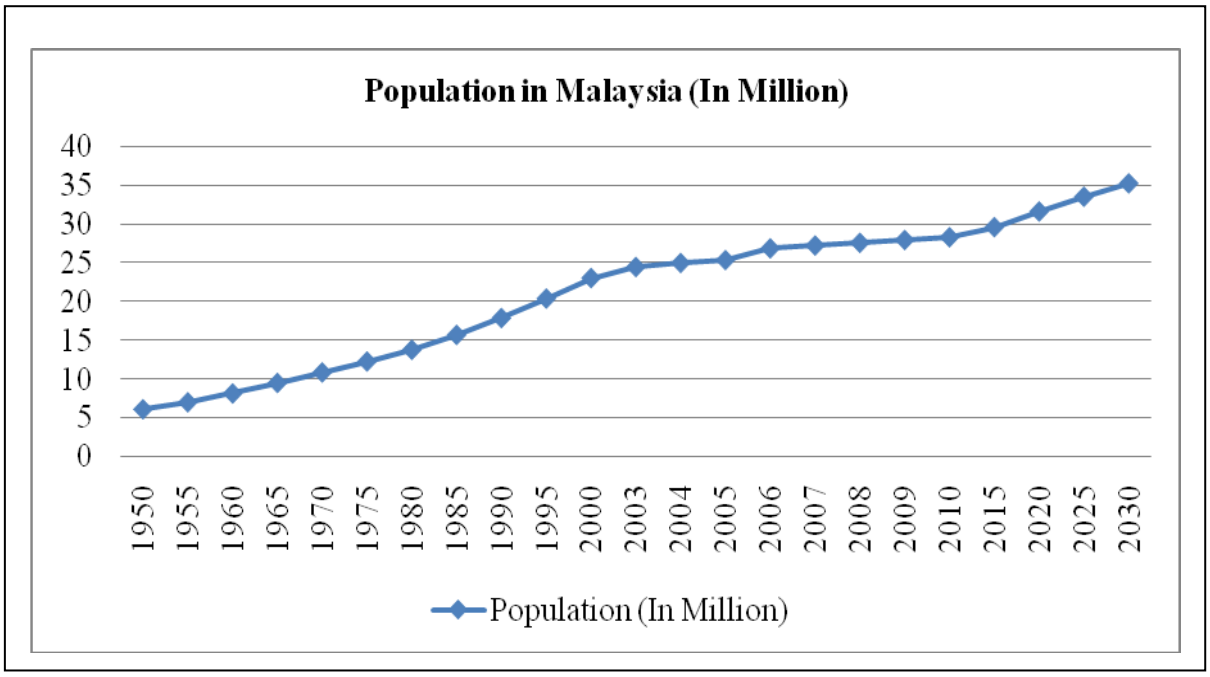
With rapid urbanisation, much land in urban areas that was originally designated for agricultural use was converted into housing, townships and industrial parks (Weng, 2005). As a result, some settlements already developed in the inner city gradually became under-utilised and some were abandoned. This was common in the waterfront areas, as well as settlements developed along the river edges.

The next section covers a number of effects derived from urbanisation and land use changes in Malaysia.

4 The introduction of the Local Government Act, 1976 (Act 171) in the Peninsular Malaysia, the Local Government Ordinance, 1961 for Sabah and the Local Authority Ordinance, 1977 for Sarawak, have resulted in redefining and extending the boundaries of urban areas in order to reflect the more realistic urbanisation in Malaysia (Jaafar, 2004).

3.3.2 Urbanisation and Demographic Changes in Malaysia

The population of Malaysia stands at over 27 million (estimated 2009), which makes it the 43rd most populated country in the world. The Malaysian population has grown steadily since 1950 and is estimated to have increased by more than two percent per annum, adding over one million people every five years (Hasan & Kasim, 2007; Jali, et al., 2006). The population is forecasted to increase steadily in the future.



(Source: Jali, et al., 2006; Malaysian Department of Statistics, 2010)

Figure 3.2: Population growth in Malaysia between 1950 and 2010

The demographics of the Malaysian population are represented by five ethnic groups; Malay, Chinese, Indian, indigenous and others. Among the Malaysian population, Malays and indigenous groups make up 65.1% of the population, while Chinese (26%), Indian (7.7%) and Others (1.2%) (Malaysian Department of Statistics, 2009). However, the population distribution is uneven between the Peninsular Malaysia, Sabah and Sarawak, with almost 20 million residents concentrated in the Peninsular Malaysia. Figure 3.2 shows the demographic trends in Malaysia between 1950 and 2030 (forecasted).

3.3.3 Urbanisation and the Economy of Malaysia

Malaysia is a relatively open state oriented market economy.[5] After gaining independence in 1957, the Malaysian economy grew rapidly. Malaysia was known for its natural resources such as forestry, agriculture and minerals,[6] and presently Malaysia is dominated by exports of natural resources such as rubber and petroleum (Husin, 2006).

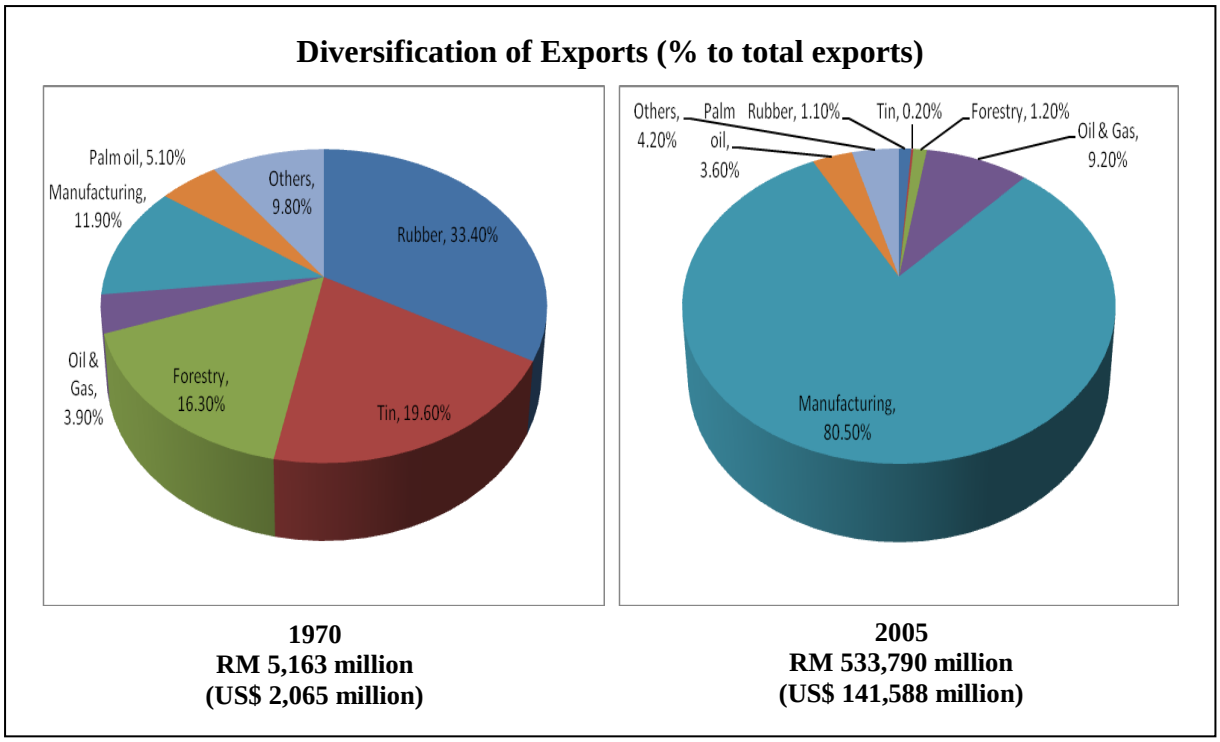
Nevertheless, rapid industrial growth in the 1980s resulted in decreases in plantation and petroleum exports for the country, amounting to a 30% decrease in plantations and a 20% decrease in mining activities. Malaysian economic growth has slowed, especially after the effects of the global economic crisis in 1980-1982, which was worse in the middle of the 1980s (oil palm and oil prices decreased by almost half). The Malaysian economy began to recover in late 1986 and grew steadily until 1990 with an average annual growth rate of about 8% to 9% (Omar, 2002).

In response to the need for a massive economic recovery programme,[7] the government launched a privatisation programme in 1990. However, many privatised companies failed in the Asian financial crisis of 1997-1998. Several recovery programmes undertaken since have witnessed increased Malaysian economic growth at 6.3% in 1999 and 7.9% in 2000. Unfortunately, the percentage subsequently reduced due to the global economic crisis and the 11th September 2001 incident. In 2002, the Malaysian economy continued to recover and the manufacturing sector became dominant for Malaysia, with electronic goods accounting for two-thirds of total exports. However, Malaysia continues to be a producer and exporter of other commodities such as palm oil, rubber, cocoa and petroleum. Figure 3.3 presents the diversification of Malaysian exports.

5 The government provides the broad thrust and sets the direction for the whole economy, and ensures the achievements of socio-economic goals, and the private sector is free to operate and is given appropriate policy, institutional and infrastructural support (Husin, 2006).

6 Tin and petroleum are two main mineral resources, and are of major significance in the Malaysian economy. Malaysia was the largest tin producer in the world and tin was Malaysia's largest export until petroleum took over in 1972. Also, Malaysia is one of the top oil palm exporters, and oil palm is a major economic generator for Malaysia.

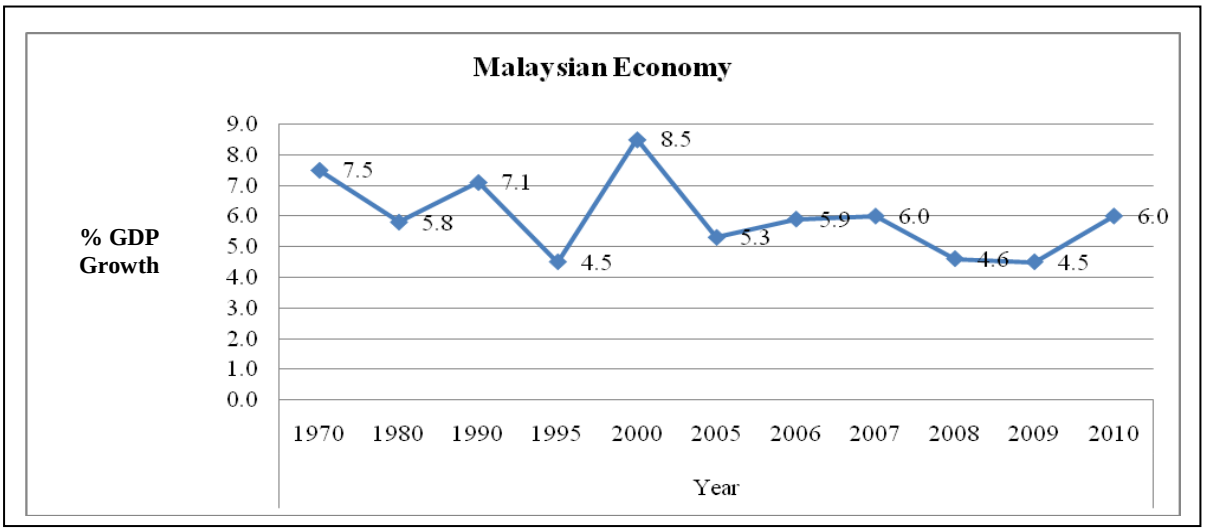
7 Recovery programs had several objectives: (1) stabilizing the currency, (2) restoring market confidence, (3) maintaining market stability, (4) strengthening economic fundamentals, (5) furthering socio-economic goals, and (6) reviving badly affected sectors (Sarji, 1995).



(Source: Husin, 2006)

Figure 3.3: Diversification of Malaysian exports

Until 2010, the economy of Malaysia grew steadily and is expected to increase further due to improvements in the labour market, rising disposable incomes and improved consumer confidence (Husin, 2006; Malaysian Department of Statistics, 2010). Figure 3.4 presents the economy of Malaysia for the past forty years (1970-2010) based on GDP growth.



(Source: Husin, 2006; Malaysian Economic Planning Unit, 2010; Nilai Harta Consultation Research, 2010)

Figure 3.4: Malaysian economy

3.3.4 Urbanisation and Social Considerations in Malaysia

The rate of economic growth in Malaysia increased significantly during the urbanisation periods. In contrast, poverty[8] remained one of the major social problems among Malaysians, especially in the rural sector. According to Siwar (1996), poverty is a universal problem but it has become a predominantly rural phenomenon due to its high rate of incidence in rural areas. In addition, Aziz (1964) determined that the poverty problem was attributed to multi-dimensional factors in nature ranging from social to economic factors.

In the 1970s, almost half of the Malaysian population lived in poverty and most of them in rural areas (Arshad & Shamsudin, 1997). The Malay group (about 57% of the Malaysian population) was the predominant problem and caused an economic imbalance between the ethnic groups in Malaysia. However, over this period poverty incidents in urban areas were also considered high, contributing 7.1% of the poverty rate.

In 2009, the Malaysian poverty rate declined to 3.8%, after the government took measures to combat poverty (Malaysian Economic Planning Unit, 2010). In respect to urban and rural areas, the poverty rate declined to 1.7% (urban areas) and 8.4% (rural areas) in 2009 (Malaysian Economic Planning Unit, 2010).

3.3.5 Urbanisation and the Environment in Malaysia

With respect to environmental considerations, one of the impacts of urbanisation is the deterioration of the natural environment. Dramatic land use changes had contributed to rapid land degradation and this problem was compounded by development in unsuitable and environmentally sensitive areas – not only development along the water edges. For example, urbanisation has exerted considerable pressure on water resources. Table 3.3 describes the four major environmental problems directly related to urbanisation as well as waterfront development in Malaysia. These problems disturb economic growth and the activities of life and can result in the loss of property and lives (Abidin, 2004; Malaysian Department of Environment, 2007).

8 According to Aziz (1964), "Poverty is a vicious cycle of low productivity, malnutrition, lack of infrastructure, low incomes and unemployment, embedded in structural defects, reinforced by imperfect competition and the relative neglect of the rural economy."

Table 3.3: Land use effects

Water related problem	Factors of pollution	Effect
Water shortage	Increased population. Expansion of urbanisation. Industrialisation. Irrigation for agriculture	Pressure on water resources. Rising water pollution.
Water pollution	Industrial effluent. Farming community (animal waste and irrigation systems). Sediment from land clearance. Solid waste.	Disruption of water supply. Poor human health. Aquatic life and habitat destroyed.
Flooding	Disposal of solid waste. Sediment from land clearance. Runoff from developed areas.	Decreased capacity of waterways and frequent floods of larger magnitude occur.
Landslides and mud slides	Prolonged periods of high intensity rainfall. Development on hill slide/hill tops/road cuttings.	Threats to lives.

(Source: Abidin, 2004)

According to the Malaysian Department of Irrigation and Drainage (2007), despite providing sufficient water resources, Malaysia still faces water related problems due to not managing water effectively. For example, the increasing population and the per capita availability of water for a better quality of life, has resulted in a decrease in the water available for industrial and agricultural use (Abidin, 2004; Malaysian Department of Irrigation and Drainage, 2007; Mokhtar, et al., 2008). Furthermore, Malaysia currently suffers from water stress and droughts. In fact, the water demand has exceeded the available capacity of the river basins (Malaysian Department of Irrigation and Drainage, 2007), meaning that the amount of water available to sustain life is limited. Unfortunately, the physical scarcity of water is not the key issue in most parts of Malaysia; rather economic issues seem to dominate. At present, there is enough water to meet society's needs but there are few incentives for the wise and conservative use of the resource.

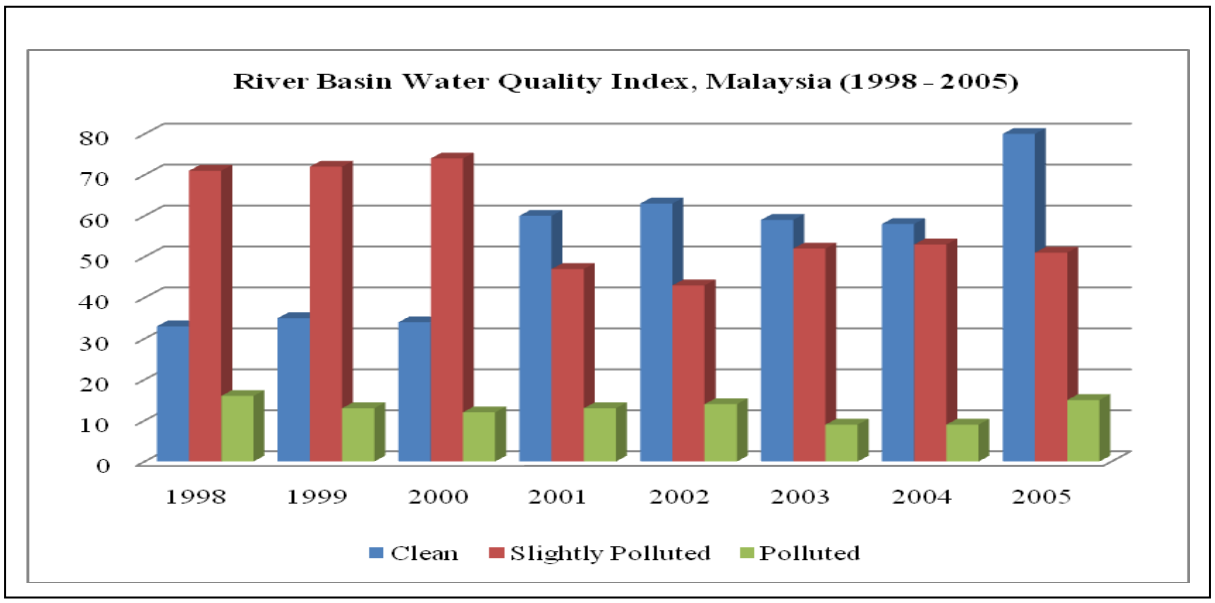
Moreover, according to the Malaysian Department of Irrigation and Drainage (2009c), rivers have been polluted for the last 20 years due to a number of human activities that directly degrade the quality of the river water – for example, agricultural, industrial, commercial and transportation wastes (Weng, 2005). In urban areas, land use change was identified as a major contributor to issues of water pollution and Weng (1999) and Abdullah (2002) determined

that more that 90% of sediment loaded in the rivers was derived from land cleared for construction.

As illustrated in Figure 3.5 below, between 1998 and 2005, the river basin water quality index in Malaysia increased; however, the number of polluted rivers remained constant (Daud, 2009).

The main sources of river water pollution in Malaysia are from four main sectors; population sewage, manufacturing industries, farms and agro-based industries (Malaysian Department of Environment, 2004). As a convenient means of disposal, rivers were used for the discharge of many contaminants and this decreased the quality of the water (Abdullah, 2002).

Another major environmental issue that needs to be addressed is flooding. Floods are normal parts of the ecological process and are initially caused by heavy rainfall. However, given the strategic geographical locations of rivers, flooding is considered the most significant natural disaster in Malaysia. Recent rapid development within water areas including river catchments has resulted in higher runoffs and increased flood frequencies. Malaysia has experienced major floods in 1920, then in 1926 and 1963, 1965, 1967, 1969, 1971, 1973, 1979, 1983, 1988, 2005 and, most recently, in December 2006 and January 2007 (Malaysian Department of Irrigation and Drainage, 2007).



(Adopted from: Daud, 2009)

Figure 3.5: River basins water quality index, Malaysia (1998-2005)

As a consequence, heavy floods may kill hundreds of people and destroy assets including property, crops and infrastructure (Ninno, Dorosh, Smith, & Roy, 2001). For example, the

flash floods in 1971 resulted in the loss of more than 200 million Malaysian Ringgits (about NZ$ 86.9 million) and the deaths of 61 persons. In addition, the recent massive floods that occurred between December 2006 and January 2007 were considered to be the most costly flood events in Malaysian history, with an estimated loss of about 149 million Malaysian Ringgits (about NZ$ 65.2 million) (Malaysian Department of Irrigation and Drainage, 2007).

Experience with flood events has led the government to endeavour to practice sustainable flood management. Sustainable flood management aims to reduce the adverse impact of floods through the wide circulation of flood information to stakeholders. As recommended by the Malaysian Drainage and Irrigation Department, the most effective flood mitigation programmes should include the following strategies: (1) Prevention, (2) Protection, (3) Preparedness, (4) Emergency response, and (5) Recovery and lessons learned (Malaysian Department of Irrigation and Drainage, 2008).

Besides the environmental issues addressed above, landslides and mud slides are another effect of urbanisation and land use changes. A landslide is a geological phenomenon which includes a wide range of ground movements such as rock falls, shallow debris flows and the deep failure of slopes that happens in offshore, coastal and onshore environments. It is considered a significant hazard in mountainous areas (Fuhrmann, Konrad, & Band, 2008). Usually, landslides are caused by a number of factors incorporating pore water pressure, the loss of soil structure, volcanic eruptions, and erosion due to human causes such as construction, agricultural and forestry activities (Kuriakose, Jetten, Westen, Sankar, & Beek, 2008).

In Malaysia, landslides that occurred were usually caused by rapid development on hill slopes, construction of highways in hilly terrain, deforestation and poor maintenance of drainage systems (Abidin, 2004; Malaysian Department of Public Works, 2007). The recent massive landslide event that occurred on December 2008 was near to the site of another landslide that occurred in 1993 (a 12 story condominium block collapsed) that killed at least four people and left 15 others injured (The Associated Press, 2008). In fact, some major landslide incidents have happened in residential areas, resulting in the loss of life and economic hardship to the public. Although many strategies have been undertaken by the government such as introducing the Developments Guidelines for Highlands and the Guidelines on Slope Maintenance in Malaysia (CERUN 1), landslides still occur in Malaysia.

3.4 Land Development Process in Malaysia

Land has varied definitions and interpretations. In general, land may refer to the solid part of the earth's surface that is not covered by water. More than that, from economic and legal perspectives, land also includes minerals, soil fertility and the resources of the sea; it is determined as the "free gifts of nature". A more specific definition by the Town and Country Planning Act, 1976 (Act 172) states that land includes (a) the surface and all substances forming the surface of the earth, (b) all substances below the surface of the earth, (c) all vegetation and other natural products, whether or not requiring periodical application of labour to their production, and whether on or below the surface of the earth, (d) all things, whether on or below the surface of the earth that are attached to the earth or permanently fastened to anything attached to the earth, and (e) land covered by water, and (f) any estate or interest in, or right over land.

In terms of land development in Malaysia, the process refers to the changing of the original uses of the land for the purposes of residential, commercial, industrial or other activities. From the perspective of land administration, land development is best defined "as any change in the original alienated land, contrary to what was already approved by the State Authority upon alienation" (Jaafar, 2009). More specifically, the Town and Country Planning Act, 1976 (Act 172) looked at developments itself, "as the carrying out of any building, engineering, mining, industrial or other similar operation in, on, over, or under land, or making of any material change in the use of any building or other land, or the subdivision or amalgamation of lands".

The National Land Code (NLC) 1965,[9] is the governing code for land administration in Malaysia. The NLC has rules and restrictions which control and/or guide land development in the country. With reference to the planning requirements for development, the National Land Code provides guidelines on the procedures for planning applications as follows:

(a) Variation of conditions, restrictions and categories (Section 124);

(b) Sub-division (Sections 135 – 139);

(c) Partition (Sections 140 – 145);

9 The National Land Code (1965) was made effective on 1st January 1966 as the main canon of land law to administer land in Peninsular Malaysia. The main function of the National Land Code (1965) is to provide a practical way of land administration in the country.

(d) Amalgamation (Sections 146 – 150);

(e) Simultaneous applications for sub-division and variation of conditions, restrictions and categories (Section 124 A); and

(f) Surrender and re-alienation – special provisions (Sections 204A-204 H)

A land development is a unique activity in terms of its physical characteristics and locations. Thus, any land chosen or required for the purpose of development remains under its agricultural status until approval is gained for the conversion, sub division or partition of land from responsible institutions or agencies, and actual developments can take place later.

In addition, in many cases in Malaysia, the private sector is the driver of growth, while the public sector facilitates the development and ensures the desired objectives are achieved (Husin, 2006). Practically, with any type of land, the decision for land development is made by the government, and all land development must fit with national zoning and planning regulations and also must fulfil the requirements of the urban planning policies of the government (Jaafar, 2009; Omar, 2002) including national and sub-regional levels. The implementation of the actual development is usually offered to private developers.

The next section discusses the development stages and the actors involved in the process.

3.4.1 Land Development Stages and Main Actors

Development in Malaysia has several stages and requires the participation of many actors. The process is not necessarily followed in sequence, in some cases it could overlap or be repeated. Table 3.4 below presents the relevant stages of the process and the corresponding actors. The general procedures in the land development process in Malaysia are illustrated in Figure 3.6 below.

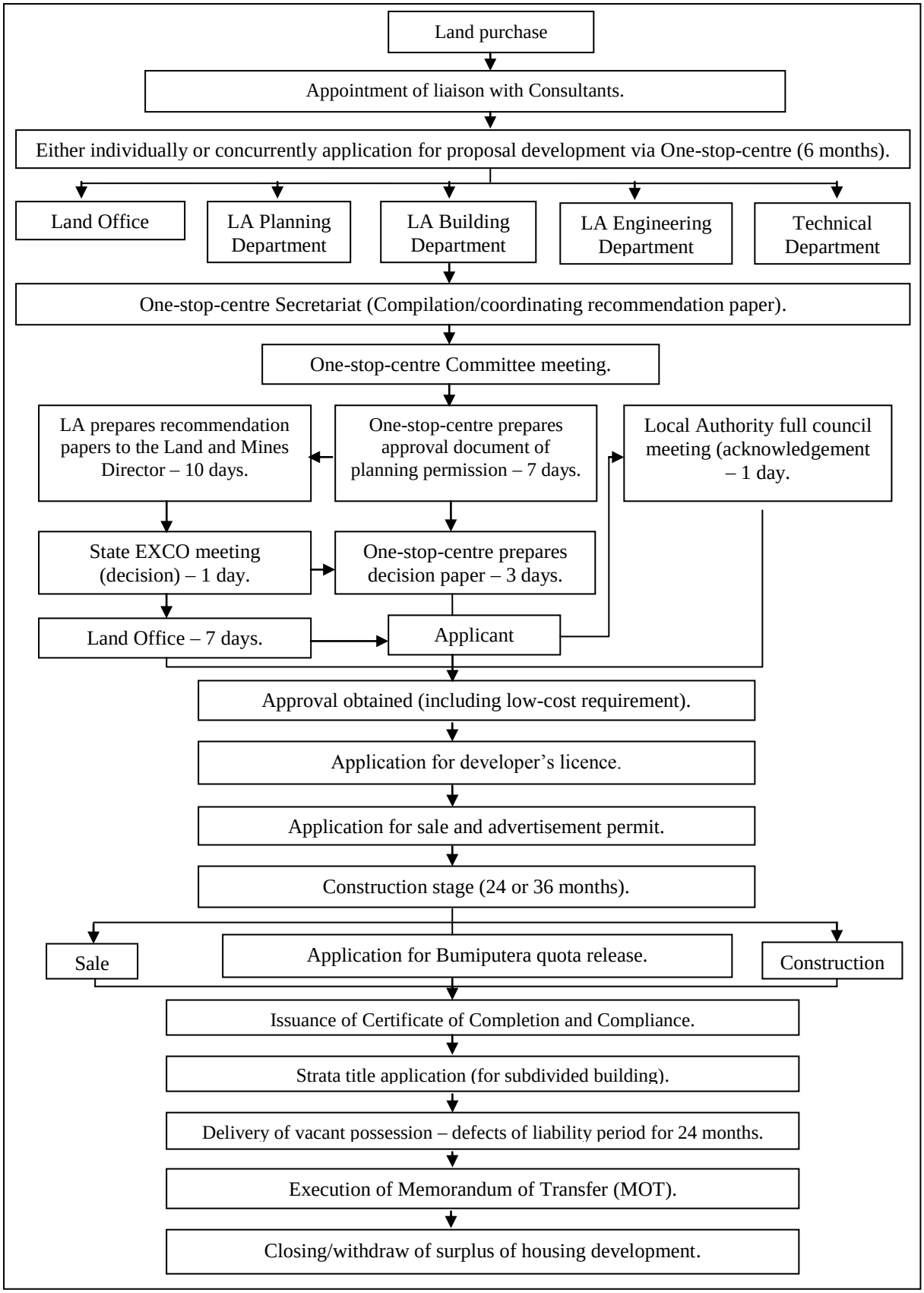
Table 3.4: The development stages and associated actors

Development stage	Main actor(s)	Supporting actor(s)
Initiation	Landowner, Public Sector	Accountant, Commercial Agent/Estate Agent.
Evaluation	Developer	Professional/Economic, Consultant (e.g. Registered Property valuer or Appraiser.
Acquisition	Developer, Private sector	Solicitor, Accountant, Financier, Land Surveyor, Valuer.
Design and Costing	Developer	Architect, Quantity Surveyor, Building Surveyor.
Permission (including conversion, sub-division and amalgamation)	Planning Authority	Planning Consultant, Architect, Land Surveyor.
Commitment	Land Owner, Private Sector, Developer	Solicitor, Building Contractor, Architect, Quantity Surveyor, Engineer, Supplier.
Implementation	Developer, Building Contractor, Project Manager	Sub-contractor, Architect, Quantity Surveyor, Engineer, Supplier.
Let/ Manage/ Dispose	Landowner, Developer, Occupier	End financier, Lawyer, Estate Agent, Valuer.

(Source: Jaafar, 2009)

Thus, for any kind of development, the collaboration of the private sector and the government is essential and must fit with national development planning[10] and zoning rules.

10 In Malaysia the planning structure and its authoritative power is provided by law through three acts namely; The Local Government Act (Act 171), The Town and Country Planning Act 1976 (Act 172) and the Street, Drainage and Building Act 1974 (Act 133). The application for planning approval must follow several planning tools as recommended by the planning authority, such as land use zoning, population density and plot ratio (Jaafar, 2010).



(Adopted from: Real Estate and Housing Developers' Association Malaysia, 2010)

Figure 3.6: Land development process in Malaysia

3.5 An Evolution of Waterfront Development in Malaysia

Rivers were homes to vital communities and initiated the emergence of cities around them. Malaysia is fortunate to be able to call itself a water rich nation and possesses a number of rivers with great potential for recreation. The importance of rivers as the physical centre of the city and the site of trading from very early times remains in the history of all Malaysians (Hussein, 2006).

Population growth, economic growth, urbanisation and increased technology have transformed many Malaysian river systems from water industries into non-water industries. This transformation symbolises the independent city states' efforts to remake themselves for the 21st century. At the same time, due to these changes, the function of the waterfront areas has also changed and the current pattern of waterfront development in Malaysia now focuses more on mixed-use development and recreation, while incorporating Malaysian cultural and historical values. So, it is important to understand the story behind urban waterfronts over the last two centuries. The historic milestones of waterfront development in Malaysia can be divided into four (4) periods which are in parallel with the urbanisation periods (Arshad & Shamsudin, 1997; Rahman, 2001; Yassin et al., 2010) and are as follows:

(1) First phase: During colonial rule (1887-1956)

During this period, the river was the most important means of domestic and trade transportation. The growth of societies along the river edges initiated the emergence of port towns and several other urban forms. Business related to river activities expanded and the river was transformed into a focal point. Later in this period, the relocation of people, especially Chinese, occurred into "new villages" during the Malayan Emergency Period (1948 to 1960).[11]

(2) Second phase: After independence and early urbanisation (1957-1969)

During this period, development continued along the river edges and the establishment of the perception of rivers as public open space corridors occurred. However, the government started to separate Malaysians into different groups (Malays in rural areas, Chinese in urban areas

11 The Malayan Emergency was a conflict between communist guerrillas and British Commonwealth forces. The guerrillas (most of them were Malayan Chinese), were seeking to overthrow the British colonial administration in Malaya. The Malayan Emergency was declared on 18th June 1948 after three European plantation managers were murdered in the northern state of Perak, Malaya (Ghows, 2006).

and Indians in estate areas). Land settlement was one of the major approaches in agricultural and socioeconomic development (Manshard & Morgan, 1988).

Another strategy to support rural sector transformation in Malaysia was "Agrarian reform" (Arshad & Shamsudin, 1997). The strategy of agrarian reform affected a wider range of inputs and institutions and was aimed at the transformation of rural life and activities in all their economic, social, cultural, institutional, environmental and human aspects (Food and Agricultural Organization, 1978). The major agrarian reforms implemented in Malaysia were land development and settlement and in situ development.

For example, Malaysia's second Prime Minister, the late Tun Razak raised the idea of developing the Federal Land Development Authority (FELDA) to reallocate land to rural communities. FELDA was formed on 1st July 1956, after enforcement of the Land Development Ordinance 1956, which was designed to mainly support poor and landless communities, especially Malays (Federal Land Development Authority (FELDA), 2009). FELDA focused mainly on the Peninsular Malaysia and to date, has developed approximately 317 new areas with 853,313 hectares becoming plantation and settlement areas, and benefiting more than 530,000 settlers. After 50 years of development, the FELDA scheme was the most successful scheme and became the world leader in the palm oil industry, and the settlers became part of the middle income group by 2010. During this time the Malaysian population began to adapt to urbanisation and started to migrate to urban areas.

(3) Third phase: Urban explosion during the industrialisation period (1970-1997)

City reshaping and rural reconstruction, urbanisation and the upgrading of transportation systems to cater for trading and travellers, resulted in the decline of riverfronts. The introduction of the New Economic Policy (NEP)[12] of Malaysia in the 1970s, had a positive effect in improving the Malaysian economy, as well as industrial production and the property sector (Malaysian Economic Planning Unit, 2004). The positive effect of NEP continued steadily until the early 1990s and in the early 1980s it achieved a high point (economic

12 The launching of the New Economic Policy (NEP) in 1971 was the most significant policy change in the Malaysian history (Malaysian Economic Planning Unit, 2004). The NEP emphasised the importance of achieving socio-economic goals alongside pursuing economic growth objectives. This policy seemed necessary to provide increased economic opportunities for the poor and other disadvantaged groups to enable them to move out of poverty. Two strategies were adopted: (1) to reduce absolute poverty for all Malaysians, and (2) to restructure society to correct economic imbalances. NEP successfully drove the Malaysian economy until the early 1990s, where a slight decline in the middle 1990s due to the Asian financial and economic crisis occurred (Malaysian Economic Planning Unit, 2004).

growth more than 8% per annum). This positive effect for the Malaysian economy however, resulted in the decline of river functions and caused buildings and traditional settlements remaining along the riverfronts to be left to cope with the polluted water.

(4) Forth phase: Technology, modernisation and vision 2020 (2000 to present)

In this period, Malaysia continued to embrace technology and the expansion of manufacturing and industry in urban areas. Increasing job opportunities and facilities provided by urban areas caused increasing population in urban areas of up to 62% (Jaafar, 2004). Urban sprawl and city reshaping caused the government to initiate urban waterfront development and urban riverfront development for two main reasons; redevelopment and revitalisation (Sarawak Economic Development Corporation, 2009). After several years waterfront areas became popular as recreational centres. However, congestion in urban areas caused urban people to start moving to suburban areas (urban boundaries) including river areas, for privacy. This initiated a new pattern of waterfront development in Malaysia. Now, waterfront development has become a new trend for development all over the country and is popular among developers, placing an emphasis on housing and mixed-use development projects.

Waterfront development in Malaysia is forecast to expand in the future. Some projects will proceed to the next phase, some projects will upgrade existing development (redeveloping) while others are new projects. Also, private developers are taking opportunities to transform water into gold by initiating housing waterfront development projects. Housing development will continue to be one of the major new uses representing the most fundamental shift from all previous uses. Examples of the major waterfront development projects in Malaysia are presented in Table 3.5 below. Along with the incorporation of different aspects, the aim is still to enhance waterfront development and to maintain the natural resources.

Table 3.5: Examples of riverfront development projects in Malaysia

No.	Name of project	Location	Type of project	Projetc's Developer	Name of water body	Status
1.	Kuching Riverfront	Kuching, Sarawak	Recreational	State of Sarawak	Sarawak River	Completed
2.	Malacca Waterfront	State of Malacca	Recreational	State of Malacca	Malacca River	Completed
3.	Glennmarie Riverfront Cove	Klang, Selangor	Residential	Glenmarie Cove Development Sdn Bhd.	Langat River	Completed
4.	Kingfisher Cove, Riverfront	Kota Kinabalu, State of Sabah	Residential	Sabah Urban Development Corporation	South China Sea	Completed

No.	Name of project	Location	Type of project	Projetc's Developer	Name of water body	Status
5.	Kuantan Waterfront	Pahang, State of Pahang	Commercial and Recreation	Pahang State Development Corporation (PASDEC) Holdings Berhad	Kuantan River	Completed
6.	Mines Resort City	Sri Kembangan, State of Selangor	Mix-use development	Country Heights Holding Berhad	Lake – Former Hong Fatt Mine	Completed
7.	Kinta riverfront	Ipoh, State of Perak	Mix-use development	Morubina Sdn Bhd	Kinta River	Completed
8.	Jesselton Waterfront	Kota Kinabalu, State of Sabah	Commercial and Marinas	Suria Bumiria Sdn Bhd	Former Kota Kinabal Port	Expected complete on 2016
9.	Kota Kinabalu Waterfront	Kota Kinabalu, State of Sabah	Recreation	Golden Fame Property Sdn Bhd	South China Sea	Completed
10.	River View Kemensah	Melawati, Kuala Lmpur	Residential	Loh & Loh Development Sdn Bhd	-	Completed
11.	Sibu Riviera City	Sibu, State of Sarawak	Mix-use development	Sara-Timur Sdn Bhd	Pulau Kerto and South Bank	NA
12.	Bayu Puteri Marina	Johor Bahru, State of Johor	Mix-use development	Paradise Realty Sdn Bhd	Tebrau River Basin	Completed
13.	Taman Tasik Prima	Puchong, Kala Lumpr	Residential	Bolton Berhad	Puchong's premier lakefront	Completed
14.	Tamansari Riverside Garden City	Titiwangsa, Kuala Lumpur	Mix-use development	Asie Sdn Bhd	Gombak River	NA
15.	Kota Bharu Waterfront	Kota Bharu, State of Kelantan	Residential	Liziz Standaco Sdn Bhd	Kelantan River	NA
16.	Putrajaya Waterfront	Putrajaya	Mix-use development	Putrajaya Corporation	Putrajaya Lake	NA
17.	Bandar Botanic	Klang, State of Selangor	Mix-use development	Gamuda Land	Central Lake	NA

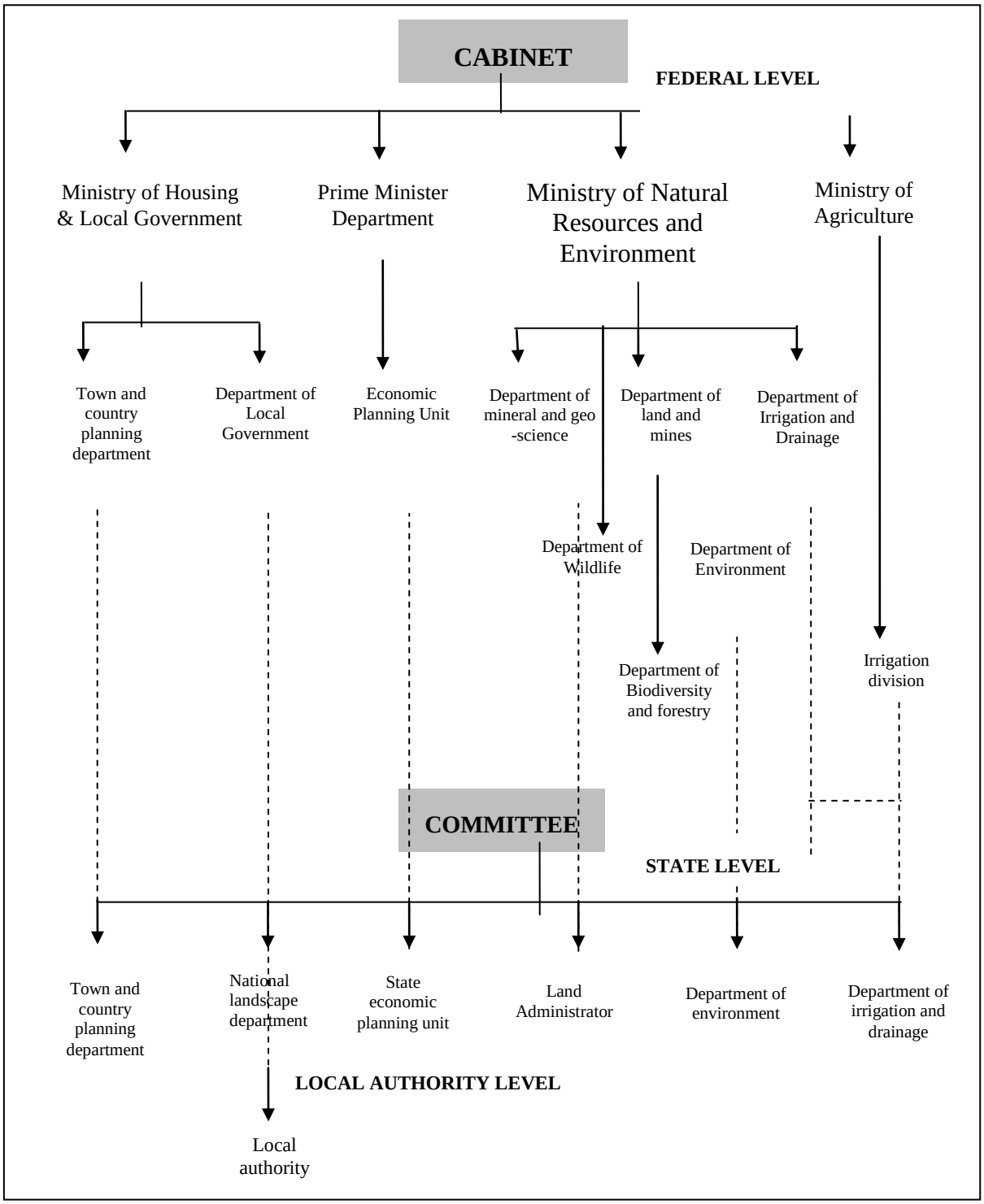
(Source: Ministry of Housing and Local Government, 2011)

3.6 Governance for Waterfront Development in Malaysia

Governance is about local change and reform and solving certain issues. According to Elfithri, Mokhtar, Shah, & Idrus (2008), effective governance requires changing and reforming some laws and regulations in order to solve certain issues. Due to different political, social, economic and administrative systems that are in place to develop and manage natural resources such as land resources, the balance of power and administration in a country are

important. In practice, the governance and administration of natural resources in Malaysia involves several department and agencies that operate dependently or independently of one another, according to the specific responsibilities assigned to them. Thus, this requires participation and involvement from stakeholders within a larger context of shared understanding, resulting in effective governance (Mokhtar & Elfithri, 2005). In addition, Elfithri et al. (2008) noted that successful governance could be achieved by considering moving decision making power, resources and capacity to lower levels of management.

Water and land are the two main resources directly associated with waterfront development. In Malaysia, natural resources – land, water, rivers and forest – are under the jurisdiction of the State government (Federal Constitution, 2006). In addition, the State government also has full responsibility for water management including gazetting and preserving water catchments, development along the river corridors, urban development and logging for forest timber. In turn, those natural resources provide revenue to the State government through their uses – timber logging, industry, township development and water supply (Abidin, 2004). Nevertheless, with regard to natural resource development matters, both governments (federal and state) are involved. In fact in Malaysia, involvement from both parties is required in the management and administration activities, where each of them have their own specific tasks in planning, land-use control and management (Welch & Keat, 1987). The specific tasks assigned to them concern a wide range of aspects including political, social, economic and administrative systems. Figure 3.7 shows the administration and government institutions' involvement in water and land matters in Malaysia, and Appendix A summarises the objectives and functions of each institution.



(Source: Malaysian Department of Irrigation and Drainage, 2009c)

Figure 3.7: Institutional frameworks for land and water resource development in Malaysia

3.6.1 Regulations Related to Waterfront Development in Malaysia

In most countries, various forms of regulations are implemented to correct physical, economic, social and spatial imbalances (Singh, 1994). The importance of law, policies and guidelines towards waterfronts has been recognised in Malaysia as it has been in many

countries (Riley & Shurmer-Smith, 1988). For example, in the United States in the 1970s and 1980s, environmental regulations and policy formulation for the regeneration of waterfronts were increased, and subsequently had significant impact upon waterfronts (West, 1989). In fact, the establishment of the Clean Water Act (see US Public Law (92-500), 1972) and the National Environmental Policy Act (see Public Law (91-190), 1970) have led to water quality improvement and the reclamation of brown field sites, and have resulted in increased investment in waterfront areas by developers and users alike as well as visually enhancing waterfront areas (Breen & Rigby, 1996).

In Malaysia, legislative systems were implemented within a broader framework and supervised by the federal government. Laws also were used as a form of management in response to environmental problems in Malaysia (Daud, 2009). According to Latip et al. (2010), the earliest law in Malaysia which included the urban river aspect was introduced in 1907 and was known as the Sanitary Board Enactment. The Sanitary Board Enactment was focused on health and sanitation including drainage[13] as part of the law. This enactment was later reviewed and renamed as the Municipal Ordinance Cap 133/1913, and the Town Improvement Enactment 1917, and focused more on health and the habitation of houses (the setting of back lanes and open spaces for sanitary conveniences) (Norris, 1980). However, these new regulations did not specifically discuss rivers or the importance of them.

The specific law in relation to rivers was established in the 1920s and was known as the Water Act 1920. The Water Act 1920 provided a detailed definition of rivers, the responsible authority for the rivers and the riverbanks, and those involved in the appeal board (Water Act, 1920). This law remains current and is used by the Department of Drainage and Irrigation of Malaysia (Malaysian Department of Irrigation and Drainage, 2009b).

The first policy that stated the importance of waterfronts for public use was established in 1984 and was known as the Kuala Lumpur Structure Plan 1984[14] (Dewan Bandaraya Kuala Lumpur, 1984). The Kuala Lumpur Structure Plan provided specific concerns on

13 The river is part of the drainage system (Norris, 1980).

14 The Kuala Lumpur Structure Plan 1984 was the master plan and was in the form of a written statement covering the overall development of the Federal Territory of Kuala Lumpur. First published in 1984 and revised in 1994, the Plan contained the broad goals and objectives, policies and proposals concerning development, land use, the improvement of the social, economic and physical environment, and traffic management within the Federal Territory of Kuala Lumpur. The Plan had a perspective period of 20 years, up to the year 2000, and was reviewed periodically (Dewan Bandaraya Kuala Lumpur, 1984).

developments around the natural features and including rivers.[15] After that, several other initiatives directly and/or indirectly in relation to rivers and waterfronts were announced including the Malaysia Plan[16] and the amendment of the Town and Country Planning Act 1976 in 1994. Despite the laws, various guidelines in relation to waterfronts were drafted by several department including guidelines for development related to rivers and river reserves by the Malaysian Department of Irrigation and Drainage (2006), and waterfronts as recreational areas by the National Landscape Department (2005).

Up to the present, many laws, policies and guidelines that directly and/or indirectly related to waterfronts were put in place. However, most of the laws established concentrated on penalties for the pollution of rivers rather than specifically mentioning the importance of waterfronts including the Fishery Act (Act 317) (1985), the Environmental Quality Act (Act 127) (1974) and the Local Government Act (Act 171) (1976). The policies and guidelines introduced were very general and mostly done based on zoning rather than specific plots, for example the National Urbanisation Policy by the Town and Country Planning Department and, this resulted in difficulty monitoring and controlling development (Latip, et al., 2010). Moreover, some of the guidelines were not gazetted and were only used in isolation within the department which produced them, such as the waterfront as recreational area by the National Landscape Department, the planning guidelines for river reserves as public open space by the Town and Country Planning Department and facing the river concept guidelines by the

15 The Environmental Improvement Policies in the Kuala Lumpur Structure Plan 1984 (under sub-section LC7) specifically highlighted and acknowledged the waterfronts as potential public spaces.

16 The 5th Malaysia Plan (1986-1990) stated the importance of preserving the environment and environmental planning, and the importance of balancing the development of socioeconomic and environmental needs (Fifth Malaysia Plan, 1986).

In the 6th Malaysia Plan (1991-1995), Malaysia launched several initiatives to improve the waterfront and rivers including the ten year Rehabilitation Programme and "Love Our River" campaign (Sixth Malaysia Plan, 1991). Unfortunately, ten years later, in 2005, the campaign was announced a failure by the Ministry of the Environment due to concentrating more on riverbank beautification rather than river cleaning (The star online, 2007).

The 7th Malaysia Plan (1996-2000) was a continuation of the 6th Malaysia Plan. The plan focused on sustainable development and the integration of environmental considerations with economic and social development processes (Seventh Malaysia Plan, 1996).

The 8th Malaysia Plan (2001-2005) continued the theme of sustainable development (Eight Malaysia Plan, 2001).

The 9th Malaysia Plan (2006-2010) highlighted five main thrusts. One of them indirectly mentioned was about planning to improve the integration between waterfronts and urban rivers (Ninth Malaysia Plan, 2006).

The 10th Malaysia Plan (2011-2015) highlighted several key points as follows; charting development for a high income nation, 6% growth target, increased Malaysian per capita income by 2015, creating private sector-led economy, supporting innovation-led growth, full employment and restructuring of subsidies (Tenth Malaysia Plan, 2010).

Drainage and Irrigation Department. This made difficulties for implementing the guidelines and discouraged achieving more sustainable waterfront development (Latip, et al., 2010).

Table 3.6 summaries related laws, policies and guidelines to waterfront development in Malaysia, according to the year it was introduced.

Table 3.6: Related law, policies and guidelines related to waterfront development in Malaysia

Year	Law	Policy/Guideline
1907	Sanitary Boards Enactment.	
1913	Municipal Ordinance Cap 133/1913	
1920	Water Act 1920 (Act 418).	
1923	Town Planning and Developments Bill, 1923.	
1927	Town Planning and Developments Bill, 1927.	
1930	Sanitary Boards Enactment Cap 137, 1930.	
1953	Irrigation Areas Act 1953 (Act 386).	
1955	Town Boards Enactment of the Federated Malay States (Cap 137) amended in 21st April 1955.	
1960	Akta Ibu Kota Persekutuan 1960 (Act 190).	
1964	Land Conservation Act	
1965	National Land Code 1965 (Act 65).	
1974	Environmental Quality Act 1974.	
1974	Street and Drainage Act 1974.	
1974	Federal Constitution.	
1976	Local Government Act 1976.	
1970	City of Kuala Lumpur (Planning) Act 1973 (Act 107).	
1976	Town and Country Planning Act 1976.	
1982	Federal Territory (Planning) Act 1982 (Act 267).	
1984		Kuala Lumpur Structure Plan 1984.
1985	Fisheries Act 1985 (Act 317).	
1985	Undang-undang kecil Bangunan (Wilayah Persekutuan Kuala Lumpur) 1958.	
1986-1990		5th Malaysia Plan.
1991-1995		6th Malaysia Plan.
1996-2000		Kuala Lumpur Structure Plan 2020.
1996-2000		7th Malaysia Plan.
2001-2005		8th Malaysia Plan.
2005		National Physical Plan.
2005		River Reserves (JPBD).
2005	National Heritage Act 2005 (Act 645).	Guidelines for riverfront developments concept.
2005		Waterfront as Recreational Area.
2006		National Urbanisation Policy.
2006-2010		9th Malaysia Plan.

Year	Law	Policy/Guideline
2008 2010		Draft Local Plan 2020. 10th Malaysia Plan.

(Source: Latip, et al., 2010)

3.6.2 Guidelines for Development Related to Rivers and River Reserves

The guidelines for development related to rivers and river reserves were designed by the Department of Irrigation and Drainage, Malaysia (2006). Guidelines for development related to rivers and river reserves were developed specifically for Local Authorities,[17] to provide guidance and to facilitate decision-making for land development planning approval, for rivers and river reserves including riverfront development. These guidelines also include the requirement for all information, the scope of impact assessment that is required for any development that involve river reserves and the river itself, as well as a flow chart of the development approval process.

The guidelines for riverfront development were designed and proposed concurrently with the guidelines for development related to rivers and river reserves (Malaysian Department of Irrigation and Drainage 2006). The guidelines for riverfront development were developed for Local Authorities to use as a reference for the planning of development close to river areas. In addition, these guidelines are also necessary as references for developers and consultants to use who directly and/or indirectly involved in development close to river areas.

Specifically, the guidelines for riverfront development concept have four objectives as follows:

(a) To explain and encourage the implementation of guidelines in the development planning of riverfront areas.

(b) To be a reference and a guideline for any development near to river areas.

(c) To provide uniform guidelines for all parties involved in the riverfront development process.

(d) To control all types of riverfront development.

17 The Land administrator and Local Authorities are responsible parties involved in land development planning approval including development planning for rivers and river reserves.

According to the guidelines for riverfront development, planning for riverfront development is required to include neighbourhood areas within 50 metres of a river reserve and the river body itself. This is not considering the land status and/or land type of the development areas. The guidelines proposed several criteria that guide and should be taken into consideration while planning for development in front of river areas. Table 3.7 summarises and presents the criteria proposed for guidelines for riverfront development.

Table 3.7: Criteria for guidelines for riverfront development

No.	Criteria	Description
1.	River as a main attraction of developments	According to the guidelines, the river's role is to remain as a main attraction for the development. The river plan must be developed earlier than any other development plan. Removal of or changing the river line or bed are not permitted.
2.	Beautification of river reserves	According to the guidelines, developers are required to provide recreation and beautification plans for river reserves to be approved by the Department of Drainage and Irrigation, Malaysia. Maintain river reserves as buffer zones to control environmental problems such as soil erosion. Utilising river reserves for green areas and for recreational use are allowed to developers.
3.	Level of river flow	According to the guidelines, development close to river areas must not increase the level of river flow. Development of more than 10 hectares, are required to build retention ponds with maximum area of approximately between 3-5% of total development area.
4.	Developments of permanent infrastructure	According to the guidelines, the development of permanent buildings and infrastructure are not allowed within rivers and river reserves unless they are facilities for recreational purposes such as a play ground. River beautification work that could increase a river's water flow must obtain approval from the Department of Drainage and Irrigation.
5.	Platform level of building	According to the guidelines, the maximum platform level for buildings is required to reduce any damage from flooding.
6.	Riverfront developments concept	According to the guidelines, planning for the development close to river areas must include the riverfront development concept. The main access to the building must face the river. Property developers are required to undertake beautification work for the development close to the river area, and contribute a portion of the maintenance costs for river reserve and beautification works to the Local Authority.
7.	River view	According to the guidelines, the development planning of riverfront areas should include the river view.

No.	Criteria	Description
		The arrangement of the building and type and size is required in the proposed development plan.
8.	Open space	According to the guidelines, any planning for infrastructure development is highly required to maintain and conserve open spaces along the river.
9.	Public access	According to the guidelines, gated communities and any activities which will not allow public access to the river and river reserves are prohibited.
10.	Conservation of flora and fauna	According to the guidelines, development close to river areas are required to maintain the green zone along the river reserves as habitat for flora and fauna. Construction of concrete structures along river banks is limited and forest trees with high commercial value are not allowed to be harvested and cut.
11.	Recreation activities	According to the guidelines, recreational activities that involve rivers such as fishing and kayaking are highly encouraged.
12.	Preservation of historic value of river	According to the guidelines, maintaining and preserving the historic value of rivers including historical buildings along the river is required.
13.	Water restoration	According to the guidelines, a centralise sewage system for development along river areas is required. Water treatment is needed before discharged to rivers to avoid water pollution. This requirement is compulsory for development projects of more than10 hectares.
14.	Bridge	A bridge facility with good design and a high standard of quality is required to facilitate people access to this area. The width of the bridge is 4.5 metres and using the elevated bridge or arch bridge type.

(Source: Malaysian Department of Irrigation and Drainage 2006)

In order to maintain the success of riverfront development, the guidelines for riverfront development is recommended to be applied in conjunction with other regulations as follows:

1. Water Act 1920 (Amendment 1989);

2. Local Government Act 1976 (Act 171);

3. Environment Quality Act 1974 (Act 127);

4. Mining Enactment 1962 (F.M.S. Cap. 147);

5. Drainage Works Act 1954 (Act 354) (Amendment 1989);

6. Irrigation Areas Act 1953 (Act 386) (Amendment 1989);

7. Road, Drainage and Building Act 1974 (Act 133);

8. National Land Code 1965 (Act 56); and

9. Other regulations enforced from time to time.

The application of the guidelines for riverfront development would help all parties that are directly and/or indirectly involved in riverfront development, and would encourage riverfront development for future development in Malaysia.

This chapter served as a review of waterfront development in Malaysia context. The emergence of waterfront development and redevelopment was discussed as well as the interrelated factors in the transition of waterfronts from industrial areas to unused spaces.

This chapter has also reviewed the literature dealing with the governance as well as regulations associated with waterfront development in Malaysia. Moreover, related guidelines designed for development close to river areas, which were known as guidelines for the development related to rivers and river reserves, and guidelines for riverfront development, were also explained.

Chapter 4

Methodology and Use of the Mixed Methods Research Strategy

4.1 Introduction

This chapter discusses the rationalisation for the mixed methods research strategy adopted to achieve the objectives of the research. It starts with a discussion of the research objectives, followed by the research design, data collection, data preparation and analysis, and concludes with a chapter summary.

4.2 Research Objectives

The specific objectives of this study are to:

(1) Identify current practices of waterfront development in Malaysia.

(2) Examine the approach taken overseas to waterfront development with an emphasis on available guidelines (for example, the Wellington Waterfront, New Zealand and the Singapore's Riverfront, Singapore).

(3) Evaluate the current regulations and guidelines related to waterfront development in Malaysia.

(4) Develop and recommend new guidelines towards more sustainable development of the waterfront in Malaysia.

Once the purpose of the study was identified and examined, the next step was to formulate a strategy to achieve the research objectives. This is presented in the following section; research design.

4.3 Research Design

The steps adopted in this research are as follows:

(1) Define the research problem.

(2) Determine the methods needed.

(3) Design the research strategy.

(4) Construct the interview questions and design the questionnaire.

(5) Specify the sampling process and the statistically robust sample size.

(6) Pre-testing of the questionnaire, revising it and preparing for the data collection.

(7) Data analysis and evaluation.

(8) Overall evaluation of the completed research study.

Specifically, in this research a mixed methods strategy was employed as the research process. In particular, the exploratory design,[18] also known as the sequential exploratory mixed methods design, was chosen for this study. The rationale for using a mixed methods research strategy with a sequential exploratory design is provided in the next section. This is followed by an explanation of the case study approach in the qualitative stage, and also a description of the way in which its findings are used to develop a questionnaire for the quantitative stage. A questionnaire is used for a survey of property developers in Malaysia and serves to support the findings of the qualitative stage. A detailed explanation about data analysis techniques involved in the various research steps follows, and concludes with a summary of the chapter.

4.4 Motivation for Using the Mixed Methods Research Strategy

Social research is conducted to understand complex human behaviour and experiences through qualitative or quantitative methods, or a combination of these (Morse, 2003, p. 189). Both qualitative and quantitative methods have different strengths and weaknesses and are used to answer different questions; however, they complement each other (Neuman, 2006, p. 151). Therefore, due to different emphases and limitations of the qualitative and quantitative methods, the mixed methods approach was introduced as a third methodological paradigm in social science research (Creswell, Clark, Gutmann, & Hanson, 2003; Johnson & Onwuegbuzie, 2004; Morse, 2003; Tashakkori & Teddlie, 2003).

Mixed methods research is defined as research where both qualitative and quantitative data are collected and analysed within a single study. Mixed methods requires data to be collected concurrently, or sequentially (one after another) in one or more stages of the study (Creswell, et al., 2003, p. 212). The combination of qualitative and quantitative methods in one study could neutralise the biases inherent in any single method and provide an in-depth

18 Creswell and Clark (2007) introduced four major types of mixed method designs; the Triangulation Design, the Embedded Design, the Explanatory Design and the Exploratory Design.

understanding of a phenomenon from a range of perspectives, different levels and groups of respondents (Creswell, et al., 2003, p. 211; Morse, 2003, p. 205; Tashakkori & Teddlie, 1998, pp. 93-94, 672). Furthermore, mixed methods has the ability to answer all research questions (Creswell & Clark, 2007).

In this study, both qualitative and quantitative questions have been proposed. In order to achieve the research objectives, the mixed methods strategy consisting of both approaches, was applied. The qualitative phase in this study was a case study, which was followed by a survey questionnaire in the second phase.

The significance of qualitative research in general, is to explore new phenomena and to understand complexities that focus on the provision of in-depth information. The emphasis of the case study approach in particular, in relation to this research, was to identify the attributes associated with best practice for waterfront development from waterfront development stakeholders in Malaysia. In order to obtain wider information of successful waterfront development projects from other developed countries (i.e. the Wellington's Waterfront, New Zealand and the Singapore's Riverfront, Singapore), documents relating to waterfront development (i.e. guidelines and principles) were reviewed. This was to explore how and why they have been successful. In addition, recommendations for best practice in waterfront development were identified during the first phase of the research strategy.

Information gathered and the attributes identified from the first phase were then included in a questionnaire (survey). The purpose of the quantitative phase (questionnaire survey) in this research strategy was to confirm statistically the identified attributes associated with best practice for waterfront development, and then to develop new guidelines for best practice for waterfront development in Malaysia.

The semi-structured nature of qualitative research provided an opportunity to identify unanticipated attributes associated with waterfront development in Malaysia, which could then be used for developing the questionnaire. A semi-structured interview is flexible; while the interviewer generally has guidelines to explore, new questions can be brought up during the interview as a result of what the interviewee says.

The information associated with topics asked during the interview can then be included in constructing the questionnaire before testing it quantitatively through statistical analysis (second phase). For this reason the strengths of both qualitative (identification of new considerations) and quantitative methods (confirmation of the statistical significance of newly

identified considerations) were combined in order to provide more robust and comprehensive results.

The use of mixed methods facilitates the between method triangulation,[19] whereby the use of both methods leads to different assumptions and confirmations. The use of multiple methods within a single study offers wide perspectives and more extensive results through the combination of a variety of data sources (Creswell, et al., 2003, p. 211; Morse, 2003, p. 195; Tashakkori & Teddlie, 2003, p. 16).

Although mixed methods research remains controversial in social science (Tashakkori & Teddlie, 2003, p. 379), concentrating on the strengths of each method within the mixed methods strategy may improve the quality of inferences[20] and support more in-depth understanding. Further, the mixed methods strategy is more difficult to complete, more time consuming and costly and importantly, both methods (qualitative and quantitative method) could be exposed to the same errors and biases. In this research, the use of a second method for supplementary purposes helped provide more in-depth understanding about waterfront development in Malaysia.

4.5 The Sequential Exploratory Mixed Methods Design

Over the years, a classification of mixed methods and multi-method designs has emerged from the literature (see Creswell, et al., 2003, pp. 214, 216-217, for more detail). As mentioned earlier, the sequential exploratory mixed methods strategy was carried out in this research where, a qualitative research investigation followed by a quantitative research was combined in a single mixed methods strategy. In short, this involved the integration of the two types of data at various stages along the research process; data collection, data analysis and interpretation (Creswell, 2003, pp. 212-215) and priority was generally given to the first phase (Tashakkori & Teddlie, 2003, p. 227). Priority was given to the first phase because it formed the basis for the research and provided the necessary information to be used as input for the

19 Triangulation is a terminology widely used within case study research. The term is originally borrowed from the land surveying discipline mainly to determine a yet unknown position (C) through the combination of two known points (A and B) by using trigonometric laws. In the social science discipline, triangulation is used for two reasons; to describe research strategies that use different approaches to answer certain research questions, or/and to improve the validity of results by collecting and analysing data from different sources and strategies within a single study (Tashakkori & Teddlie, 2003, pp. 459-460).

20 Inference is defined as "a conclusion reached" (Angeles, 1981). The term can be used by QUALs and QUANs alike because it refers to the inductively or deductively derived conclusions from a study (Tashakkori & Teddlie, 2003, p. 35).

quantitative phase which, was carried out in response to the findings derived from the qualitative phase. The findings from these two phases were then integrated during the interpretation phase (Creswell, et al., 2003, p. 227). The decision to employ two phases of data collection sequentially in a single research project was to ensure the research could generate strong and comprehensive outcomes.

Although the methods followed in each phase are discussed in detail in the following section, it is important to explain how these methods are used together. As depicted in Figure 4.1 below, a case study approach was used in the qualitative phase to provide in-depth information and attributes, which contributed to the establishment of waterfront development in Malaysia. The qualitative data was collected from multiple sources including personal interviews and document reviews. This information was then transformed into text and analysed with the help of Microsoft Excel software in order to identify current practices in waterfront development in Malaysia, to evaluate the governance and regulations that control them and to identify the important principles guiding waterfront development in Malaysia. Bear in mind that Microsoft Excel was used as a data organiser rather than for solving the research problem. The decision was made based on researcher judgment and supported by information gathered.

Data consolidation occurred when these attributes (variables) were integrated into a questionnaire which was then used in the survey questionnaire (Descriptive approach). The data consolidation stage is appropriate if the purpose of the mixed methods strategy is the development of subsequent steps in the research process[21] (Greene, et al., 1989). After the survey instrument was developed, the study moved into its second stage; the quantitative phase (as indicated in the last three boxes in Figure 4.1 below).

The survey instrument used in this study was mainly to validate whether the perceptions of waterfront development practices in Malaysia were different between waterfront development stakeholders; and also, to assist in the determination of the attributes and relationships between them in order to develop future waterfront development guidelines for Malaysia through statistical analyses, such as descriptive statistics, exploratory factor analysis and correlation. The survey questionnaire was then distributed to the respondents who were property development companies listed under Bursa Malaysia. The returned survey was then

21 Greene et al. (1989) determine five major purposes for mixed method evaluation design: Triangulation, Complementarities, Development, Initiation and Expansion.

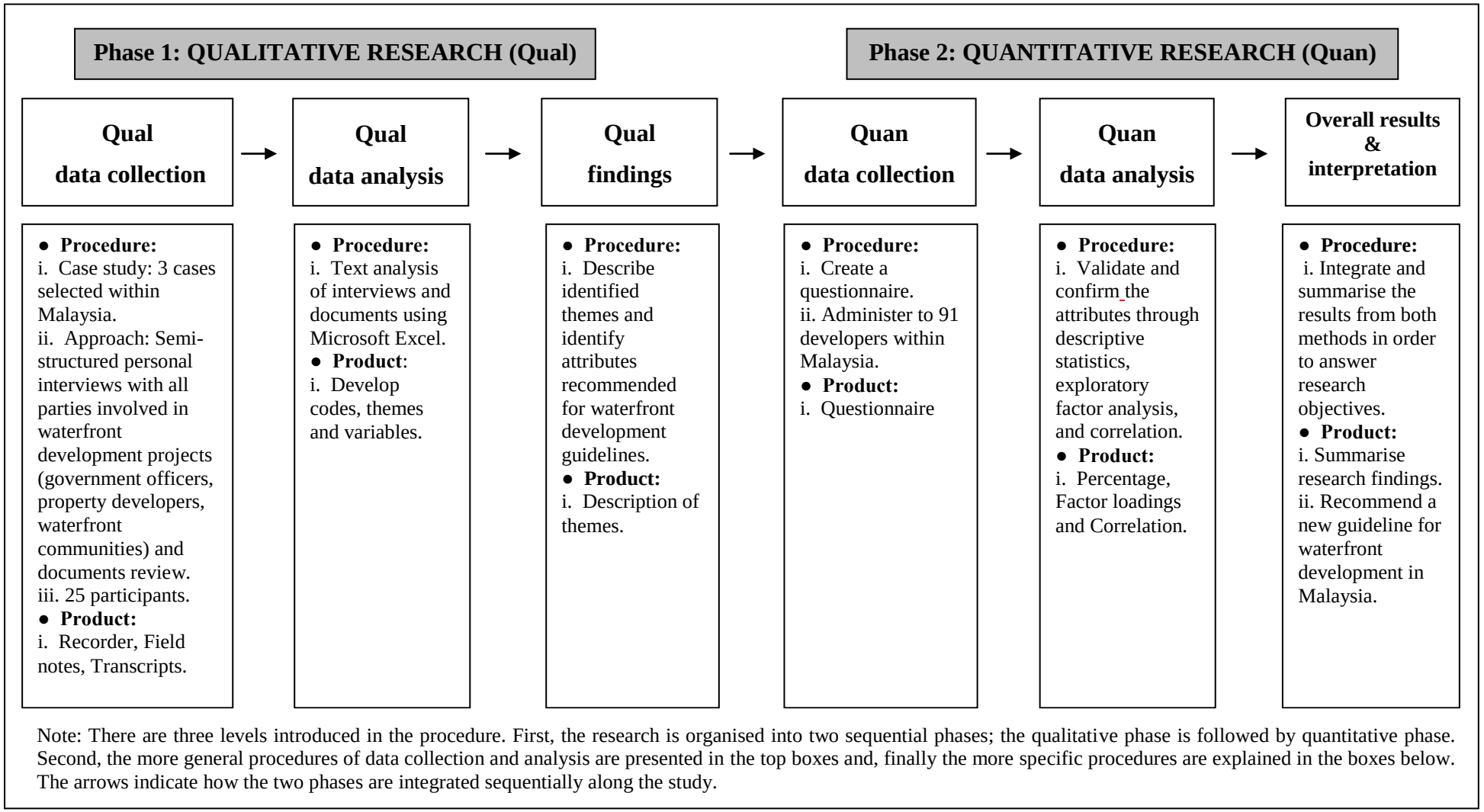
analysed using the Statistical Package for Social Science (SPSS). The quantitative phase supported the qualitative phase as stronger conclusions could be drawn (Onwuegbuzie & Teddlie, 2003). The findings were integrated within the data collection and analysis phase and conclusions were based on both methods (Creswell, et al., 2003, p. 218; Tashakkori & Teddlie, 2003, p. 687).

In short, the purpose of the mixed methods analysis in this study can be summarised as follows:

(1) The selected methods of inquiry were used to view waterfront development in Malaysia from different angles, and the results from the qualitative phase were confirmed in the quantitative phase.

(2) The case study results were used to develop a questionnaire.

(3) A description of the data collection procedures followed in the qualitative phase and the quantitative phase improved the validity of the results.



Note: There are three levels introduced in the procedure. First, the research is organised into two sequential phases; the qualitative phase is followed by quantitative phase. Second, the more general procedures of data collection and analysis are presented in the top boxes and, finally the more specific procedures are explained in the boxes below. The arrows indicate how the two phases are integrated sequentially along the study.

(Adapted from: Creswell, 2003, p. 235)

Figure 4.1: Mixed methods procedure – data collection and analysis

4.5.1 The Qualitative Phase: A Case Study Approach

A qualitative approach was adopted for the first phase in this research because waterfront development in Malaysia is a relatively new research topic, thus, an exploratory approach was used to understand its relevance from the stakeholders' perspective (Hair, Babin, Money, & Samouel, 2003). Also, a qualitative study was the most effective approach to gain an understanding of the perceptions of interviewees.

A case study approach has been used widely in various research areas (Yin, 2003) including property studies (see Bond, 2010; Bond & Cook, 2004; Guilding & Whiteoak, 2008; Hong, Ismail, & Yin, 2008; Kupke & Pearce, 2000; McDonagh, 2010; Omar, Yusof, & Samad, 2001, for examples of the case study approach). The case study is considered an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the lines between phenomenon and context are not clear (Yin, 1984, p. 23). Therefore, choosing the exploratory case study approach was well suited for this research (for the first phase) when very little information was known about the situation and little information was available on similar issues in the past. The case study was done through the collection of several sources of evidence such as interviews, documents and physical artefacts (Eisenhardt, 1989, p. 534; Yin, 1984, p. 23).

The next section explains the motivation for choosing the case study approach for this particular research, followed by an explanation of operational procedures applied along the process.

4.5.1.1 Motivation for Using the Case Study Approach

Case studies are often viewed as useful tools for the exploratory stage of research – as a basis for the development of the 'more structured' tools that are necessary in surveys and experiments. Eisenhardt (1989) said that case studies were:

> "Particularly well suited to new research areas or research areas for which existing theory seems inadequate. This type of work is highly complementary to incremental theory building from normal science research. The former is useful in early stages of research on a topic or when a fresh perspective is needed, whilst the latter is useful later."
>
> (Eisenhardt, 1989)

In addition, the case study approach was the best way to investigate new themes where new perspectives were needed (Eisenhardt, 1989, p. 543). In this research, information about the emergence and establishment of waterfront development in Malaysia was required during the exploration from the stakeholders involved in waterfront development projects. The information needed included the history of the establishment of waterfront development in Malaysia, the development process which included guidelines to control waterfront development, the level of success, and other information about waterfront development~~s~~ projects. The closeness of the case study to real-life situations was important for the development~~s~~ of a nuanced view of reality (Flyvbjerg, 2006). In addition, the researcher also required new perspectives or recommendations in order to provide a clear picture of how best practice in waterfront development~~s~~, should be implemented in Malaysia in the future.

Furthermore, a case study approach was particularly useful in generating valuable information about complex issues through the application of multiple sources of evidence, as compared to being limited to one specific data source (May, 2001, p. 173; Yin, 1984, p. 90). The in-depth focus of case studies often results in the creation of more valuable information and sufficient understanding compared to a focus on a single data source and single method (Eisenhardt, 1989; Yin, 2003). Therefore, the selection of three case studies in this research was considered more compelling and more robust (Yin, 1994, 2003). Moreover, case studies could yield more data points from different points of view – government officers, property developers and waterfront communities; so the case study approach was the most suitable method to manage and handle this situation.

Despite the many advantages offered, the case study approach has been accused of being less rigorous because of the tendency for biases, which result from subjective sampling and reliance on the researcher's interpretations. However, biases in verification do not just apply to the case study approach but, to all methods (Flyvbjerg, 2006). Hence, by employing many sources of evidence that converge in this research, it was possible to reduce bias and enhance the appropriateness of the qualitative case method. At the same time, multiple sources of evidence were used for data triangulation, which refers to the gathering of data through different sources (personal interviews and document reviews) in order to strengthen the validity and increase confidence in the interpretation of the data collected.

4.5.1.2 Case Study Design

This research developed guidelines for the best practice for waterfront development in Malaysia by considering recommendations from the various parties involved in the waterfront development projects identified. This research adopted a case study method in the first phase (the whole study uses a mixed methods strategy) aimed at an in-depth understanding for developing the guidelines. It is expected that these findings will help improve government guidelines on waterfront development and in addition, add to sustainable development in Malaysia.

Yin (2003, p. 13) emphasised the importance of case studies by stating that "case studies investigate real-life events in their natural setting". A natural setting offers researchers a unique opportunity to observe people in settings where they choose to come and engage in activities. Patton (1987) further explained that going into the field meant having direct and personal contact with people in the programme in their own environment. More than that, by employing the case study research design in particular, allowed a focus on specific cases.

In designing a case study approach, determining the unit of analysis as the first step is especially important. In this research, the case study was exploratory and the unit of analysis[22] was various waterfront developments – to investigate the thoughts of the various stakeholders participating in waterfront development projects. Specifically, each case consisted of a semi-structured personal interview with the parties involved and a review of the project proposals.

A multiple case study approach was employed in the research. As determined by Yin (1993), multiple case studies should follow a replication, not a sampling logic. This meant that two or more cases should be included within the same study precisely to predict that the similar results (replication) will be found. Using multiple-case studies in this research provided more confidence in the overall results. Consistent findings developed over the investigation of more than one case study were considered to give more robust findings (Yin, 1993, 1994). Additionally, investigating a number of waterfront development projects enhanced the accuracy, validity and reliability of the results by capturing the holistic essence of the subject studied (see Figure 4.2 for the case study design).

22 Unit of analysis is the actual source of information, such as individual, organisational document or artefact.

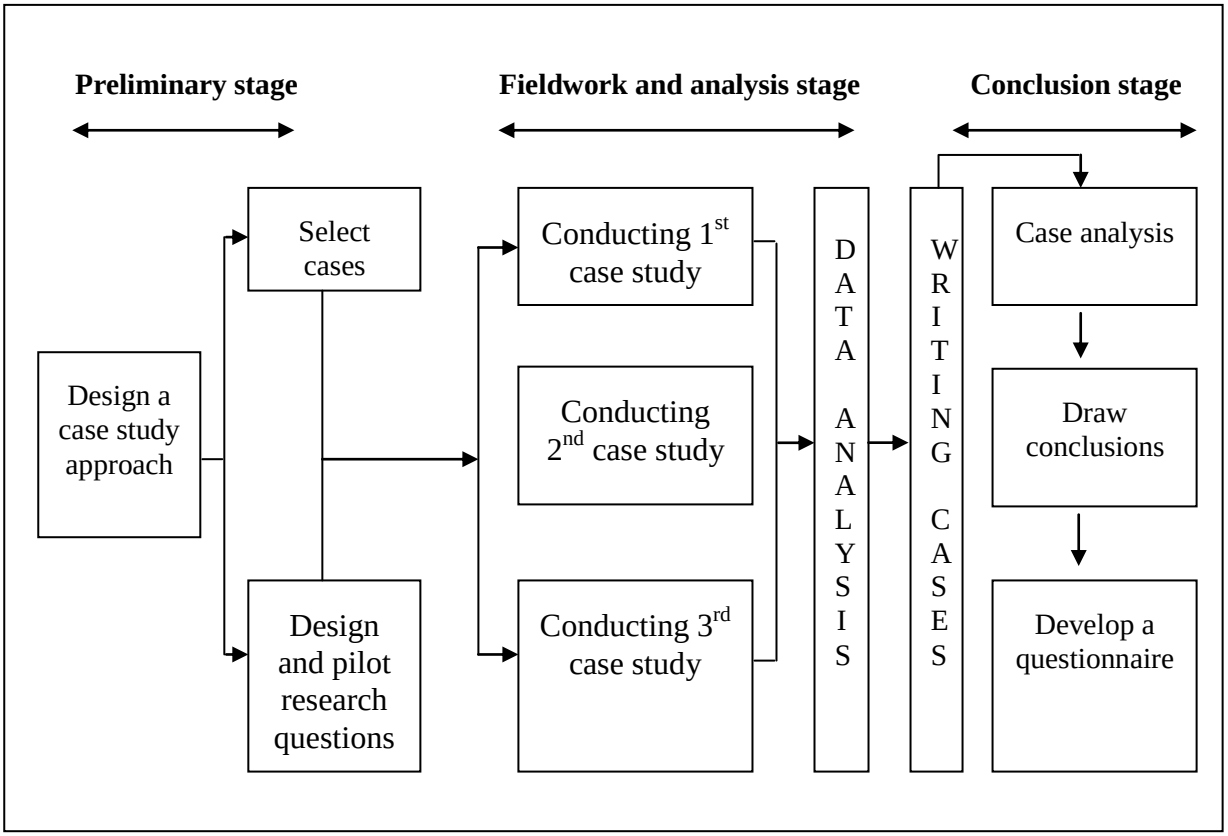


Figure 4.2: Stages involved in conducting case studies

A judgemental sampling method was adopted for selecting respondents in the qualitative phase (interviews) of this research. This was because the judgement was needed of who can provide the best information in order to fulfil the objectives of the research. The researcher only went to those people who were likely to have the required information, knowledge and willingness to share it (Kitchin & Tate, 2000). Therefore, in this research, case studies have involved the government officers, the property developers and the waterfront communities that participated in the waterfront development.

Furthermore, this type of sampling procedure is extremely useful for describing a phenomenon or developing something about which very little is known. Clearly, the number of people interviewed was less important than the criteria used to select them. This is different from quantitative studies where standard sampling (sampling logic)[23] is done objectively (Yin, 1984, p. 48).

23 According to the sampling logic, the number of respondents (or subject), are assumed to represent a large pool of respondents (Yin, 1984, p. 47).

4.5.1.3 Case Study Area

A key requirement in the selection of the case studies was that they comprise a well known waterfront development project. The other selection criteria for the cases were as follows:

(1) Waterfront area – development at the front of a river.

(2) Type of waterfront project – specifically recreational and residential.

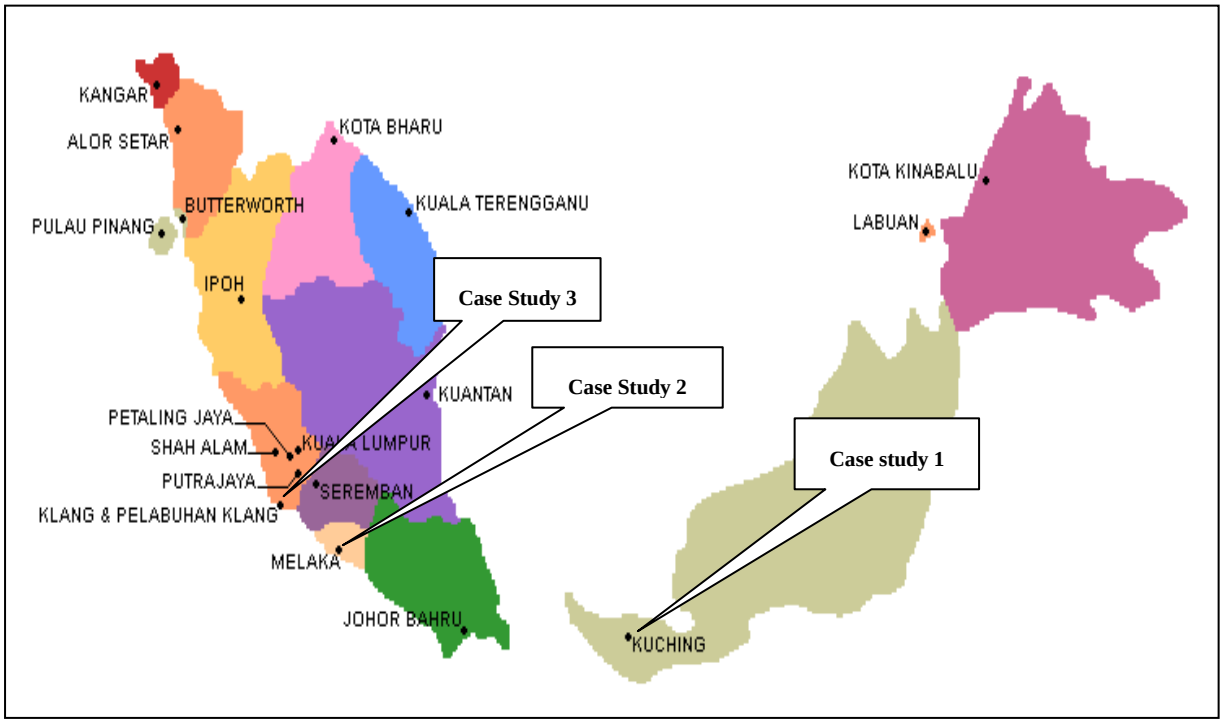
(3) Willingness of all parties involved in the development to be personally interviewed.

(4) Availability of documents related to the development projects.

(5) Project reputation as successful waterfront development.

Selection of a number of case studies with similar characteristics between them enabled literal replication to be better achieved. Moreover, it helped to ensure an adequate cover of different perspectives.

The location plan of each case study area is presented in Figure 4.3.



(Source: Selangor State Government, 2009)

Figure 4.3: Location map of the case study areas

A brief description of each case study area is presented in Table 4.1, and details of the projects are explained in the next section (Section 4.5.1.4).

The case study cannot be used to make generalisations from the sample to a population as is done in statistical methods, because sampling is done purposefully and is not random (Yin, 1993, p. 91). Case studies, however, allow generalisations to be made that can lead to some form of replication (Yin, 1993). For example, generalisations on particular issues in waterfront development can be drawn from similar thoughts identified from different sources within the multiple cases studied.

It must be stressed that the aim of the qualitative phase in this study was exploratory. As such, the small sample size was not the issue that it would have been in quantitative research because it enables generalisations to be made about the underlying population (Onwuegbuzie & Leech, 2005). In fact, a feature of qualitative sampling is that the number of cases is often small because qualitative investigation aims at depth as well as breadth which would make analysis of large numbers of in-depth interviews unmanageable (Ritchie & Lewis, 2003).

Table 4.1: Characteristics of case studies areas

Case study area **Feature**	**Kuching Riverfront**	**Malacca Waterfront**	**Glenmarie Riverfront Cove**
Name of water body	Sarawak River	Malacca River	Langat River
Type of project	Recreational	Recreational	Residential
Project's Owner	State of Sarawak	State of Malacca	DRB-HICOM
Amenities	Restaurants, river access, Shops, waterfront settlement	River access, shops, waterfront settlement.	Restaurants, housing, river access.
Views	River views and city	River views and city	Limited river views
Proximity to river	50 m	50 m	100 m
Proximity to CBD	1 km	1 km	35 km

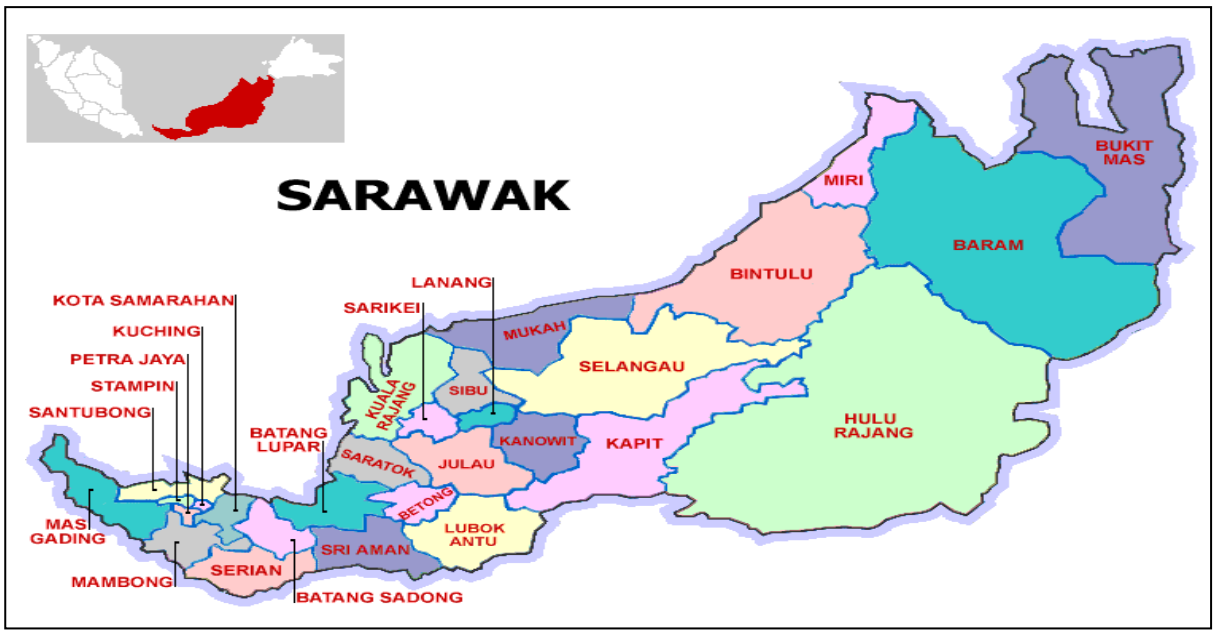
4.5.1.4 Description of Case Study Areas

Details of the projects are explained as follows;

CASE STUDY 1: <u>Kuching Riverfront, Kuching City, Sarawak, Malaysia.</u>

The first case study was conducted in the state of Sarawak in the project area known as Kuching riverfront.

Sarawak is separated from Peninsular Malaysia by about 600 kilometres by the South China Sea. Located on the western island of Borneo with a land area of approximately 124,459 kilometres square, Sarawak is largest state of Malaysia. Sarawak is also known as "the land of many rivers". As home to the 590 kilometres long Batang Rajang River, the country's longest river provides a natural means of transportation and communication and Sarawak is blessed with much biodiversity (Sarawak Government Official Portal, 2009). The location map of Sarawak Riverfront is shown in Figure 4.4 below.



(Source: Sarawak Economic Development Corporation, 2009)

Figure 4.4: Location map of Sarawak Riverfront, Malaysia

Kuching, the capital of the state of Sarawak is the largest city in Sarawak and is the fourth largest city in Malaysia after Kuala Lumpur – Klang Valley, Penang and Johor (Butler, 2009; Sarawak Government Official Portal, 2009). The population in Kuching is about 623,660 people and Chinese make up almost 40% of this population (Malaysian Department of

Statistics (Sarawak Branch), 2009). Kuching is a river city, which is situated on the banks of the Sarawak River on the North-Western part of the island of Borneo. In days gone by the river was the city's main highway. The river still retains its importance and enchanting natural beauty. Present day life is still concentrated on the riverfront.

Kuching Riverfront is an approximately 1.0 kilometre long riverside esplanade from the heartland of the city to downtown Kuching. The Kuching Riverfront was developed as part of the revitalisation of the river frontage to the city of Kuching. It was the brainchild of the Chief Minister of Sarawak as a tribute to the people of the state. The layout for Kuching Riverfront is shown in Figure 7.2 below.

The riverfront marketplace of Kuching had lost its traditional significance as a regional distribution, trading and retailing centre for Kuching and its hinterlands. Instead it became dirty and dilapidated and a focal point for unhealthy activities. In returning the forgotten riverfront to the people, the Kuching Riverfront development seeks to draw them once again to its banks and renew the vibrant relationship they once shared. It is also aimed at improving the quality of life of the local residents. The river park is thus known as "The People's Place".

The development of the project was fully funded by the State Government. Construction began in the year 1991 and was completed in August 1993. The Kuching Riverfront was officially launched by the Chief Minister on 3rd September 1993. The developments aimed to create a new image for the city of Kuching as well as to provide benefits to other parties; local residents, the government and tourists. Summaries of the Kuching Riverfront developments project are presented in Table 4.5 below.

The Kuching Riverfront development was inspired by the Sydney Waterfront, Sydney, Australia, one of the most established waterfront development projects in the world. However, the development's concept blends the historical and cultural setting with the provision of facilities and activities for tourists and the community, and particularly families.

(Source: Sarawak Economic Development Corporation, 2009)

Figure 4.5: Layout for the Kuching Waterfront development

Table 4.2: Details of Kuching Riverfront development project

Item		Details
Developer	:	Sarawak Economic Development Corporation (SEDC).
Consultants	:	Conybeare Morrison & Partners (Australia). United Consultants (Sarawak, Malaysia).
Contractors	:	PPES Bena Sdn Bhd. Utraco (M) Sdn Bhd.
Project cost	:	Malaysian Ringgits 89.90 million.
Area of Developments	:	The south bank of the Sarawak River from the Holiday Inn to the Vegetable Market – approximately 1.0 kilometre.
Features	:	(1) Fountains – musical; conventional fountain with sculpture "birds in flight". (2) Audio visual centre on the history and tourist attractions of Sarawak at the Square Tower – 22 metres high for viewing the Astana and the Serpentine River. (3) Godown Amphitheatre – 150 numbers of seats with open concept amphitheatre. (4) Tables and stools clustered together under umbrellas/shades for eating, relaxing and other purposes. (5) Childrens playground with the theme "from the mountains to the sea". (6) Rotunda – shelter with decorative motif on the floor. (7) A historical structure - Chinese pagoda. (8) Eating area and eating outlet. (9) Handicraft stalls. (10) Floating pontoons – for berthing of leisure boats, recreational fishing etc. (11) Chinese museum. (12) Tambang jetty – traditional river ferry. (13) Promenade with ethnic motif. (14) History walk – plaques on the history of Sarawak laid along the promenade. (15) Waterfront square – a venue for civic and cultural events, recreational activities, and platform for viewing riverside events.

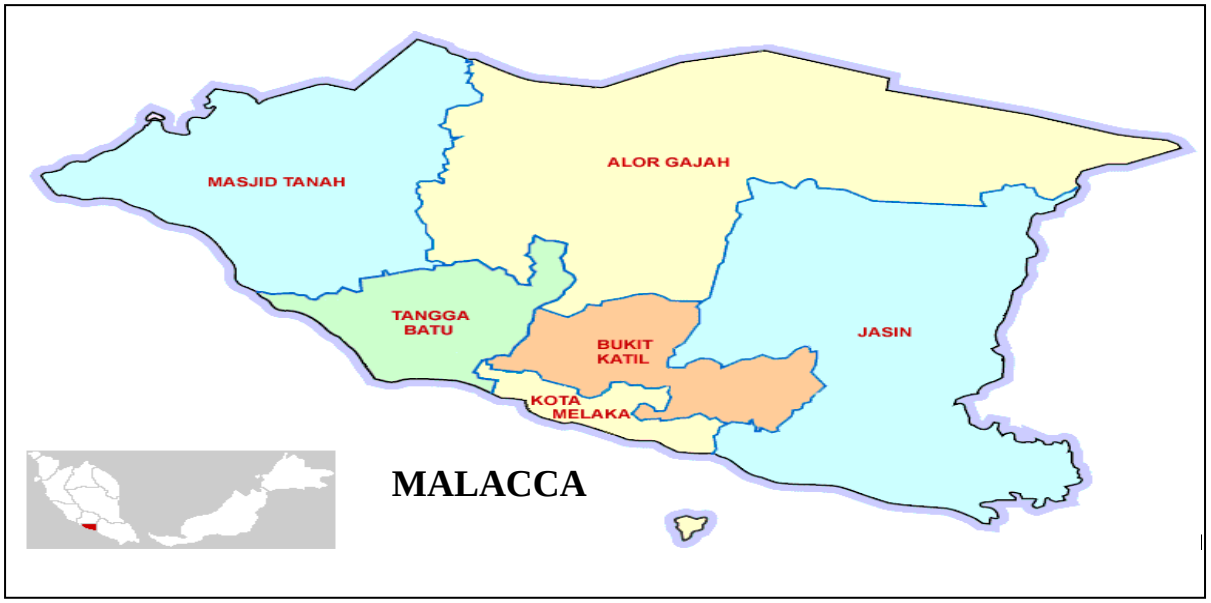
(Source: Sarawak Economic Development Corporation, 2009)

CASE STUDY 2: <u>Malacca Waterfront, Malacca City, Malacca, Malaysia</u>

The second case study was conducted in the state of Malacca, Malaysia and the development project is known as the Malacca Waterfront. Malacca is located on the West Coast of the Peninsular Malaysia, about 147 kilometres from Kuala Lumpur. The state of Malacca covers an area of 1,650[24] square kilometres and is divided into three regions namely; Central Malacca, Jasin, and Alor Gajah (State Government of Malacca, 2010). Strategically situated

24 Malacca is the third smallest state in Malaysia after Perlis and Penang, with a total population of about 738,8000 peoples (estimated 2007) (State Government of Malacca, 2010).

facing the Straits of Malacca in the west and faces the South China Sea in the east, Malacca state is considered as a seaside city. The location of the Malacca Waterfront is presented in Figure 4.6 below.



(Source: State Government of Malacca, 2009)

Figure 4.6: Location map of State of Malacca, Malaysia.

Historically, Malacca was a major maritime trading centre[25] to all over the world and had a lot of conquerors in past centuries; Chinese, Portuguese and Dutch. Malacca is a wonderful repository for its cultural heritage, and in 1989, Malacca was declared as Malaysia's historic city and has been listed as a UNESCO World Heritage Site[26] since 7th July 2008. Presently, Malacca is well known as a tourism centre for Malaysia.

The Malacca River is the main waterway in the state of Malacca which flows through the middle of the town, and was once an important trade route in past centuries (Malacca Sultanate). Therefore, the 3.8 kilometres long Malacca River flows calmly and provides limitless functions (such as transportation, a source of food, settlement, and a source of drinking water) to waterfront communities.[27]

25 Malacca was a major port along the spice route, and its harbour bristled with the sails and masts of Chinese junks and spice loaded vessels.

26 A World Heritage site is a place such as a forest, lake, desert, monument, building, complex or city that is listed by UNESCO as having special cultural or physical significance.

27 Waterfront settlements emerged and established along both sides of the Malacca Riverbanks during Dutch rule.

Through hundreds of years, the Malacca River has changed its role from a busy major port along the spice route to a tourist attraction. Since 2002, the state of Malacca has been proactive in developing the abandoned riverbanks, and the City Local Authority was mandated to initiate the development project, well known as the Malacca Waterfront development project. The proposed project covered from Watergate (Straits of Malacca) and adjacent areas to the areas of Portuguese and Dutch origins.

The project aimed to create a new image for the Malacca River and regain its historical status. With the development aim of "beautification and rehabilitation", the Malacca Waterfront development project expected to have pollution free water, beautiful gardens along the riverbanks and pedestrian walkways. Specifically, the project had the following objectives:

(i) To ensure that the riverfront retains its strong links with the city's heritage;

(ii) Creating opportunities to initiate lively riverside activities along the river for commercial and tourism purposes;

(iii) To enhance and reinforce the riverfront character and be an integral part of living in the city of Malacca;

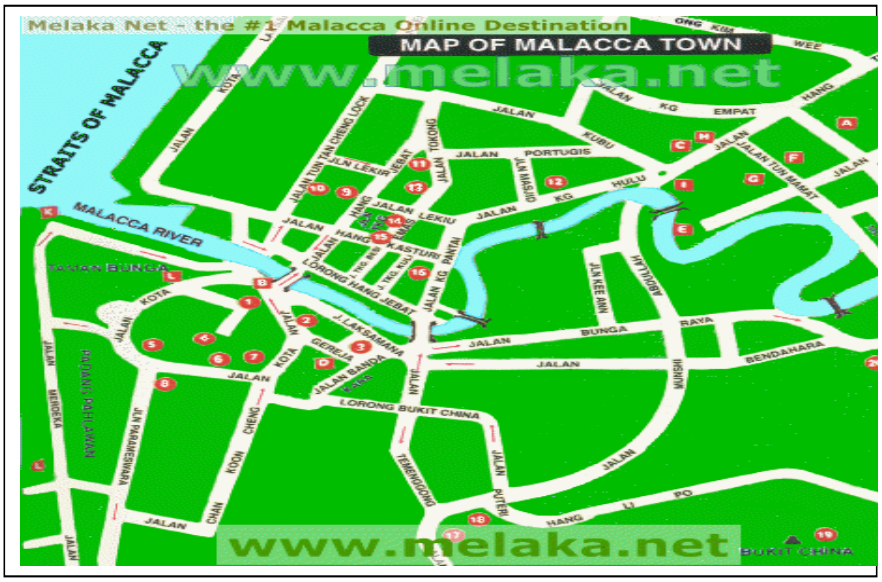
(iv) To introduce pockets of gardens and spaces, proper and wide pavement esplanade walkways complemented by landscape design;

(v) Introduce an interceptor sewer to channel all raw sewage, rubbish and debris away from the river;

(vi) Introduce new vehicular and pedestrian bridges, jetties and waterfront activities to rejuvenate the maritime history of the city;

(vii) Possible introduction of a barrage system to control the water levels in the river from tidal changes.

The Malacca Waterfront development project is modelled after the San Antonio Riverfront, in the United States. Fully government funded the project was divided into four phases focusing on construction of the wave breaker, a promenade, a sewage system, landscaping, boat mooring facilities and the installation of lighting. Figure 4.7 presents the layout of the Malacca Waterfront development project.



(Source: State Government of Malacca, 2009)

Figure 4.7: Layout for Malacca Waterfront development

The first phase of the Malacca Waterfront project was started on 1st July 2002 and was successfully completed in the middle 2005. The 2nd phase commenced on November 2005 and continued on from the first phase activities. The 3rd and 4th phases focused on cleaning up the water and controlling water levels for boating and cruising activities and commenced in the year 2006. The total cost of the project in Malaysian Ringgits is 320 million (NZ$ 139 million). The project was completed in 2010. Table 4.3 summaries the Malacca Waterfront development project.

An extensive waterfront redevelopment project has successfully transformed the Malacca River from a once dirty muddy river way to a colourful waterway. City residents and tourists can now enjoy a continuous riverfront walk from Hang Jebat Bridge upriver, all the way to the tourist areas of the old port near the Syed Abdul Aziz Bridge. In recent years, the Malacca Waterfront has become one of the most prominent places for tourists visiting Malacca and Malaysia.

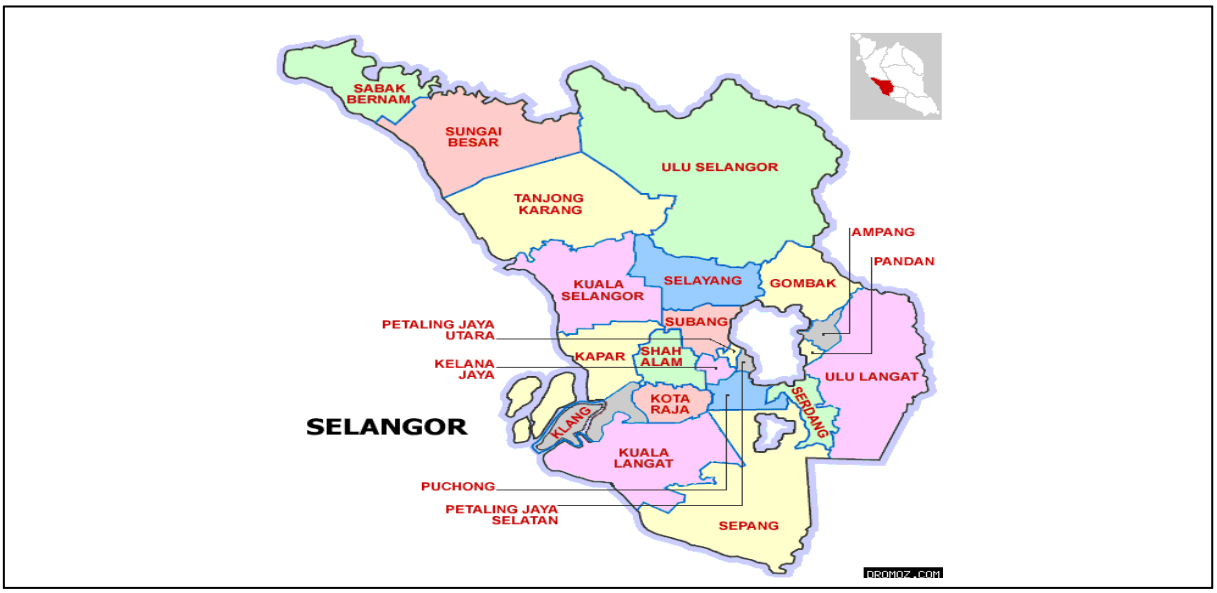
Table 4.3: Description of the Malacca Waterfront development project

Phase of development	Descriptions
Phase 1	
Cost	Malaysian Ringgits 91,200,000 (NZ$ 39,600,000)
Budget	Malaysian Ministry of Tourism.
Duration	31 months (01st July 2002 – 31st January 2005).
Scope of Work	Soil investigation, Develop a retaining wall, Soft and hard landscape, Develop a pavement, Upgrading sewerage system – pipe laying, Develop sewer treatment plant.
Contractor	Pembinaan Kaleigh Sdn Bhd – Pesona Metro Sdn. Bhd. (Joint-venture).
Status	Completed.
Phase 2	
Cost	Malaysian Ringgits 49,950,000 (NZ$ 21,717,000).
Budget	Ministry of Natural Resources and Environment.
Duration	20 months (01st November 2005 – 30th Jun 2007).
Scope of Work	Develop a pavement (Continue from 1st phase), Develop boat stop (river taxi and tour boats), Soft and hard landscape, Upgrading sewerage system – develop interceptor sewerage, Develop retaining wall, Electricity works, Develop drainage outfall and Gross Pollutant Traps (GPT).
Contractor	Pembinaan Kaleigh Sdn Bhd – Pesona Metro Sdn. Bhd. (Joint-venture).
Status	Completed
Phase 3	
Cost	Malaysian Ringgits 93,000,000 (NZ$ 40,430,000).
Budget	Ministry of Natural Resources and Environment.
Duration	23 months (01st August 2006 – 31st July 2008).
Scope of Work	Develop a tidal barrier, Develop a pavement, Develop causeway, Electricity works, Soft and hard landscape.
Contractor	Pembinaan Kaleigh Sdn Bhd – Pesona Metro Sdn. Bhd. (Joint-venture).
Status	Completed.
Phase 4	
Cost	Malaysian Ringgits 90,398,000 (NZ$ 39,300,000).
Budget	Ministry of Natural Resources and Environment.
Duration	24 months (31st January 2008 – 30th January 2010).
Scope of Work	Upgrading a pavement bridge for Kg. Morten bridge, Cathay bridge, Pasar bridge, Kg. Jawa bridge. Upgrading bridge for vehicles for Hg. Jebat bridge, Hg. Tuah bridge, Chan Koon Cheng bridge, Tan Kim Seng bridge. Develop retaining wall. Develop a pavement for Kg. Morten. Develop a pavement from causeway to Syed Abdul Aziz bridge.
Contractor	Kejuruteraan Asas Jaya Sdn Bhd.
Status	Completed.

(Source: State Government of Malacca, 2009)

CASE STUDY3: <u>Glenmarie Cove Riverfront Development, Selangor, Malaysia</u>

Located on the West Coast of Peninsular Malaysia, at the northern outlet of the Straits of Malacca, Selangor is known as the heartland of the nation. Selangor's land area is approximately 8,000 square kilometres and was Malaysia's most populous state, with about 5.2 million (estimated 2009) inhabitants. As well as an aadvantageous geographic position, Selangor is blessed with rich natural resources; natural forests, waterfalls, hills, and lakes to complement its many man-made attractions. Today, Selangor is the industrial hub of Malaysia[28], and is the most prosperous and developed state in Malaysia. Figure 4.8 shows the location map of the state of Selangor, Malaysia.



(Source: Glenmarie Cove Development Sdn. Bhd., 2009)

Figure 4.8: Location map of Selangor, Malaysia

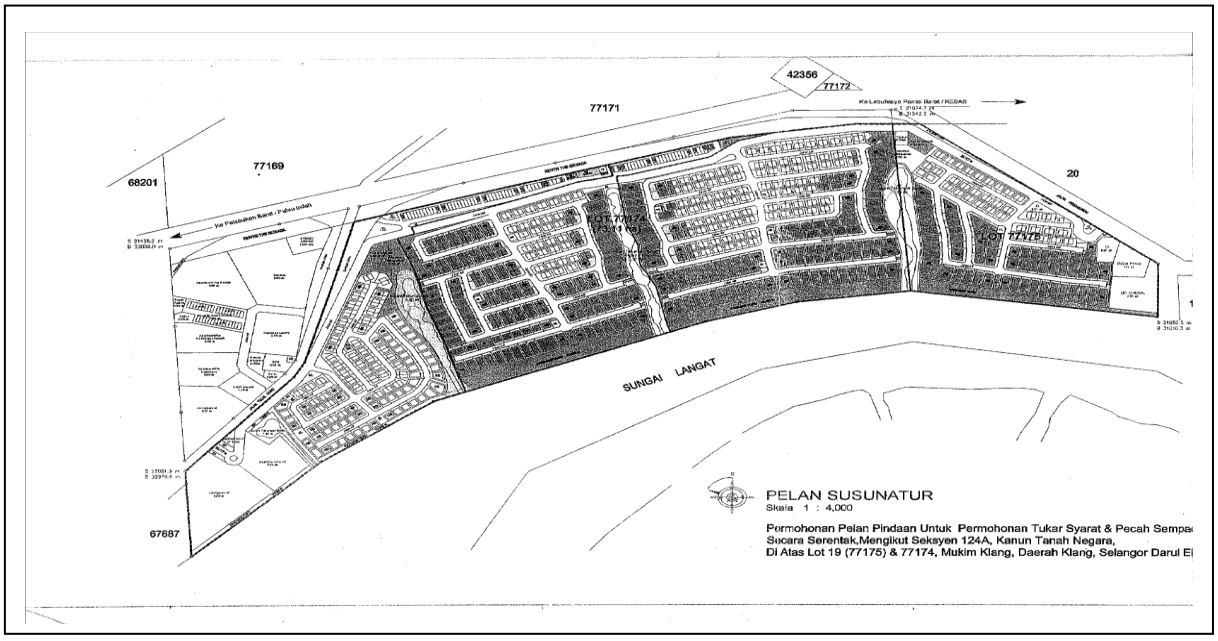
Historically, Selangor was a tin mining area and had the busiest port (port Klang) to cater to the tin mining trade. Surrounded by the river both to the north and south, Selangor is dominated by fishing villages on the coast and villages inland. Langat River in Selangor[29] is 120 kilometres long and flows from the main range (Gunung Niang), up to the Straits of Malacca.

28 The country's largest industrial site is located in Shah Alam, Selangor.

29 As well as the Langat River are Klang River, Penchala River, Gombak River, Ampang River, Damansara River, Bernam River, and Kemensah River.

Historically, the Langat River was the main source of communications and transportation between the waterfront community[30] and foreign traders during the early days. In recent years, due to developments and modernisation, the Langat River became polluted (Malaysian Department of Environment, 2006), and this also affected other rivers that flow from the Langat River, such as the Sungai Balak, the Sungai Batang Benar, and the Sungai Pajam.

Glenmarie Cove is situated between the established townships of Subang Jaya and Klang Town Centre. A gated and guarded residential scheme, Glenmarie Cove covers an area of 80.94 hectares along the banks of the Langat River. The low density development offers a life style with the vibrancy of a riverfront along with a range of homes designed to complement the green surroundings and shimmering waters. Glenmarie Cove is the model of Malaysia's riverfront living. The riverfront concept is a unique factor that enhances the value of the Glenmarie Cove. The layout of the Glenmarie Cove Riverfront development is presented in Figure 4.9 below.



(Source: Glenmarie Cove Development Sdn. Bhd., 2009)

Figure 4.9: Map of Glenmarie Cove, Selangor

30 Tin Mining traders settled along the river in Selangor, and early human settlement and towns were developed, such as Dusun Tua, Cheras, Kajang City, Dengkil, etc.

4.5.1.5 Preparation and Collection of Data

A purposive sampling procedure was used in this research. A representative from each case study area was contacted by telephone and the purpose of the research was briefly explained to them as well as the list of information needed that was required to be surveyed. In short, the names of respondents were initially determined by the management of each organisation through company records based on their job responsibilities, position and involvement in the subject being studied. However, respondents were also selected on the basis of the researcher's individual knowledge that they could provide the necessary information needed in this research.

As the interview[31] was the primary data gathering instrument in the qualitative phase, a semi-structured personal interview with the named respondents suggested by the company representatives was chosen. The objective of a semi-structured approach was to understand the respondent's point of view rather than make generalisations. This would provide sufficient flexibility and the best information about the subject under discussion based on their respective interpretations. The interview questions were carefully designed to assist in conducting the interviews and to provide adequate coverage for the purpose of the research. Major questions were developed in the form of a general statement which was then followed by a sequence of sub-questions that probed further. The questions were then piloted with four identified stakeholders – a property developer, two government officers and one academic in property studies in Malaysia. They were selected based on their willingness to share the information needed. The pilot was aimed at identifying ambiguities, helping to clarify the wording of questions and permit the early detection of any necessary additions or omissions. The interview questions were then adjusted after the pilot case. See Appendix B for the interview questions used in semi-structured interviews.

The waterfront development study in this research required data collection from within Malaysia. As determined by the government of Malaysia, all researchers[32] are required to obtain approval from the Economic Planning Unit for any research that requires data from

31 The interview is a form of gathering of information through direct communication between two or more individuals, while the face-to-face interview refers to a conversation between two individual (interviewer and interviewee) as a platform for gathering information (Zikmund, 2003).

32 According to the Economic Planning Unit (1999), for the purpose of this regulation, the term "Researcher" refers to foreign nationals or Malaysians from foreign institutions and/or organisations who scientifically and objectively research a particular area or problem.

Malaysia (Economic Planning Unit, 1999). The General Circular No. 3 Year 1999[33] contained the regulations pertaining to conducting research in Malaysia. The approval process took about two months and the research pass was collected by the researcher before commencing the research. See Appendix C for the research pass and approval letter from the respective organisations.

All parties involved in waterfront development projects (as recommended by appointed representatives) were contacted by telephone and electronic mail to inform them about the research and to determine a date for the personal interview. This was followed up with a formal letter containing the purpose of the research and other details, as discussed on the telephone. See Appendix D for an example of the letter sent to all interviewees. Next, in order to confirm acceptance a letter confirming the date for the interview and, a follow up call was also made.

The interviews were recorded with a digital recorder to ensure an accurate account of the conversations and to avoid losing data, since not everything can be written down during an interview. Every record was labelled with the name of the interviewee in order to organise the information. Then, the information was transcribed into Microsoft Word documents before analysis.

Besides the in-depth interviewing, the data collection included analysis of documentary sources related to each waterfront development project. Documents were collected from the respondents' offices that were made available for the purpose of the research. This was important to supplement and compensate for the limitations of the other methods. The documentary evidence acted as a method to cross-validate information gathered from interviews, which was sometimes different (what people say was sometimes different from what people do). Moreover, the documents provided guidelines to assist the researcher with inquiries during the interview. In order to achieve the research objectives, official and unofficial documents and records relating to the project's development process were reviewed and analysed. Thus, the integration of multiple qualitative techniques from the case studies research, enhanced the validity and reliability of the findings from this research.

33 The objectives of the General Circular No. 3 Year 1999 are; (1) to ensure all research conducted is registered with a central registry, (2) to ensure that the results of the research are beneficial to the country, (3) to ensure that no specimens are taken out of the country without the approval of the department concerned, and (4) to monitor that which is sensitive in nature in order to protect the nation's image and safeguard the national interest.

A data base was created to store all data collected and procedures followed, in the case study. Data was either stored electronically or in hard copy (transcription of interviews, proposal of the developments projects), while procedures followed were documented (e.g. time, place and order in which interviews were undertaken). Instead of assisting in increasing the reliability of the research by providing a chain of evidence (Yin, 1984, p. 96), the case study data base was a formal procedure for organising all the evidence. The main objective was to arrange, categorise and document the data collected to assist the management of the cases and to make the primary evidence generated in the study available to other researchers (Yin, 1984, pp. 92-93).

4.5.1.6 Data Analysis

The recorded interviews with the respondents were transcribed along with the data collection procedures. Interviews with the respondents in the case studies were sometimes conducted in English, as this is Malaysia's second language after Bahasa Malaysia which is the official language of Malaysia. However, most respondents preferred to have the conversation in Bahasa Malaysia. These English interviews were directly transcribed and then referred to as 'original transcription'.

The conversations in Bahasa Malaysia were translated and then referred to as 'translated transcription' in the data interpretation, presented in Chapter five and onwards. All respondents were given pseudonyms to ensure they remained anonymous in the reporting of the research findings. For example 'G' prefixed the government officer, and 'P' referred to private and waterfront community.

The next analytical process involved a coding process to identify key themes and patterns in the research. The bulk of the data was organised in categories such as - river's significance and transformation factors for waterfront, and effectiveness of waterfront regulations (to name two categories created in this research). The coding process helped to create patterns and links between categories, supporting further analytical thinking towards establishing the conceptual themes of the research. Six themes were identified namely: (i) waterfront development in Malaysia – in the past, (ii) waterfront development in Malaysia – present, (iii) the waterfront development process, (iv) waterfront development effects, (v) regulations for waterfront development, and (vi) recommended guidelines for best practice for waterfront development in Malaysia. These themes were interrelated and presented in Chapter five – Qualitative results. A summary of the data analysis process is presented in Figure 4.10.

The analysis in this research was exploratory in the sense that attributes associated with waterfront development were identified but, only tested later during the quantitative phase. The results of the case study are discussed in Chapter five – Qualitative results. The case study results were used in the development of the questionnaire. The questionnaire was sent to an expert panel consisting of ten persons in order to increase the reliability and to construct validity through investigator triangulation. Their suggestions were included in the survey questionnaire – with amendments.

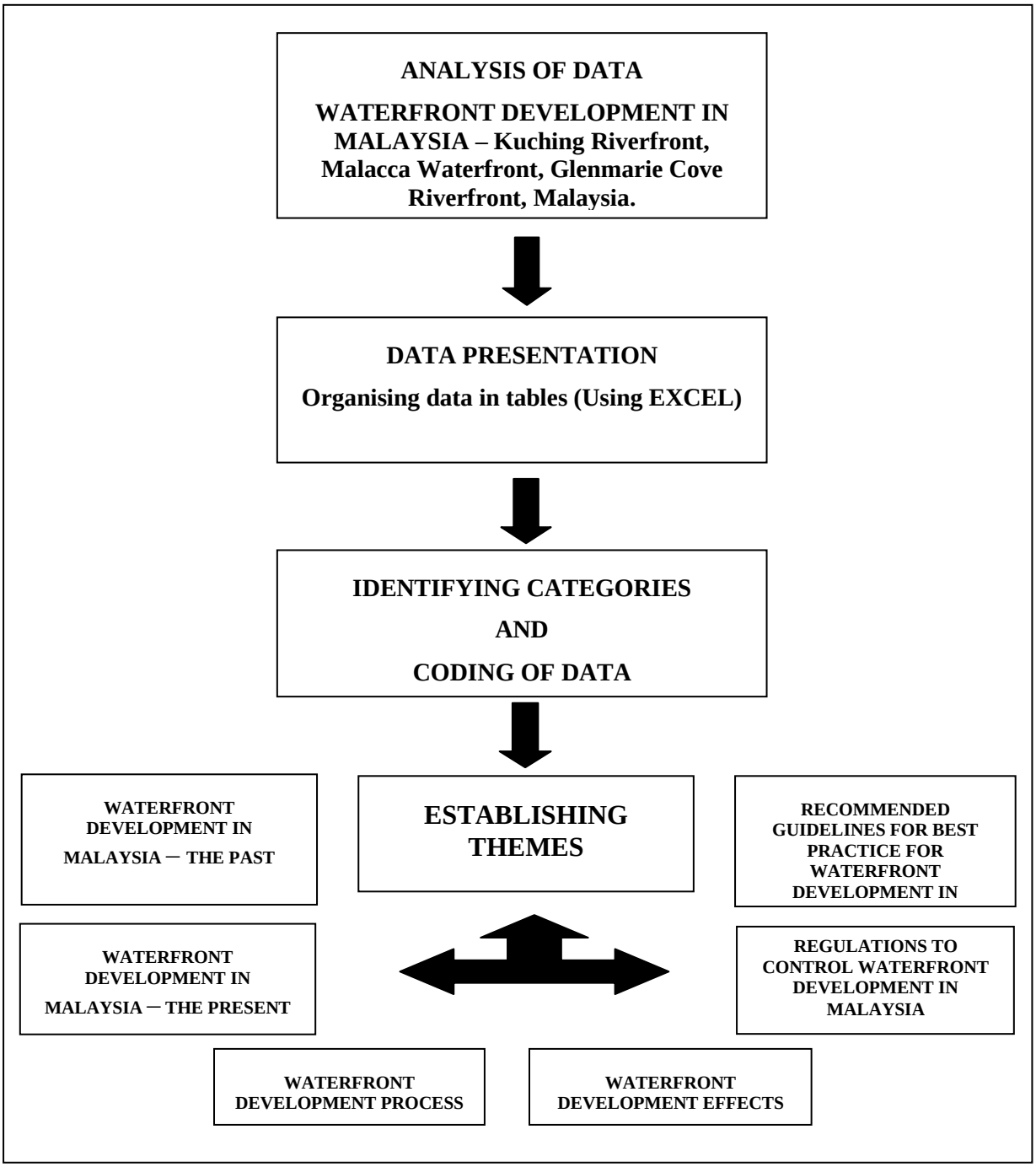


Figure 4.10: Summary of data analysis

4.5.2 The Quantitative Phase: A Survey Approach

A survey is a research technique for gathering information from a representative sample of individuals through communication either verbally or written (Fink & Kosecoff, 2005; Zikmund, 2003). In this research, a quantitative survey method was adopted as a strategy for the second phase of the data collection. In the quantitative phase, the questionnaire developed in the qualitative phase was used in a survey of property developers in Malaysia. The purpose of the quantitative phase was to confirm the findings reached in the qualitative phase and provide more support for these findings. Moreover, once information and attributes related to waterfront developments in Malaysia, such as recommendations for best practice for waterfront guidelines for future waterfront development projects were known, (during the qualitative phase), they were subjected to quantitative testing for confirmation.

The survey was carried out within Malaysia and the respondents were property developers listed under Bursa Malaysia. The following section discusses the sampling method employed in this research and is followed by the instrument design and distribution and finally, the analysis procedures.

4.5.2.1 Sampling Method

Generally, a sample is a finite part of a statistic, to gain information about the whole property under study. In particular, sampling is defined as the act, process or technique of selecting a suitable sample or a representative part of a population, for the purpose of determining parameters or characteristics of the whole population (Cooper & Schindler, 2006). As well as saving time and effort, sampling was also important for gathering consistent, accurate and unbiased estimates of the population's status in terms of whatever was being researched (Sapsford & Jupp, 2006).

In this research, a stratified sampling procedure was used as part of probabilistic sampling (Sapsford & Jupp, 2006; Sekaran, 2003). This sampling procedure is considered to be the most popular procedure in survey research, allowing the researcher to group the sample based on specific variables such as financial status and company profile. The percentage of each subgroup in the entire population is maintained in the sample. Furthermore, a stratified sampling technique is more representative and time saving and is an economic means to obtain a sample from the population (Newman & McNeil, 1998).

The sample data comprised firms listed under the property counter that traded at Bursa Malaysia during 2009. Considering that a waterfront development project requires strong financial records and sufficient and efficient management teams as well as excellent experience in the past, the selection of property development companies who were listed in Bursa Malaysia was therefore appropriate. As stated by Bursa Malaysia, only 91 property development companies were listed in 2009 (Bursa Malaysia, 2009). See Figure 4.11 for the stratified sampling procedure employed in this research and Appendix E for the list of property development companies listed at Bursa Malaysia in 2009.

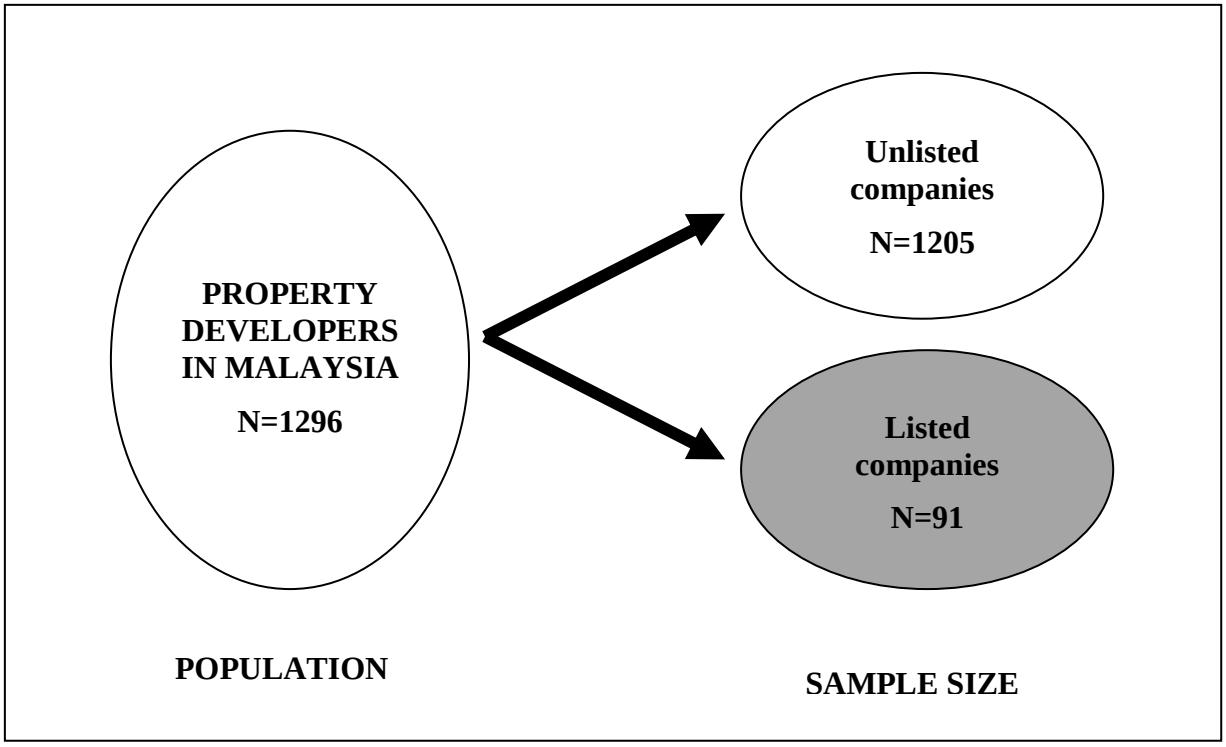


Figure 4.11: Sampling procedure used in this research

The sample size can be interpreted as covering two groups namely, unlisted companies with N=1205 and, listed companies N=91. A sufficient sample size[34] was important to maintain the accuracy of the research (Kumar, 2005; Zikmund, 2003). Hair et al. (1998) noted that a minimum sample size required for statistical analysis (e.g. factor analysis) is 100 while some researchers used sample sizes from 250 to 500 respondents (Schumacker & Lomax, 1996). Even though the acceptable numbers for a sample size varies between many researchers, typically, a larger sample size leads to increased precision in the estimates of various

34 Sample size is defined as the actual number of subjects chosen as a sample to represent the population, and further that it could be determined by estimating the variance of the population, the magnitude of acceptable error, and the confidence level (Sekaran, 2003; Zikmund, 2003).

properties of the population (Newman & McNeil, 1998, p. 49). However, larger samples can be unsuitable because of their increased cost (Ruane, 2005). Hence, the exact figure is not significant as long as the information obtained is from a representative sample although a smaller sampling ratio is needed to maintain accuracy (Ruane, 2005).

4.5.2.2 The Questionnaire Design: A Self-administered Questionnaire

A questionnaire is a written instrument used to obtain information from a study's subject. According to Zikmund (2003), a well-designed and administered questionnaire could facilitate the researcher to address the research objectives. Zikmund (2003) stated that as a "rule of thumb" in designing a questionnaire, it should be as simple as possible, collect only the needed information and be valid. In short, the questionnaire design must be able to be generalised and have a degree of freedom for respondents when answering questions.

In this research, self-administered questionnaires[35] and the accompanying covering letter were mailed to the respondents who completed them individually. The aim was to motivate the respondents to answer the attached questions and then achieve as high a respondent rate as possible (Bourque & Fielder, 1995, p. 126). Despite several advantages (i.e. inexpensive, convenient for time and flexible), a self-administered questionnaire presents a challenge to the researcher because the researcher relies on the clarity of the written questions rather than on her/his skills (Bourque & Fielder, 1995; Zikmund, 2003). Also, the response rate tends to be much lower with mailed questionnaires as compared to other modes (Singleton & Straits, 2010). Moreover, it also introduces a non-response bias as any doubts respondents might have cannot be clarified. Nevertheless, the selection of experienced respondents regarding waterfront development would increase the response rate and several follow-ups should yield the most reliable information, especially when closed-ended questions are used and the questionnaire is well structured (Singleton & Straits, 2010). This will result in the researcher achieving the research objectives.

This specific questionnaire survey among selected property developers was designed to examine several attributes of waterfront development in Malaysia as well as to determine the characteristics for best practice for waterfront development guidelines in Malaysia. It sought

35 A self-administered questionnaire is defined as "a questionnaire that is filled in by the respondent rather than by an interviewer" (Zikmund, 2003, p. 212) and mailing the survey is the technique to administer the questionnaire to the respondents.

to identify the important characteristics that would make a significant contribution towards developing guidelines for future waterfront development in this country. The questionnaire structure, the pre-testing procedures, the questionnaire distribution process and finally, the data analysis are discussed in the following sections.

4.5.2.2.1 The Questionnaire Structure: Closed-ended Questions

As explained in an earlier chapter, the quantitative phase (the questionnaire survey) in this research was conducted mainly to statistically test the information gathered during the qualitative phase (the interview approach). The questions in this questionnaire were developed using attributes or information gathered in the first phase of data collection (where the face-to-face interview approach was used).

In this research, closed-ended responses were employed in designing the questionnaire questions. Once the exploratory stage is completed, questionnaires may use predominantly closed-ended questions, which are sometimes called the fixed-alternative questions, to focus on the issues identified as relevant to the investigation (Singleton & Straits, 2010). This common structure was necessary to gather a sufficiently large body of comparable data across different respondents in order to made statistical inferences.

Furthermore, several categories of closed-ended questions[36] were used in designing the questions, as recommended by Zikmund (2003, p. 333). The choice of closed-ended responses will expose the research to a limited number of answers – requiring only recognition and a choice from among answer options. However, the inclusion of 'other – please specify' categories in the questionnaire will not confine the respondents to within the answers suggested. Moreover, the "other" option could give useful non-specified answers. Therefore,

36 Zikmund (2003) suggests five categories of closed-ended questions, as follows:

(i) Simple-dichotomy questions - refers to a fixed alternative question that requires the respondent to choose one of two alternatives.

(ii) Determinant-choice questions - refers to a type of fixed alternative question that requires a respondent to choose one (and only one) response from among several possible alternatives.

(iii) Frequency-determination questions - refers to a type of fixed alternative question that asks for an answer about general frequency of occurrence.

(iv) Attitude rating scale - refers to measures used to rate attitudes such as the Likert scale and the semantic differential.

(v) Checklist questions - refers to a type of fixed alternative question that allows the respondent to provide multiple answers to a single question.

employing the closed-ended questions approach for structuring the questionnaire in this research was necessary as it offered greater precision and uniformity, as well as easier recall for the respondents and easier coding and analysis for the researcher (Singleton & Straits, 2010, p. 314; Zikmund, 2003, p. 333).

The questionnaire was divided into three sections. The three sections were structured to include questions from the six themes developed in the qualitative phase, as illustrated in Figure 4.10. Section A sought information about the companies' profiles, which included the property services offered by companies, the operating location, the number of years operational and the number of staff. Section B, mainly focused on waterfront development practices in Malaysia. This section was designed to obtain information about current waterfront development in Malaysia including the percentage of projects undertaken, the reasons to initiate waterfront development as well as identifying the sustainability and constraint factors for achieving sustainable waterfront development. Finally, section C was designed to examine regulations for controlling waterfront development including the respondents' awareness of regulations imposed directly or indirectly on waterfront development, an evaluation of the effectiveness of the regulations and finally, the respondents' opinions on several statements of recommendations for future waterfront development guidelines. Additionally, in order to offer more opportunity to the respondents to draw out comments and suggestions, one open-ended question was provided in the last part of the section C. New recommendations from respondents would provide support towards developing the guidelines for best practice for waterfront development in this country. Space at the end of the questionnaire also invited respondents to make additional comments.

Despite using closed-ended questions, a number of decisions were made during the process of designing the questionnaire. One of these was to include a limited number of agree-disagree statements while using the Likert scale,[37] as some researchers have indicated that these have a tendency to be prone to bias and the effects from the wording of the questions. The questionnaire was designed to use a combination of 4-point and 5-point Likert scales. To assess the respondents' attitudes such as their level of awareness on waterfront regulation's terms, a 4-point Likert scale was used; ranging from 1= never heard of it, 2= have heard of it, 3= somewhat familiar, and 4= very familiar. A 4-point Likert scale forced respondents to indicate their agreement which demanded much more from the respondents (no middle

37 The Likert scale is a common approach used to measure the strength or intensity of the respondents' feelings toward an attitudinal object (Sekaran, 2003; Zikmund, 2003).

choice). Moreover, Garland (1991) indicated that a scale without a mid-point would be more suitable as long as either the reliability or the validity of responses was not affected. In contrast, the exclusion of a mid-point can lead respondents towards the positive end of the scale (Worcester and Burns (1975, in Dawes, 2001)).

Additionally, to assess respondent agreement for questions such as the effectiveness of guidelines for riverfront developments concept, a 5-point Likert scale was used. A 5-point Likert scale gave respondents neutral ground to answer neither positively nor negatively. This 5-point Likert scale was commonly used in property studies (Alias & Daud, 2006; Newell, 2003; Wong, 2004 - to name a few examples). The 5-point Likert scale used in the questionnaire ranged from 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree and 5= strongly agree.

While each alternative presented advantages and disadvantages, adoption of the 4-point rating scale and the 5-point rating scale was appropriate for this research. Some researchers have preferred to use seven categories or more as they offer more freedom for answering (Singleton & Straits, 2010, p. 322), but limiting it to a few categories such as the 4-point scale and the 5-point scale were also useful for obtaining precise information, as it allowed respondents to be firm in their decisions. In fact, Likert (1932) in his original paper did not consider the number of choices to be an important issue and in practice, the researcher often decides on the number of choices they like (Munshi, 1990).

Another decision made was to include both numerical and adjectival labelling for each response category. The researcher decided to use both numerical information in determining an appropriate answer and adjectival labelling of each response category, as it conveyed less ambiguity to the respondent (Fowler & Cosenza, 2008; Singleton & Straits, 2010; Zikmund, 2003). A combination of both numerical and adjectival labelling would also facilitate the respondents' ability to understand the alternatives given, as well as helping them to make the right decisions. See Appendix F for an example of the questionnaire used in this research.

4.5.2.3 The Pilot Study

Prior to the pilot study, pre-testing of the questionnaire contents with peers was conducted both in New Zealand and in Malaysia. Since the research would be conducted within Malaysia, the involvement of Malaysian points of view was important and necessary. Therefore, three experts from New Zealand and four experts from Malaysia were selected to review the questionnaire design. There were lecturers in property studies, property

developers, and government officers, and they were selected based on their expertise in this research area and also on their willingness to review the questionnaire. A questionnaire was handed to each of the reviewers in New Zealand and was mailed and e-mailed to the reviewers in Malaysia. They were asked to comment on any words, sentences, terminology or scales they found difficult to understand or were confusing, or were inappropriate to ask or uncomfortable to answer. In addition to being a starting point for the subsequent stages, this stage allowed for the refinement of the survey questionnaire and for improving its content. At the end, the comments were analysed and the design of the questionnaire was revised greatly.

Prior to distributing the questionnaire, a pilot study was conducted in Malaysia. Ten property development companies who were listed under Bursa Malaysia were asked to complete the questionnaire. The respondents for the pre-tests were drawn from the same population of the actual survey in terms of background, familiarity with the content, and attitudes and behaviours, as suggested by Malhotra (2002). A reviewed questionnaire was then distributed to these respondents to pilot test. The purpose of pilot testing a survey is to increase the reliability, validity and usability of the survey (Newman & McNeil, 1998, p. 42). Instead of just mailing it to the respondents, the questionnaire was also e-mailed to them concurrently, in order to obtain a 100% response rate.

Moreover, the pilot study also offered several other advantages. Firstly, the pilot study could examine the effectiveness of the mail survey strategy adopted for this research by identifying the number of questionnaires returned. Secondly, the pilot study allowed for a tentative securing of future participation in the actual data collection. Thirdly, the pilot study allowed for refinements in the original survey questionnaire which then proceeded to the actual survey. Finally, after three weeks and two reminders that were sent to the respondents, a total of ten questionnaires were returned, so a 100% response rate was achieved for the pilot test.

4.5.2.4 The Questionnaire Distribution Process

A self-administered questionnaire was used in this research and a mail survey was the technique used to administer the questionnaires. Respondents in this research were property development companies listed under Bursa Malaysia. Ninety-one questionnaires were mailed to the identified respondents' addresses in April 2010 and were also mailed electronically (e-mail) concurrently. Newman and McNeil (1998, p. 25) determined that a mail survey was considered one of the most frequently and widely used survey procedures in social sciences research, while e-mail was a relatively new mechanism of distribution of a questionnaire.

Incorporation of the e-mail technique allows for speed of distribution, a fast turnover time, low processing costs and more flexibility (Zikmund, 2003).

Once a personal letter address was identified, respondents were contacted by sending them an invitation letter[38] to participate in this research. The invitation letter was typed on the Lincoln University letterhead and explained the purpose of the research, as well as inviting them to participate by filling in the attached questionnaire. See Appendix G for the invitation letter to participate in the survey). A personalised letter addressed to a specific respondent showed how important they were to this research. Moreover, the invitation letter printed on the Lincoln University letterhead also indicated importance and therefore encouragement to the respondents to complete and return the questionnaire (Zikmund, 2003).

Approximately two weeks after mailing the questionnaire, the respondents were contacted to enquire whether they had received the questionnaire and whether they had completed and returned it. It was found that some respondents had returned it and most had received but not yet completed it. Several reasons that hindered them from completing it earlier were identified as: (i) work commitments, (ii) outstation visits and (iii) time consuming. After two weeks, about 11 out of 91 questionnaires had been returned and amounted to a 12% response rate. This response rate was relatively low even though stamped return envelopes were enclosed together with the questionnaire.

The low response rate for the first two weeks required a follow-up reminder letter to be sent through e-mail. The reminder letter clearly restated the purpose of the survey and requested that the questionnaires be returned before the deadline. Interestingly, this follow-up email resulted in about a 39% response rate (35 out of 91 questionnaires were returned).

In light of the low response rate, the respondents were then contacted by phone to ask their willingness to fill in the questionnaire. An unanswered call, a busy signal and the non-availability of the respondent each required a call back later. Concurrently, a second reminder letter and questionnaire were emailed to the respondents who had not yet returned the questionnaire. After three months and sequential follow-ups through e-mail and telephone, it resulted in a total of 61 participating companies. Therefore, the total number of usable responses was 61, representing an overall response rate of 67%.

38 The invitation letter that accompanied the questionnaire, consisted of the purpose of the research, the approximate time to complete the questionnaire, assurance about the confidentiality of respondents, and alternatives to contacting the researcher or other research teams (Zikmund, 2003).

Even though response rates from mailed questionnaires are typically low, achieving a high response rate is important to maintaining the accuracy of the data (Sekaran, 2003, p. 237; Zikmund, 2003, p. 217). As suggested by Sekaran (2003), a 30% response rate is acceptable for a mailed questionnaire, thus, the 67% response rate obtained was sufficient for the analytical purposes of the research.

4.5.2.5 Data Analysis Techniques

The data collected from the survey was analysed using Statistical Package for Social Science (SPSS). Four techniques were used in this part of the data analysis process: Descriptive statistics, T-test analysis, Exploratory factor analysis (EFA) and Correlation.

The first stage involved descriptive statistics on the data set in the form of frequency, percentage, mean scores and crosstabs, to examine waterfront developments in Malaysia, which in turn satisfied research objectives one and three. The second stage of data analysis was performing T-test analysis, to test significant difference on waterfront development practices in Malaysia between the two groups of respondents; the respondents undertaking waterfront development projects and the respondents did not undertaking waterfront development projects in Malaysia. The next stage of data analysis was performing exploratory factor analysis (EFA) on the data set to identify underlying factors that made up the sub dimensions, and subsequently the correlation technique was conducted to examine the relationship between the factors (stage three), which in turn, satisfied research objective four.

4.5.2.5.1 Descriptive Statistics

In this research, descriptive statistics were used for screening of the data set prior to doing factor analysis and correlation, and to address research objective one and three (Pallant, 2007). Descriptive statistics in this research included frequency and percentage for categorical variables and mean scores for continuous variables.

4.5.2.5.2 Exploratory Factor Analysis (EFA)

Exploratory Factory Analysis (EFA) was used to explore the number of factors available, to examine the correlation of each factor, and to observe whether variables appear to best measure each factor (Schumacker & Lomax, 2004). EFA is often used in the early stages of the research to gather information or to explore the interrelationships among a set of variables (Pallant, 2007).

Factor Analysis (FA) and Principal Component Analysis (PCA) are two basic modes of EFA used in order to obtain factor solutions (Pallant, 2007). The objective of FA is to explain the interrelationships among the original variables. On the other hand, the objective of PCA is to select the components which explain as much of the variance in a sample as possible (Hutcheson & Sofroniou, 1999). Clearly, both approaches (FA and PCA) usually generate similar results, however, PCA is preferable (Pallant, 2007), and has been extensively used by many researchers because PCA is identified as being less problematic and complicated than applying FA (Jackson & Velicer, 1990).

Moreover, the VARIMAX factor rotation[39] method was used in the computation for EFA. The objective of the factor rotation was to make the factor structure more interpretable when the dimensions were rotated. Therefore, specifically PCA and the VARIMAX rotation were used in this study to extract the factors for all 18 items submitted for factor analysis technique. The VARIMAX factor rotation was used because this rotation focused on simplifying the columns in a factor matrix (Hair, Black, Babin, Anderson, & Tatham, 2006). The following sections discuss the test for determining the appropriateness of factor analysis and factor extraction.

Tests for Determining the Appropriateness of Factor Analysis

Factor loadings were used as the criterion for item reduction in the EFA performed for this study. Hair et al. (2006) suggested that factor loadings in the range 0.30 to 0.40 met the minimal level for interpretation of structure; factor loadings of 0.50 or greater are considered practically significant and factor loadings exceeding 0.70 are considered indicative of a well-defined structure. Therefore, factor loading values of 0.50 and greater were used in this study as suggested by Hair et al. (2006).

Next, in order to determine whether the correlations in the data matrix were sufficient for factor analysis, several approaches needed to be conducted (Hair, et al., 2006). The approaches included: (1) examining of the correlation matrix, (2) assessing the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and (3) conducting Barlett's Test of Sphericity. The following is a discussion of each of the three approaches:

(1) Examination of the correlation matrix is a simple method to determine the appropriateness of factor analysis (Hair, et al., 2006). Hair et al. (2006) also suggested

39 Two factor rotation methods commonly used in the computation for EFA are Oblique and Orthogonal rotations. VARIMAX, QUARTIMAX, and EQUIMAX are the three major orthogonal rotations; however, VARIMAX is the most popular factor rotation method.

that factor analysis is appropriate if visual inspection reveals that substantial numbers of correlations are greater than 0.30. This indicates that the items share common factors and are therefore, suitable for factor analysis.

(2) KMO provided a measure to determine whether the variables belong together. KMO interpretations are that, less than 0.50 is unacceptable; ±0.50 is considered miserable; ±0.60 is considered mediocre; ±0.70 is considered middling; and ±0.80 is considered meritorious (Hair, et al., 2006). By convention, to indicate appropriateness, KMO values should be above 0.50 for either the entire matrix or for an individual variable.

(3) Barlett's Test of Sphericity is a statistical test for the presence of correlations among variables and therefore, provides the statistical significance that the correlation matrix has significant correlations among at least some of the variables (Hair, et al., 2006).

Factor Extraction

Three commonly used criteria for determining the number of factors and the criteria for ceasing extraction are: (1) Eigenvalues or latent root criterion, (2) Percentage of variance criterion, and (3) Scree test criterion (Pallant, 2007). Eigenvalues are the most commonly used technique for selecting the number of factors (Hair, et al., 2006). Pallant (2007) suggested that any factors with Eigenvalues greater than 1.0 should be considered significant. Otherwise, the factors should be ignored.

Moreover, the percentage of variance criterion was also checked. The purpose of percentage of variance criterion is to ensure practical significance for the derived factors, by ensuring that they explain at least a specified amount of total variance (Hair, et al., 2006). Hair et al. (2006) suggest that in the social sciences, it is common to consider that a solution that accounts for 60% of the total variance is satisfactory.

Furthermore, the Scree test criterion was also checked. According to Hair et al. (2006), "the Scree test criterion is derived by plotting the latent roots against the number of factors in their order of extraction, and the shape of the resulting curve was used to assess the cut-off point". The procedure was explained by Stewart (1981, p. 58) as follows: "A straight edge is laid across the bottom portion of the roots to see where they form an approximate straight line. The point where the factors curve above the straight line gives the number of factors, the last factor being the one whose eigenvalues immediately precedes the straight line."

Once the final factors were established, the Cronbach's alphas were conducted for the remaining items to be examined. The purpose of conducting the Cronbach's alphas is to ensure the scale reliability. Finally, the last step was to label or name the final factor (Hair, et al., 2006). Hair et al. (2006, p. 149) recommend that "variables with higher loadings are considered more important and have greater influence on the name or label selected to represent a factor's conceptual meaning".

4.5.2.5.3 T-test Analysis

An independent t-test analysis was carried in this research to study significant differences in waterfront development practices with respect to group of respondents; the respondents undertaking waterfront development projects and the respondents did not undertaking waterfront development projects in Malaysia. The t-test analysis was conducted mainly to test for a statistically significant difference between two independent sample means in this research (Allen & Bennett, 2010).

4.5.2.5.4 Correlation

A correlation was carried out for the six factors extracted by factor analysis. The correlation was conducted mainly to examine the correlation between factors and to examine the relationships among the variables, extracted in each factor (Pallant, 2007).

4.6 Some Considerations before Beginning the Analysis of the Data

The next section discusses three critical aspects that need to be taken into consideration before analysing the data. The first relates to the level of reliability of the data, the second is the normality of the distribution of the data and the final aspect considers the missing values and outliers in the data set.

4.6.1 Internal Reliability of the Data

Reliability is concerned with the ability of a measure to generate consistent results. Zikmund (2003, p. 300) defines reliability as "a degree to which measures are free from error and therefore yield consistent results". Cronbach's coefficient alpha is the most commonly used measure for examining the scale reliability (Pallant, 2007). A reliability test was conducted for this study. Cronbach's Alpha Coefficient was run to test the internal consistency in areas of the questionnaire using interval scales including the Likert scale. Specifically, it was used to measure how well a set of items (or variables) hung together as a set (Pallant, 2007;

Sekaran, 2003). Cronbach's Alpha Coefficient can be explained as a correlation coefficient and the alpha value is the range from value 0 to 1.0 (Coakes & Steed, 2003).

Table 4.4 presents the internal reliability of areas in the questionnaire using interval scales, for this research.

Table 4.4: Internal reliability of areas in the questionnaire using interval scales

Variable	Number of Items (n)	Cronbach's Alpha	Mean inter-item correlation
Section B:			
Waterfront re Regulation Terms	10	0.891	0.464
Section C:			
Guidelines for the riverfront developments concept.	4	0.841	0.592
Best practice for waterfront developments.	18	0.778	0.165

As illustrated in Table 4.4 above, all variables showed Alpha values close to 1, which indicates high internal consistency and the achieving of reliability values. As recommended by DeVellis (2003) and Pallant (2007), Alpha values greater than 0.7 were considered acceptable however, a value above 0.8 was preferable. Churchill (1979) however, suggested that an Alpha value of 0.60 or greater also should be considered adequate for developing a new questionnaire. Thus, based on the Alpha values as presented in Table 4.4 above, it can be concluded that the respective respondents were able to understand all questions in the questionnaire and that they agreed on the necessity of the researcher for asking the questions.

4.6.2 Normality of the Distribution in the Data

The most fundamental assumption underlying the statistical analysis was the normality of the data (Coakes & Steed, 2003). Normality refers to the "degree to which the distribution of the sample data corresponds to a normal distribution" (Hair, et al., 2006, p. 40). According to Pallant (2007), Skewness and Kurtosis are two indications of normality,[40] giving information about the shape of the distribution of the data. Skewness refers to the symmetry of a distribution compared with a normal distribution and Kurtosis is used to describe whether the

40 There are several ways to explore the assumption of normality: graphically; Histogram, Stem-and-leaf plot, Boxplot, Normal probability plot, Detrended normal plot and, statistically; Kolmogorov-Smirnov statistic with a Lilliefors significance level and the Shapiro-Wilk statistic and Skeweness and Kurtosis (Coakes & Steed, 2003; Pallant, 2007)

peak of a distribution is taller or shorter than a normal distribution (Morgan & Griego, 1998; Pallant, 2007). In this research, Skewness and Kurtosis were used to assess the normality distribution of the score. The assumption of normality was tested using the Explore option of the Descriptive Statistics menu in SPSS for Windows (Pallant, 2007). Table 4.5 presents the Skewness and Kurtosis for the data set.

Table 4.5: Test of normality – Skewness and Kurtosis

Item	Skewness	Kurtosis
Environmental Impact Assessment (EIA) is compulsory.	-0.448	-0.667
Maintenance and rehabilitation costs are shared between stakeholders.	0.249	0.046
Use environmentally friendly materials in construction.	-0.305	-1.106
Provide flood mitigation (e.g. by planting more trees).	-0.263	-0.791
Protection of natural resources (water and environment).	-0.081	-0.771
Personal security is maintained by means of policing, surveillance cameras, etc.	0.171	-1.267
Provision of sufficient public facilities and amenities (such as pedestrian, landscaping, access ways, recreation areas, etc.	0.101	-1.064
Upgrading and maintaining established settlement along the waterfront area.	-0.283	-0.373
Upgrading and maintaining sewage system.	-0.421	-0.888
Continuous river rehabilitation.	-0.494	-0.978
River reserve beautification.	0.447	-1.862
Restrict type of developments.	0.096	-0.468
Integrate both modern and heritage aspects into developments.	0.121	-0.987
Encourage economic activities.	-0.181	-0.874
Sharing waterfront benefits (such as views, financial rewards, etc.) among stakeholders (e.g. community, government and developer).	-0.512	-0.806
Stakeholders' participation.	-0.714	-0.874
Continuously educate public about environmental concerns.	0.097	-0.784
Provide regulations and policies that mitigate market speculation for waterfront properties.	-0.471	-0.445

As determined by many scholars, a distribution was perfectly normal if it had Skewness and Kurtosis values of zero (0) (George & Mallery 2009, pp. 98-99; Morgan, Leech, Gloeckner, & Barrett, 2007, p. 50; Pallant, 2007, p. 56). However, for the purposes of statistical analysis, Skewness and kurtosis values of more than ±1.0 were excellent, and a value ± 2.0 in many cases was also acceptable (George & Mallery 2009, pp. 98-99). Even though most of the items indicated a negative kurtosis value, it did not seem to affect the results of most of the statistical analyses. Therefore, based on the results (as presented in table 4.5), the data was considered to be normally distributed and appropriate for statistical analysis. The actual shape of the distribution for each item can be seen in the Histogram as presented in Appendix H.

4.6.3 Missing Values and Outliers

The non-response rate for the items in this research was zero, which meant that all the items provided complete information in all cases. Moreover, the data set was also screened for outliers. An outlier may have a disproportionate impact on the statistical analysis. Therefore, it was necessary to identify data that may be unduly influential on the results of the analysis. However, there were no outliers detected in the data set, meaning that all scores were within the possible range for the items or there were no extreme points in the data set (Pallant, 2007, p. 63). Thus, the data set in this research was satisfactory for statistical analysis.

Chapter four has presented the sequence of steps involved in the developments of the methods used for this research; the design of the survey and questionnaire including its content, as well as the process of conducting interviews and distributing the questionnaires were outlined. A number of issues regarding the limited number of responses obtained in the initial phase of the data collection, as well as the representativeness of the sample were discussed. Finally, the data set was screened for the appropriateness of the analytical procedures.

Chapter 5
Qualitative Results – Survey Interviews

5.1 Introduction

This section presents the interview results. Talking to interviewees face-to-face enabled "deep" and "rich" data to be obtained about the emergence of waterfront developments in Malaysia until the present day. The analysis in this section was exploratory in the sense that information associated with waterfront development was identified, but only tested later during the quantitative phase. Six themes developed from the interviews and inspired the development of the questionnaire.

5.2 Response Rate

A total of 25 face-to-face interviews were conducted within the three months from May to July 2009. The interviewees were selected from the case study areas namely: Kuching Riverfront in Sarawak, Malacca Waterfront in Malacca and Glenmarie Cove Riverfront in Selangor.[41] Input was obtained from three different sources: (i) Federal, State and Local Government; (ii) Private sectors; and (iii) Waterfront community. All interviewees represented in the sample are parties that have been actively involved in property development projects and, directly involved in the waterfront development projects in the selected case study areas. Moreover, case study areas in this research have involved waterfront development projects proposed by the State of government, therefore, a minimum number of private sector (28%) involved in this research is considerable. Table 5.1 summarises the information from the interviewees who participated in the interviews.

Interviews were sufficiently well answered to allow a response rate of 100% to be obtained. The one-to-one in-depth interviews were mainly to gather a clear view about waterfront development history in Malaysia and about the selected areas. The objective for the interviewees' feedback was two-pronged. Firstly, to obtain reactions from the respondents about waterfront development in Malaysia including their experience and their thoughts on future implementations of waterfront development, and guidelines related to waterfront development as well as any obstacles along the development process. Secondly, it provided a

41 Interviewees were parties directly and/or indirectly involved in the selected case study areas – refer Section 4.5.1.2 for details of sampling procedures used for survey interviews.

platform for interviewees to offer insights and alternative perspectives or views on how they visualised future waterfront development in Malaysia especially in relation to guidelines and practices.

Table 5.1: Composition of the interviews

Organisation	Institution	Number of Interviewees n (%)	Working Experience
Federal Government	Department of Irrigation and Drainage (Headquarters). Department of Water, Ministry of Natural Resources and Environment. Department of Environment, Ministry of Natural Resources and Environment.	3 (12)	10-28 years
State Government	Department of Drainage and Irrigation. Property management - state. Economic Planning Unit (State). Department of Planning. River Board, Sarawak.	5 (20)	10-15 years
Local Authority	Local Authority for each case study area.	10 (40)	7-20 years
Private Sector	Property Developer. Mechanical Engineer.	2 (8)	5-10 years
Waterfront community	Individual.	5 (20)	Not related
		TOTAL = 25 (100)	

Interviewees were contacted in advance by telephone before an appointment letter was sent by mail and electronically. For the most part, in the beginning the majority of officers refused to be interviewed citing reasons such as lack of time and resources. However, all agreed to cooperate after they received an appointment letter. The longest interview lasted one and a half hours while most took between 45 minutes to one hour. All interviewees agreed for the conversation to be recorded and later transcribed for analysis. Although the officers were interviewed, project reports were also used as the source of evidence for this study. In cases where the interpretation of officers, as stated in the interviews, differed from the project reports, the reports were given more weight because these were official documents.

The interviewees' points of view discussed here were not intended to be exhaustive and representative of all stakeholders. The intention was to present divergent viewpoints within

the context of responsible parties, to frame regulations, guidelines and strategies for waterfront development in Malaysia.

5.3 Waterfront Development in Malaysia

This section presents six themes generated from the exploratory analysis in this study (qualitative phase). The results generated from the cases were beneficial for the next phase of data collection.

5.3.1 Waterfront Development in Malaysia – the Past

All 25 respondents were asked their opinions on the importance of rivers and riverfront areas for Malaysia and the country as well. They were asked an interview question as follows:

Q: What do you think of the importance of the boundary between the river and the country?

From interviews, it appears that rivers significantly impact the lives of people, for communication, trade, sources of food and agriculture. History shows that many towns and cities in Malaysia were established near water areas (such as Kuala Lumpur, Malacca and Perak). Table 5.2 summarises the interviewees' views on the significance of rivers for the Malaysian environment and the country.

Table 5.2: Significance of rivers

River's significance	Respondent (n = 25)			Ranking		
	G1 n=25(%)	G1 n=18(%)	G3 n=7(%)	G1	G2	G3
Drainage and Irrigation for farming and agriculture.	13 (52)	10 (55.5)	3 (42.8)	1	1	1
Water sources for household consumption.	12 (48)	10 (55.5)	2 (28.6)	2	2	4
Transportation and communication.	11 (44)	9 (50)	2 (28.6)	3	3	5
Source of food and protein.	11 (44)	8 (44.4)	3 (42.8)	4	4	3
Recreational / Fishing / water sport.	9 (36)	5 (27.8)	4 (57.1)	5	5	2
Habitat for water species.	6 (24)	5 (27.8)	1 (14.3)	6	6	7
Human settlement along the river edge.	5 (20)	4 (22.2)	1 (14.3)	7	7	8
Trading activities / Port activities.	4 (16)	3 (16.7)	1 (14.3)	8	8	9
Tourism business.	4 (16)	2 (11.1)	2 (28.6)	9	9	6
Hydroelectric.	3 (12)	2 (11.1)	1 (14.3)	10	10	10
Country's defense.	3 (12)	2 (11.1)	1 (14.3)	11	11	11
Religious events.	2 (8)	1 (5.5)	1 (14.3)	12	12	12

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

As presented in Table 5.2 above, overall, more than half (52%) of interviewees from Government and Non-government officers agreed that river is significantly important for drainage and irrigation for farming and agriculture. This is followed by using water sources for household consumption which accounting for 48%, transportation and communication (44%), and source of food and protein (44%). The least number of interviewees agreed that river is significantly functioning for religious events, accounted for 8%.

On the other hand, when considering the respondent groups separately, responses varied slightly but were very similar in their ranking. For example, about 55.5% of the government officers and 42.8% of non-government officers agreed that the river is most important for drainage and irrigation for farming and agriculture. The least significant factor for both groups was for religious events with (5.5% of government officers and 14.3% of non-government officers).

Respondents were then asked how rivers would function in the future. All of the respondents thought that rivers provide many functions for the Malaysian people that will remain, but that the significance of rivers has changed over time for many reasons, such as taking transportation away from rivers to the land. One of the respondents stated his thoughts as follows:

> I believe the river is important for the country. It serves many uses, water resource, food, transportation, country defence and settlement. Today, the important function has changed, and I am sure it remains important. River still serves as the medium of communication for the residents on left and right riverbanks. (Original transcription)
>
> (Interviewee G4)

Respondents were then asked their opinions about how waterfront settlements developed along the water edges.

Q: Early human settlement and cities in Malaysia developed along the river area. Could you please comment about this history?

As discussed above, rivers provided multiple functions for Malaysia. Although important for catering for trade, transportation and irrigation, waterfront areas were also important for human settlement. From interviews it appears that early human settlements in Malaysia were developed for traders and local people[42] and subsequently, enlarged to become trading

42 In colonial times, Malaysia catered for trade with Gujerat, Arabia, China and Europe.

settlements along the water edges. All 25 interviewees agreed that strong relationships between water and people meant that waterfront settlements were established in early times.

Moreover, in order to identify what the waterfront settlements looked like in the past, interviewees were asked their opinions on that particular matter.

Q: What did the areas looks like in the past time, specifically the developments you are associated with?

From interviews, about 32% of respondents thought that the waterfront settlements were developed near to agricultural land, and then the land utilised for farming to support their life. In terms of planning development, one of the respondents said:

> In this state, "kampong"[43] was established along the river banks (both sides). They relied on rivers for food. Regarding on planning, maybe houses were developed without permission and guidelines. (Translated transcription)
>
> (Interviewee G6)

Therefore, from interviews, information about how waterfront developments took place in Malaysia in the past was obtained. Subsequently, the next discussion will focus on why some waterfront areas remained and why some of them were destroyed.

5.3.2 Waterfront Development in Malaysia – the Present

Q: Waterfront development in Malaysia has changed over the decades and the current pattern of development is more focussed on public uses (recreational) and mix use development. Are you aware of this transformation?

After waterfront areas lay abandoned for many years, the government has started to set aside large waterfront areas for future development. Extensive work on waterfront areas and river beautification has shown the government's efforts towards maintaining waterfront areas as a valuable asset for the country is effective.

From the interviews it appears that all 25 interviewees were aware of the transformation of waterfront areas – from the abandoned spaces to developed areas and public uses. Observation of the case study areas show that waterfront functions had changed to recreation and mixed-use development.

43 According to Maliki (2008), Kampong is a Malay word meaning Village.

They were then asked about factors that led to the transformation of waterfront areas in Malaysia. From interviews, several factors were identified, as presented in table 5.3.

Table 5.3: Transformation factors for waterfront areas

Factor	Respondent (n = 25)			Respondent (n = 25)		
	G1 n=25(%)	G2 n=18(%)	G3 n=7(%)	G1	G2	G3
Development and redevelopment.	16 (64)	13 (72.2)	3 (42.8)	1	1	1
Urbanisation.	11 (44)	9 (50)	2 (28.6)	2	2	4
Improved quality of life.	7 (28)	4 (22.2)	3 (42.8)	3	3	2
Industrialisation.	6 (24)	4 (22.2)	2 (28.6)	4	4	5
Increase in population.	6 (24)	4 (22.2)	2 (28.6)	5	5	6
Increased environmental concerns.	5 (20)	2 (11.1)	3 (42.8)	6	9	3
Tourism activities.	5 (20)	3 (16.7)	2 (28.6)	7	8	7
Upgrading transportation system.	5 (20)	4 (22.2)	1 (14.3)	8	6	8
Resettlement programmes.	4 (16)	4 (22.2)	0 (0)	9	7	9

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

Table 5.3 presents the responses from interviewees on influential factors in the transformation of waterfronts in Malaysia. Overall, all 25 interviewees from both government and non-government officer groups agreed that development and redevelopment was the main contributor to the decline and transformation of waterfronts in Malaysia, accounting for 64%. Moreover, urbanisation also showed as a trigger for the decline of waterfront areas accounting for 44% in total. It was followed by other factors, such as improved quality of life, industrialisation, environmental awareness, tourism and upgrading the transportation system. A few (16%) interviewees indicated that resettlement programmes was also a cause of the transformation of waterfront areas in Malaysia.

On the other hand, when considering respondent groups separately, 72.2% of Government officers considered that development and redevelopment as a trigger for the decline of waterfront areas, accounted for 72.2%. This is followed by urbanisation (50%), improved quality of life (22.2%), and industrialisation (22.2%). A mere 11.1% of government officers indicated that increased environmental concerns among Malaysian was the reason for the decline of waterfront areas in Malaysia.

In contrast to these results, the majority of non-government officers indicated that transformation of waterfront areas in Malaysia was attributed to three main factors: development and redevelopment, improved quality of life and increased environmental concerns, accounting for 42.8% each respectively. None of the non-government officers

indicated that resettlement programmes is a reason for the decline of waterfront areas in Malaysia.

Thus, for many reasons (as presented in table 5.3 – transformation factors), a large number of waterfront areas were (re) developed and then became vital parts of many cities in Malaysia.

Interestingly, three (12%) interviewees mentioned that waterfront development in Malaysia, particularly in the case study areas, were inspired by examples from overseas: the Sydney Harbour and Saint Ontario. However, some changes were made to suit the Malaysian culture. The 25 interviewees were then asked about factors that led to the successful implementation of waterfront development in other countries.

Q: What are the most influential factors contributing to the successful implementation of waterfront development in other countries?

From interviews it appears that stakeholders' participation and cooperation is the most influential factor contributing to the successful implementation of waterfront development in developed countries and accounted for 52%. It is followed by sufficient financial resources for support along the development process (40%), and an efficient delivery system – communications (36%). A mere 8% of interviewees indicated that a feasible location contributed much on successful waterfront development in other countries.

The factors that could be important for the successful implementation of waterfront development as derived from the interviews are summarised and presented in Table 5.4. These factors could be beneficial for Malaysia in order to improve waterfront development in the future.

Table 5.4: Success factors for international waterfront projects

Factor	Respondent			Ranking		
	G1 n=25 (%)	G2 n=18 (%)	G3 n=7 (%)	G1	G2	G3
High cooperation and participation from stakeholders.	13 (52)	9 (50)	4 (57.1)	1	1	1
Sufficient financial resources.	10 (40)	9 (50)	1 (14.3)	2	2	4
Efficient delivery system (communications).	9 (36)	8 (44.4)	1 (14.3)	3	3	5
Sufficient management and administration teams.	5 (20)	4 (22.2)	1 (14.3)	4	4	6
Adequate regulations for waterfront development.	4 (16)	2 (11.1)	2 (28.6)	5	5	2
Continuous enforcement of regulations.	3 (12)	2 (11.1)	1 (14.3)	6	6	7

Feasible location – must be at the right place.	2 (8)	0 (0)	2 (28.6)	7	7	3

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

When considering the respondent groups separately, government officers agreed that high cooperation and participation from stakeholders involved in waterfront development projects, and sufficient financial resources are the most influential factor contributing to the successful implementation of waterfront development in developed countries, accounting for 50% each respectively

Similar to the government officer groups, non-government officers also indicated that the main successful factor for implementation of waterfront development projects in developed countries was high cooperation and participation from stakeholders involved in waterfront development projects, accounting for 57.1% of respondents. This is followed by adequate regulations for controlling waterfront development (28.6%), and feasible location (28.6%). From the results, the Non-government officers indicated that continuous enforcement of regulations for waterfront development was the least factor contributed for successful waterfront development in developed countries.

5.3.2.1 Waterfront Development – Demand and Supply

In general, increased awareness about preserving and conserving natural resources was determined as the main reason for the government initiating waterfront redevelopment projects in Malaysia. In order to have an idea about waterfront development in the future, the demand and supply factors for waterfront development were identified in this study. Nine of the 25 respondents (about 36%) who are property developers and government officers (Federal and State Government) were asked their opinions on the supply side of waterfront development in Malaysia as follows:

Q: What are important reasons in a decision to initiate a waterfront development project?

From the interviews it appears that maintaining heritage and cultural values along the waterfront areas is a main reason in the decision to undertake waterfront development projects in Malaysia (about 44%). The second most important reason is to provide tourist attractions, the third to protect natural resources and the forth to provide amenities or facilities for the public. These three share the same percentage at about 33% each. A few respondents indicated that catering for demand from buyers (11%) and making higher profits (11%) were reasons for undertaking waterfront development projects in Malaysia.

On the other hand, the rest (16 out of 25 respondents) were asked their opinions on the demand side of waterfront developments in Malaysia.

Q: What reasons most influence people interested in waterfront property?

All 16 respondents answered the question sufficiently. From the interviews, about 56.3% of the respondents thought that they were interested in waterfront properties mostly to have a more private environment for their residential area. The second most influential factor for people to have waterfront property is for investment and/or wealth creation purposes and this accounted for 43.8%. Only 12.5% of respondents chose waterfront property for health and psychological benefit, reasons. Table 5.5 summarises the factors identified from the interviews from both sections.

Table 5.5: Reasons for having Waterfront development

Factors of demand	Frequency n=16 (%)	Ranking
More private environment.	9 (56.3)	1
As an investment/wealth creation.	7 (43.8)	2
To obtain a scenic view.	6 (37.5)	3
A better lifestyle.	5 (31.3)	4
More convenient living environment.	5 (31.3)	5
The availability of leisure and recreational activities.	4 (25)	6
To create a business activity.	3 (18.8)	7
Health and psychological benefits.	2 (12.5)	8

Table 5.5: Reasons for having Waterfront development (cont.)

Factors of supply	Frequency n=9 (%)	Ranking
To maintain heritage and cultural values.	4 (44.4)	1
To provide a tourist attraction.	3 (33.3)	2
To protect natural resources.	3 (33.3)	3
To provide community amenities.	3 (33.3)	4
To introduce a new concept of development.	2 (22.2)	5
To create an investment for investors.	2 (22.2)	6
To reduce environmental damage.	2 (22.2)	7
To cater for demand from buyers.	1 (11.1)	8
To make higher profits.	1 (11.1)	9

5.3.2.2 Successful Waterfront Development and Obstacles to Achieving this

From the interviews, all 25 interviewees were asked their opinions on waterfront development in Malaysia, in terms of the level of success and the obstacles behind the lack of success. All of them were asked the question as follows:

Q: Do you think waterfront development in Malaysia have reaped the similar achievement like in other countries? Please comment with reasons.

As presented in Table 5.6, from the interviews, only 28% of interviewees thought that Malaysia has successfully implemented waterfront development projects while the rest were unsure and not successful as compared to other countries and accounted for 40% and 32% each. For the interviewees who responded "not successful", they provided two obstacles for not achieving success: (i) insufficient financial resources (62.5%) and (ii) lack of human and technology expertise (50%).

Of the 18 Government officers who answered the interviews, only 16.7% indicated that Malaysia has successfully implemented waterfront development projects, 38.9% indicated that is was not successful and 44.4% were. In terms of reasons for unsuccessful implementation of waterfront development, from the seven interviewees who indicated that the implementation of waterfront development projects was not successful, 57.7% of them thought that it was due to insufficient financial resources and lack of human and technology expertise (57.7%).

In contrast, of the seven Non-government officers to respond to the interviews, 57.1% agreed that Malaysia has successfully implemented waterfront development projects. Only one (14.3%) indicated that it was not successful while another 28.6% were unsure. The interviewee who indicated unsuccessful implementation of waterfront development projects gave the reason of insufficient financial resources. Table 5.6 summarises the results.

Table 5.6: Level of successful waterfront development and obstacles

Level of successful of waterfront development	Respondent		
	G1 n=25 (%)	G2 n=18 (%)	G3 n=7 (%)
Yes – successful implemented waterfront development.	7 (28)	3 (16.7)	4 (57.1)
No – not successful implemented waterfront development.	8 (32)	7 (38.9)	1 (14.3)
Unsure.	10 (40)	8 (44.4)	2 (28.6)
Reasons for unsuccessful implementation of waterfront development			
Reasons for lack of success	**Respondent**		
	G1 n=8 (%)	G2 n=7 (%)	G3 n=1(%)
Insufficient financial resources.	5 (62.5)	4 (57.1)	1 (100)
Lack of human and technology expertise.	4 (50)	4 (57.1)	0 (0)

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

5.3.2.3 Waterfront Development – in the Future

During the interview sessions, all 25 interviewees were asked about waterfront development in the future, in terms of numbers and the purpose of development. They were asked for their opinions on the particular matter as follows:

Q: What is your expectation about the future of waterfront development in Malaysia?

From the interviews, it appears that the majority of interviewees (84%) agreed that waterfront development in Malaysia will be increased in terms of numbers. On the other hand, about 16% were not sure whether the number of waterfront development projects will be increased in the future. From the 84% of interviewees who agreed that waterfront development will be increased in Malaysia, 76.2% were government officers while, the rest (23.8%) were non-government officers. The interviewees who indicated not sure responses thought that waterfront development require more resources (human and capital) and that they also have the potential for costs to outweigh benefits.

5.3.2.4 The Waterfront Development Process in Malaysia

In order to understand how waterfront development has taken place in Malaysia, an understanding of the first phase of the development process is necessary. During the interviews, 20 respondents who are government officers (Federal, State and Local

Government) and property developers were asked several interview questions related to the waterfront development process in Malaysia.

Q: Does the waterfront development process differ from the general development process?

From the interviews, it appears that the majority of interviewees (85%) thought that waterfront development in Malaysia requires a similar process as other forms of development and that the government has full responsibility for development, starting from planning approval right up to completion. About 15% of respondents thought that in some cases approval from other departments such as the Museum Corporation or the Department of Wild Life was required; for example, if the development included preservation areas.

Practically, the One-stop-centre (OSC) is responsible for facilitating and standardising the land development process in Peninsular Malaysia. Land development in the state of Sarawak is controlled by the State Planning Authority (SPA),[44] and the Local Authority (the Council of the City of Kuching South and Kuching North City Hall) which does not get involved directly with the development process unless the development is proposed by them and uses their allocation budgets.

Therefore, land development in Malaysia including waterfront projects, is required to follow similar processes imposed at each stage of development. Importantly, development must meet the Planning Guidelines and Standard as designed by the Department of Town and Country Planning (Peninsular Malaysia) (2011) and, also takes into consideration the land use planning guidelines.[45] Refer Figure 3.6 on page 47 for the land development process in Malaysia.

5.3.2.5 Parties Involved in Waterfront Development in Malaysia

As described in the previous section, the development process for waterfronts in Malaysia has similar processes imposed on it as other forms of development. This section discusses the stakeholders involved in the development process. In order to have an idea about parties

44 Under the Land Code (Amendment) Ordinance 1997, the committee consists of the Chief Minister, The State Planning Authority with the Minister as Chairman, the Permanent Secretary to the Ministry of Planning Management as the Secretary of the State Planning Authority, the Director of Lands and Survey Department, and three (3) ministers from different ministries.

45 The land use planning guidelines are the systematic assessment of the land and water potential, the alternatives for land use, and the economic and social conditions, in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future (Soil Resources Management and Conservation Service, 1993).

involved in the waterfront development process, the following interview question was asked to the 20 respondents who are government officers (Federal, State and Local Government) and who are from the private sector.

Q: Any developments usually involve many parties which integrated into the development process. How about waterfront development in Malaysia?

From the interviews, all respondents (100%) thought that waterfront development followed the same processes, involved the same officers and sometimes shared the same problems as other types of development. Moreover, one of the interviewees thought that for development projects which were proposed by the federal government, the state and local governments acted as the implementing agencies for the proposed project. He shares his opinion as follows:

> A government body has been involved for private and government projects from the beginning stage to the planning approval, no matter whether the project is funded by government and/or private sector. The contractor who is normally a private contractor is appointed in the implementation stage and local people do not participate. (Original transcription)
>
> (Interviewee G7)

In addition, from the interviews, it appears that in most cases, no involvement from public parties and the public is required if the proposed development involves public land acquisition. Refer to Section 4.5.1.4 – Description of case study areas for parties involved in the selected case study areas.

5.3.2.6 Governance in Waterfront Development in Malaysia

In Malaysia, the management and administration of natural resources involves several departments and agencies that operate dependently or independently of one another according to the specific responsibilities assigned to them (Rogers & Hall, 2003).

From the interviews, all 25 respondents were asked their opinions about the management and administration of waterfront resources in Malaysia. The interview question about the governance of waterfront development in Malaysia was as follows:

Q: How does Malaysia practice governance for waterfront project? Please comment.

From the interviews, it appears that more than half (60%) of the respondents answered the question, while the rest (about 40%) gave no response. From the 60% of respondents who answered the interview question, a majority (93%) thought that the management and administration of waterfront resources was not effective, even though Malaysia has a well

structured system for the management and administration of natural resources including waterfront resources. Only one respondent answered positively, as follows:

> I am satisfied with the management and administration system for natural resources, land, forest, and river. For example, our department has sufficient numbers of staff, and each of them understands their jobs or task. We have a mission and vision and clear management and work flow charts. (Original transcription)
>
> (Interviewee G11)

The 14 respondents, who answered that there is ineffective governance for waterfront development in Malaysia, were further asked for reasons that constrain the delivery of effective governance in managing waterfront resources and waterfront development in Malaysia.

Q: In your opinion, what are the reasons that constrain for effective administration and management for waterfront resources and waterfront development in Malaysia?

All the 14 respondents (100%) answered the question and most of them thought that low levels of cooperation between stakeholders was the main reason for the ineffective governance for waterfront development in Malaysia, accounting for 42.9% of responses. This was followed by an inefficient communication system (35.7%) and low enforcement of regulations for controlling waterfront development (28.6%). The least important reason for ineffective governance for waterfront development given by 7.1% of interviewees was conflicts of interest.

From the 42.9% interviewees that indicated that low level of cooperation between stakeholders was the main reason for ineffective governance for waterfront development, 35.7% responses were from Government officers while 7.1% were from Non-government officers. Moreover, only 14.3% and 7.1% of Government officers indicated that external party interference and conflicts of interest contributed to the ineffective governance. By comparison, none of the Non-government officers indicated that external party interference and conflicts of interest are reasons for ineffective governance. Table 5.7 presents several reasons identified for the ineffective governance for waterfront development in Malaysia.

Table 5.7: Reasons for ineffective governance for waterfront development

Factor	Respondent			Ranking		
	G1 n=14 (%)	G2 n=14 (%)	G3 n=14 (%)	G1	G2	G3
Low levels of cooperation between stakeholders.	6 (42.9)	5 (35.7)	1(7.1)	1	1	3
Inefficient communication system.	5 (35.7)	4 (28.6)	1 (7.1)	2	2	4
Low enforcement on regulations.	4 (28.6)	3 (21.4)	1 (7.1)	3	3	5
Inadequate policies/guidelines.	3 (21.4)	1 (7.1)	2 (14.3)	4	5	1
Lack of expertise.	3 (21.4)	1 (7.1)	2 (14.3)	5	6	2
External party interference.	2 (14.3)	2 (14.3)	0 (0)	6	4	6
Conflicts of interest.	1 (7.1)	1 (7.1)	0 (0)	7	7	7

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

Indeed, less participation and low collaboration levels amongst parties involved in the waterfront development was identified as a main cause for the ineffective managing of waterfront development in Malaysia. Therefore, in order to achieve sustainable waterfront development, support and responsibility from appropriate parties such as from the property developers and from the public is required, and efficient delivery systems with regularly updated information is needed from each responsible agency.

5.3.3 Waterfront Development Effects in Malaysia

Waterfront redevelopment in Malaysia has taken place over the last twenty years. Many issues abounded when a city decided to transform its vacant or underused waterfront areas. Some waterfront development projects have successfully included waterfront attraction projects, but many others have not succeeded. From the interviews, all 25 respondents gave their responses to the question asked for them on waterfront development effects.

Q: Based on your observation and knowledge, what are the effects might be derived from waterfront development projects?

From the interviews, all 25 respondents thought that waterfront development in Malaysia have produced an effect socially, economically and environmentally. Table 5.8 below summarises interviewees' responses on the effects of waterfront development in Malaysia from both the positive and negative sides.

Table 5.8: Waterfront development – positive and negative effects

Positive Effects	Respondent			Ranking		
	G1 n= 25 (%)	G2 n= 18 (%)	G3 n= 7 (%)	G1	G1	G2
Improving riverbank beautification and landscape.	11 (44)	10 (55.5)	1 (14.3)	1	1	4
Generated income for the state and country.	9 (36)	8 (44.4)	1 (14.3)	2	2	5
Increased property markets.	7 (28)	5 (27.8)	2 (28.6)	3	3	2
Increased property prices.	6 (24)	3 (16.7)	3 (42.8)	4	5	1
Business activity.	5 (20)	3 (16.7)	2 (28.6)	5	6	3
Job availability for residents.	4 (16)	3 (16.7)	1 (14.3)	6	7	6
Upgrading waterfront settlement.	4 (16)	4 (22.2)	0 (0)	7	4	8
Accessibility.	3 (12)	2 (11.1)	1 (14.3)	8	8	7
Negative Effects	**Respondent**			**Ranking**		
	G1 n= 25 (%)	**G2 n= 18 (%)**	**G3 n= 7 (%)**	**G1**	**G2**	**G3**
Environmental problem water pollution and flooding.	15 (60)	13 (72.2)	2 (28.6)	1	1	1
Social impact – vandalism.	8 (32)	7 (38.9)	1 (14.3)	2	2	2
Increased cost for maintenance and river cleaning.	7 (28)	6 (33.3)	1 (14.3)	3	3	3
Lost cultural values.	5 (20)	5 (27.8)	0 (0)	4	4	5
Property market speculation.	2 (8)	1 (5.5)	1 (14.3)	5	5	4

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

According to Table 5.8 above, on the positive side, from the interviews it appears that nearly half of the respondents (44%) agreed that waterfront development could improve riverbank beautification and the landscape. Moreover, an overall 36% of respondents thought that waterfront development has the potential to generate income for the state and for Malaysia through the tourism industry. For example, a waterfront development especially for recreational purposes is identified as attractions for tourists and/or visitors. The interviews also identified that waterfront development have good effects on waterfront property in terms of demand and property prices as well as property at surrounding waterfront areas, and these two accounted for 28% and 24% respectively. Only a few (12%) respondents thought that waterfront development could improve accessibility between water areas and the city.

Considering respondent group results separately, of the 18 Government officers who responded, 55.5% agreed that waterfront development could improve riverbank beautification and the landscape, and also has the potential to generate income for the state and country, accounting for 44.4% of respondents. Moreover, from the interviews, it appears that

waterfront development could also encourage business activity at surrounding waterfront areas (16.7%), and have the potential to increase property prices (16.7%) and property markets (16.7%). Only 11.1% of interviewees agreed that waterfront development could improve accessibility between water areas and the city.

In contrast, 42.8% of Non-government officers agreed that waterfront development has the potential to increase property markets and also increased property prices (28.6%). None of the Non-government officers thought that waterfront development could upgrade waterfront settlement.

Waterfront development also has negative effects. From the interviews, 44% of the interviewees thought that waterfront development have major negative effects on the environment such as flooding and water pollution. Furthermore, from the interviews, 32% thought that the social effects for example vandalism, have contributed to the negative effects derived from waterfront development in Malaysia for the case study areas. For example, interviewees' stated that facilities provided for public use within the waterfront boundary were damaged due to vandalism. More than that, in some cases, the facilities provided were stolen. A few interviewees (8%) thought that waterfront developments could cause market speculation.

From the results, of the 18 Government officers, 72.2% agreed that waterfront development have major negative effects on the environment such as water pollution. Moreover, about 38.9% of Government officers thought that waterfront development also has negative effects on social matters such as vandalism. A mere 5.5% of Government officers thought that waterfront development cause loss of cultural values derived from the development.

On the other hand, about 28.6% of the Non-government officers agreed that waterfront development have major effects on the environment. Moreover, they also agreed that waterfront development have negative effects on social matters (14.3%), increased cost for maintenance and river cleaning (14.3%) and could create property market speculation (14.3%). None of the Non-government officers thought that waterfront development could cause loss in cultural values.

5.3.4 Regulations Associated with Waterfront Development in Malaysia

Regarding the regulations associated with waterfront development in Malaysia, all 25 interviewees were asked for their opinions as follows:

Q: Based on your knowledge, what are the regulations associated with waterfront development in Malaysia?

From the interviews, all the respondents (100%) thought that waterfront development is required to follow similar regulations as enforced for any land development in Malaysia. From the interviews, they were also suggesting several regulations that could be associated with waterfront development in Malaysia as presented in Table 5.9 below.

Table 5.9: Regulations associated with waterfront development in Malaysia

Regulations	Respondent			Ranking		
	G1 n=25 (%)	G2 n=18 (%)	G3 n=7 (%)	G1	G2	G3
National Land Code, 1965.	10 (40)	9 (50)	1 (14.3)	1	1	6
Land Acquisition Act 1960.	8 (32)	5 (27.8)	3 (42.8)	2	3	1
Act 127 in Environmental Quality Act 1974.	8 (32)	6 (33.3)	2 (28.6)	3	2	3
Uniform Building by Laws 1984.	7 (28)	4 (22.2)	3 (42.8)	4	5	2
Act 172 in Town and Country Planning Act 1976.	6 (24)	5 (27.8)	1 (14.3)	5	4	7
Coastal Zone guidelines.	6 (24)	4 (22.2)	2 (28.6)	6	6	4
Act 171 in Local Government Act 1976.	4 (16)	3 (16.7)	1 (14.3)	7	7	8
Guidelines for riverfront development.	4 (16)	3 (16.7)	1 (14.3)	8	8	9
Act 133 in Street, Drainage & Building Act 1974.	4 (16)	2 (11.1)	2 (28.6)	9	10	5
National Landscape Guidelines.	4 (16)	3 (16.7)	1 (14.3)	10	9	10

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

From the interviews, 10 regulations and guidelines were identified as associated with waterfront development in Malaysia. From the results, 40% of the respondents thought that the property development companies followed the National Land Code 1965 as guidance for undertaking waterfront development in Malaysia. It was followed by the Land Acquisition Act 1960 and the Environmental Quality Act 1974 which accounted for 32% each, of the results. Table 5.9 above lists the regulations and guidelines associated with waterfront development in Malaysia as suggested by interviewees.

By respondent group, of the 18 Government officers, 50% agreed that property development companies followed the National Land Code 1965 as guidance for undertaking waterfront development in Malaysia. It was followed by the Environmental Quality Act 1974 (33.3%), the Land Acquisition Act (27.8%) and the Town and Country Planning Act 1976 (27.8%). A mere 11.1% of the Government officers thought that property development companies

followed the Street, Drainage and Building Act 1974 as guidance for undertaking waterfront development projects in Malaysia.

In contrast, from the seven of Non-government officers, 42.8% of them thought that property development companies followed the Uniform Building by Laws 1984 and the Land Acquisition Act 1960 as guidance for undertaking waterfront development in Malaysia. Few of them thought that property development companies followed the Town and Country Planning Act 1976, the Local Government Act 1976, the guidelines for riverfronts, and the National Landscape Guidelines as guidance for implementing waterfront development projects in Malaysia, accounting for 14.3% each (or one respondent for each guidance).

Next, all 25 respondents were asked about guidelines for riverfront development as follows:

Q: *Guidelines for riverfront development is designed mainly to control development in front of water areas, particularly close to river areas. Do you aware about this guideline?*

From the interviews it appears that the 21 of respondents are aware of the guidelines for riverfront development while the rest (about 4 respondents) are not familiar with these. From the 21 respondents that are aware of the guidelines for riverfront development, only 16 respondents were Government officers while another five respondents were Non-government officers. Table 5.10 summaries the responses of the interviews.

The 21 respondents who are aware and familiar with the guidelines were further asked about the sufficiency of the guidelines for controlling waterfront development in Malaysia.

Q: Is this guideline considered effective towards successful riverfront development?

From the interviews it appears that only three respondents thought that guidelines for riverfront development were sufficient to control waterfront development in Malaysia and the majority (about 18 respondents) thought that the guidelines were not sufficient to control waterfront development. From the results, the respondents thought that Malaysia also has inadequate regulations for waterfront development; in fact they claimed that there are no specific regulations designed for controlling waterfront development. Furthermore, they also mentioned that the guidelines designed for riverfront development by the Department of Drainage and Irrigation Malaysia was apparently not enforced by the State Government and the Local Authority.

On the other hand, from the interviews it appears that only one of Government officers thought that guidelines for riverfront development were sufficient to control waterfront development in Malaysia while the majority of them (15 respondents) thought that the guidelines were not sufficient to control waterfront development. In contrast, about two of Non-government officers thought that guidelines for riverfront development were sufficient to control waterfront development in Malaysia while another three respondents thought differently.

Moreover, both government and non-government officers thought that Malaysia also had inadequate regulations for waterfront development; in fact they claimed that there are no specific regulations designed for controlling waterfront development. Furthermore, they also mentioned that the guidelines designed for riverfront development by the Department of Drainage and Irrigation Malaysia, were apparently not enforced by the State Government and the Local Authority. Table 5.10 summarises the responses of the interviewees.

Table 5.10: Guidelines for riverfront development – effectiveness levels

	Respondent		
Are you aware of the guidelines for riverfronts development concept?	**G1 n=25 (%)**	**G2 n=18 (%)**	**G3 n=7 (%)**
Yes	21 (84)	16 (88.9)	5 (71.4)
Not familiar	4 (16)	2 (11.1)	2 (28.6)
Are these guidelines considered effective towards successful riverfront development projects?	**Respondent**		
	G1 n=21 (%)	**G2 n=16 (%)**	**G3 n=5 (%)**
Sufficient	3 (14.3)	1 (6.2)	2 (40)
Not sufficient	18 (85.7)	15 (93.8)	3 (60)

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

The 18 respondents who indicated that the guidelines for riverfront development are insufficient for controlling waterfront development in Malaysia were then asked for the reasons behind that view. Table 5.11 summarises the responses from these respondents.

Table 5.11: Guidelines for riverfront development – factors for ineffective guidelines

Reasons for not effective	Respondent			Ranking		
	G1 n=18(%)	G2 n= 15 (%)	G3 n=3 (%)	G1	G2	G3
Insufficient to control environmental issues.	10 (55.5)	7 (46.7)	3 (100)	1	1	1
Insufficient to encourage sustainable waterfronts.	8 (44.4)	6 (40)	2 (66.7)	2	3	2
Too general and do not provide specific guidance.	7 (38.9)	7 (46.7)	0 (0)	3	2	3
Difficult to implement in practice.	3 (16.7)	3 (20)	0 (0)	4	4	4

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

As presented in Table 5.11 above, 10 (about 55.5%) of the respondents who indicated that the guidelines for riverfront development are not sufficient for controlling waterfront development in Malaysia, identified that they are insufficient to control environmental issues as a primary reason for their being ineffective. Eight (44.4%) of the respondents identified that guidelines for riverfront development are not effective due to an inability to encourage sustainable waterfront development. A few (only three) respondents indicated that the guidelines were difficult to implement due to not including comprehensive explanations.

On the other hand, from the 15 Government officers who indicated that the guidelines for riverfront development are not sufficient for controlling waterfront development, about seven (about 46.7%) of them agreed that they are insufficient to control environmental issues and also insufficient to provide specific guidance for controlling waterfront development in Malaysia (accounted for 46.7%).

Similarly, the majority (100%) of Non-government officers who indicated that the guidelines for riverfront development are not sufficient for controlling waterfront development in Malaysia identified that they are insufficient to control environmental issues as a primary reason for their being ineffective. None of the Non-government officers thought that the guidelines are insufficient due to being too general or that they were difficult to implement.

5.3.5 Recommendations for Best Practice for Waterfront Development in Malaysia

At the end of the interview sessions, all 25 respondents were asked for their opinions on what statements should be included in guidelines for achieving successful waterfront development in Malaysia. Respondents were asked to consider several negative effects as discussed in the earlier section and suggest their views on ways to overcome or at least reduce the identified problems. All 25 respondents were asked a question as follows:

Q: Considering of all barriers and limitations, what is your recommendation relating to a new guideline for waterfront development in Malaysia incorporating economical, environmental and social factors?

All 25 respondents gave useful feedback that resulted in eighteen recommended statements. From the eighteen recommendations, 40% of the government officers and 4% of non-government officers thought that all waterfront development projects should require compulsory approval for Environmental Impact Assessment (EIA). Moreover, 56% of the government and non-government officers thought that new guidelines for waterfront development in Malaysia should emphasise the river reserves beautification aspect (accounting for 36%) and that the river be continuously rehabilitated (20%). Respondents also thought that the guidelines for waterfront development should include provision for sufficient public facilities and amenities such as pedestrian paths, toilets, landscaping and recreation areas, which accounting for 52% in total. Respondents' suggestions about which statements that should be included in new guidelines for waterfront development in Malaysia are presented in Table 5.12 below.

The interviewees were then broken into two groups; the Government officers and the Non-government officers to see if their responses differed. From the 18 Government officers, 55.5% thought that all waterfront development projects should require compulsory approval for Environmental Impact Assessment (EIA). Respondents also agreed that the guidelines should include provision for sufficient public facilities and amenities such as pedestrian paths, toilets, landscaping and recreation areas (55.5%) and should emphasise the river reserves beautification aspect (44.4%).

In contrast, from the seven Non-government officers that did not undertake waterfront development, about 42.8% thought that the waterfront development guidelines for Malaysia should emphasise environment protection and awareness and should include provision for sufficient public facilities and amenities such as pedestrian paths, landscaping, access ways, recreation areas, etc..

Table 5.12: Statements for waterfront development guidelines

No	Statement	Respondent			No.	Statement	Respondent		
		G1 n=25 (%)	G2 n=18 (%)	G3 n=7 (%)			G1 n=25 (%)	G2 n=18 (%)	G3 n=7 (%)
1.	Environmental Impact Assessment (EIA) is compulsory.	11 (44)	10 (55.5)	1 (14.3)	10.	Continuous river rehabilitation.	5 (20)	4 (22.2)	1 (14.3)
2.	Environment protection and awareness.	10 (20)	7 (38.9)	3 (42.8)	11.	River reserve beautification.	9 (36)	8 (44.4)	1 (14.3)
3.	Maintenance and rehabilitation costs are shared between stakeholders.	8 (32)	4 (22.2)	4 (5.7)	12.	Upgrading and maintaining sewage systems.	3 (12)	3 (16.7)	0 (0)
4.	Use environmentally friendly materials in construction.	4 (16)	4 (22.2)	0 (0)	13.	Restrict type of development.	7 (28)	6 (33.3)	1 (14.3)
5.	Provide flood mitigation (e.g. by planting more trees).	4 (16)	3 (16.7)	1 (14.3)	14.	Integrate both modern and heritage aspects into development.	6 (24)	6 (33.3)	0 (0)
6.	Protection of natural resources (water and environment).	6 (25)	4 (22.2)	2 (28.6)	15	Encourage economic activities.	2 (8)	2 (11.1)	0 (0)
7.	Provision of sufficient public facilities and amenities (such as pedestrian paths, landscaping, access ways, recreation areas, etc.).	13 (52)	10 (55.5)	3 (42.8)	16.	Sharing waterfront benefits (such as view, financial rewards, etc.) among stakeholders (e.g. community, government, property developer).	8 (32)	4 (22.2)	4 (57.1)
8.	Personal security is maintained by means of policing, surveillance cameras, etc.	5 (20)	5 (22.2)	0 (0)	17.	Continuously educate public about environmental concerns.	1 (4)	0 (0)	1 (14.3)
9.	Upgrading and maintaining established settlements along the waterfront areas.	1 (4)	1 (5.5)	0 (0)	18.	Provide regulations and policies that mitigate market speculation for waterfront properties.	1 (4)	0 (0)	1 (14.3)

* Note: G1 = All interviewees; G2= Government officers; G3 = Non-government officers

Chapter 6
Quantitative Method – Questionnaire Results

The results from the interviews were then used in the questionnaire which was designed and then distributed to property development companies in Malaysia. The analysis in this section was confirmatory in the sense that information gathered during the first set of interviews was also tested in this phase. The questionnaire responses were coded and entered into a computerised database.[46] The analysis of the questionnaire involved the calculations of means and percentages by response category for all questions, to provide an overview of respondent characteristics and response patterns. A comparative analysis by applying T-test was applied to study significant differences in waterfront development practices with respect to respondents' groups. The Exploratory Factor Analysis (EFA) and Correlation were also used as part of the analysis involved in this section. The EFA and Correlation were tested mainly to identify groups of a substantial number of variables and to determine the structure of the relationships between variables included in the guidelines for waterfront development.

6.1 Sample and Response Rates

In the second phase of data collection in this research, the sample data comprises property development companies listed under Bursa Malaysia during 2009. Respondents were selected using a stratified sampling procedure as part of probabilistic sampling. As stated by Bursa Malaysia, only 91 property development companies were listed in 2009 (Bursa Malaysia, 2009).

Of the 91 sets of questionnaires mailed and electronic-mailed (e-mailed) to respondents, 11 respondents returned the questionnaires within two weeks and 24 respondents sent them back after a month. This response gave a 39% response rate one month after the questionnaires were distributed. After a series of telephone follow-ups and e-mail reminders over three months, a total of 61 questionnaires were returned giving a 67% response rate.

Only valid responses were reported in this research. The 67% response rate obtained was considered a high response rate for this type of postal or e-mail survey given that a typical response rate would be 30% (Sekaran, 2003, p. 251). Thus, the 67% response rate obtained

46 The computer programme SPSS was selected as the appropriate analytical tool for processing the data.

was sufficient for the analytical purposes of the research. Appendix J lists the property development companies who participated in this survey.

6.2 Profile of Property Development Companies

Information about the property development companies who were respondents to the survey questionnaire is supplied as background information in order to provide more detail about the respondents. The profiles of the property development companies in Malaysia are presented in Table 6.1 below.

Table 6.1: Profile of property development companies

Variables	Details	n = 61	Percent (%)
Location of operations	National (within Malaysia)	49	80.3
	International (outside Malaysia)	0	0
	Both national and international	12	19.7
Years operating for	Below 1 year	0	0
	2 – 5 years	0	0
	6 – 10 years	4	6.6
	Over 10 years	57	93.4
	Not sure	0	0
Number of employees	0 – 10 people	0	0
	11 – 50 people	6	9.8
	51 – 100 people	10	16.4
	Over 100 people	42	68.9
	Do not know / Not sure	3	4.9
Type of development projects	Residential:		
	Yes	61	100
	Commercial:		
	Yes	53	86.9
	No	8	13.1
	Industrial:		
	Yes	25	41
	No	36	59
	Others:		
	Yes	7	11.5
	No	54	88.5

As presented in Table 6.1, about 80.3% of the property development companies operate within Malaysia, while 19.7% operate at both the national and international levels. None of the property development companies operate only at the international level.

The majority (93.4%) of the property development companies participating in this survey have been operating their companies for over 10 years and only 6.6% have been operating them for between six and nine years. None of the property development companies participating in this research have been operating them for less than five years. Moreover, more than half (68.9%) of all the property development companies participating in this research employ over 100 workers. Around 16.4% employ between 51 and 100 workers, while a further 9.8% employ between 11 and 50 workers. Not surprisingly, no companies employ fewer than 10 workers.

Companies participating in this research are involved in several property development activities such as residential, commercial, industrial and recreational. In particular, all (100%) companies actively participate in residential development, followed by 86.9% who are active in commercial development, while only 41% are active in industrial development. Only 11.5% are involved in 'other' development activities such as recreation.

From the results, it appears that the range of the respondents represented in the sample are similar; that is, they are property development companies that have been actively practising property developments for many years and were listed in Bursa Malaysia in 2009.

6.3 Descriptive Statistics

6.3.1 Waterfront Development Projects

The overall finding in this study is that nearly a third (32.8%) of the property development companies undertook waterfront development projects in Malaysia, while the rest (67.2%) were not involved in waterfront development in Malaysia or internationally.

Of the 67.2% of respondents who did not undertake waterfront development projects, more than half (58.6%) of the respondents are now motivated to undertake waterfront development in the future, 14.6% have decided not to undertake waterfront development in the future and 26.8% are still not sure whether to undertake waterfront development or not, depending on the financial support and demand for waterfront property at the time. Based on these responses it appears that waterfront development in Malaysia may increase in the future.

Of the one third of respondents who undertake waterfront development, over half (60%) of them only incorporate between 1-20% of waterfront development in their projects. Twenty-

five percent of respondents undertake waterfront development projects between 21-40% of the time, while 15% of them incorporate 41-60% of waterfront development in their projects.

From the 32.8% of respondents who undertake waterfront development, 75% of them had undertaken waterfront development for residential use, 70% were developed for mixed-use and 25% were developed for recreational purposes. However, the results indicated that no companies developed waterfront projects for industrial use, while only five percent developed them for 'other' uses.

The results indicated that "a profit/financial benefit" and "to diversify property type of developments" considerations greatly influence the respondents' decisions as to whether to undertake waterfront development in Malaysia, accounting for 35% for each response. Twenty percent of the property development companies undertake waterfront development for the conservation of natural resources, while 10% undertake waterfront projects for 'other' reasons such as public benefit use such as to provide public amenities for locals and visitors. Table 6.2 summarises results for waterfront development in Malaysia.

Table 6.2: Waterfront development in Malaysia

Variable	n=61	Percent (%)
Undertake waterfront development projects:		
Yes	20	32.8
No	41	67.2
Undertake waterfront development projects in future:		
Yes	24	58.6
No	6	14.6
Not sure	11	26.8
Percentage of waterfront development projects:		
1-20%	12	60
21-40%	5	25
41-60%	3	15
Type of waterfront development projects:		
Residential	15	75
Commercial	8	40
Mixed-use	14	70
Industrial	0	0
Recreational	5	25
Other	1	5
Primary motive for undertaking waterfront development:		
Profit/financial benefits	7	35
To diversify property type of development	7	35
Conservation of natural resources	4	20
Other	2	10

6.3.2 Waterfront Development: Reasons for Applying for Waterfront Development

A question was included to assess the respondents' reactions to various reasons for initiating waterfront development in Malaysia in the future. By using a scale of "1", most influential factor to "9", least influential factor, respondents were asked to rank their perception towards reasons for beginning waterfront development projects in Malaysia.[47] Table 6.3 presents the reasons for undertaking waterfront development projects in Malaysia based on property development companies' preferences.

Table 6.3: Reasons for applying for waterfront development by property development companies

Reason	Respondent		
	Group 1 n = 61 (%) (*)	**Group 2 n = 20 (%) (*)**	**Group 3 n = 41 (%) (*)**
To introduce a new concept in development.	22 (36.1) (1)	6 (30) (1)	16 (39) (1)
To provide community amenities.	11 (18) (2)	5 (25) (2)	6 (14.6) (2)
To cater for demand from buyers.	9 (14.8) (3)	3 (15) (3)	6 (14.6) (3)
To create investments for investors.	8 (13.1) (4)	3 (15) (4)	5 (12.2) (4)
To make higher profits.	7 (11.5) (5)	3 (15) (5)	4 (9.7) (6)
To reduce environmental damage.	5 (8.2) (6)	0 (0) (8)	5 (12.2) (5)
As a tourist attraction.	4 (6.5) (7)	0 (0) (9)	4 (9.7) (7)
To protect natural resources.	2 (3.3) (8)	2 (10) (6)	0 (0) (8)
Maintain heritage and cultural values	2 (3.3) (9)	2 (10) (7)	0 (0) (9)

* Ranking: From Most Influential = 1 to Least Influential = 9.

** Note: **Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development .

From the 61 questionnaires returned, over a third (36.1%) of property development companies indicated that their main reason for undertaking waterfront development was to introduce a new concept in development. The second most popular reason was to provide amenities to communities, accounting for 18%, followed by a desire to cater for demand from buyers, especially waterfront property buyers (14.8%). Moreover, respondents thought that supplying waterfront properties for investment (13.1%) and making a profit (11.5%) were their reasons. Interestingly, a mere 8.2% of respondents were motivated to supply waterfront properties for environmental concerns such as to reduce environmental damage and protect natural resources (3.3%).

47 Eight reasons for initiating waterfront development were revealed from the interviews in the first phase of data collection.

Not surprisingly, results indicate that most of the respondents tended to be more profit driven rather than motivated by environmental reasons when initiating waterfront development.

Again, responses were broken down to those that had undertaken waterfront development and those that had not. In terms of property development companies undertaking waterfront development projects in Malaysia, 30% of them indicated that to introduce a new concept in development was their main reasons for undertaking waterfront development. This was followed by providing community amenities, accounting for 25%, followed by catering for demand from buyers, creating to investment for investors, and making higher profits, accounting for 15% of respondents each respectively. Interestingly, none of the property development companies undertaking waterfront development were motivated to supply waterfront properties for environmental or tourist reasons. A mere 10% of respondents were motivated to undertake waterfront development to protect the natural resources and maintain heritage and cultural values.

On the other hand, of the 41 property development companies that did not undertake waterfront development, 39% of them indicated that their main reason for undertaking waterfront development was to introduce a new concept in development. About 14.6% of them indicated that providing community amenities and catering for demand from buyers were the reasons for undertaking waterfront development projects.

6.3.3 Successful Waterfront Development

Overall, from 61 returned questionnaires, 44.2% of the respondents were unsure as to whether Malaysia had successful implementation of waterfront development or not. Forty-one percent of respondents firmly stated that waterfront development undertaken in Malaysia were not successful as compared to other developed countries. Only 14.8% indicated that Malaysia had successfully implemented waterfront development.

On the other hand, of the 20 property development companies undertaking waterfront development projects in Malaysia, nearly half (45%) of them thought that Malaysia did not have successful implementation of waterfront development, while 35% were unsure whether Malaysia had successful implementation or not. Surprisingly, 20% of them indicated that Malaysia has successfully implemented waterfront development projects. Table 6.4 presents the results of the successful implementation of waterfront development.

Table 6.4: Successful implementation of waterfront development

	Yes n (%)	No n (%)	Unsure n (%)	Total n (%)
Within all development companies.	9 (14.8)	25 (41)	27 (44.2)	61 (100)
Within development companies undertaking waterfront development projects.	4 (20)	9 (45)	7 (35)	20 (100)
Within development companies who did not undertake waterfront development projects.	5 (12.2)	16 (39)	20 (48.8)	41 (100)

As shown in Table 6.5 below, factors that prevented the successful implementation of waterfront development were then investigated. From the responses, 32.8% of respondents thought that difficulty in balancing the social, economic and financial needs of the various stakeholders involved in the waterfront development projects was the most influential factor that prevented the successful implementation of waterfront development in Malaysia. That there is no collaboration between stakeholders involved in waterfront development was identified as a factor by 18% of the respondents. About 14.8% of respondents identified insufficient financial support as a reason for unsuccessful waterfront development, while less participation (domination by government and less involvement by non-government organisations) was suggested as a reason by 14.8% of respondents. The least number (3.3%) of respondents identified difficulty in obtaining planning permission for waterfront development as a factor that prevented successful waterfront development in Malaysia.

On the other hand, from the 32.8% of respondents who undertake waterfront development, nearly half (45%) of them thought that difficulty in balancing social, economic and financial needs between various stakeholders was a main factor that contributed to the unsuccessful implementation of waterfront development in Malaysia. Moreover, about 20% of respondents identified insufficient financial support for the development as a reason for the unsuccessful implementation of waterfront development projects, while 10% indicated that lack of collaboration between stakeholders in waterfront development projects as a reason. None of the respondents indicated the limited number of viable locations for waterfront development as a main reason for the unsuccessful implementation of waterfront development in Malaysia.

Table 6.5: Factors for unsuccessful implementation of waterfront development

Factor	Group 1 n = 61 (%)	Group 2 n = 20 (%)	Group 3 n = 41 (%)
Difficulty in balancing the various social, economic and financial needs of the various stakeholders.	20 (32.8)	9 (45)	11 (26.8)
No collaboration between stakeholders.	11 (18.0)	2 (10)	9 (21.9)
Insufficient financial resources.	9 (14.8)	4 (20)	5 (12.2)
Less participation (domination by government and less involvement by non-government organisations).	9 (14.8)	2 (10)	7 (17.1)
Other - external interference and lack of human expertise).	6 (9.8)	2 (10)	4 (9.8)
Limited number of viable locations	4 (6.6)	0 (0)	4 (9.8)
Difficulty in obtaining planning permission.	2 (3.3)	1 (5)	1 (2.4)

*** Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development.

6.3.4 Regulations and Guidelines Related to Waterfront Development

A question was included to determine the respondents' levels of awareness of various regulations that relate to waterfront development in Malaysia. Ten response options were provided as outlined in Table 6.6 below.

Overall, the results indicate that the majority of the respondents were somewhat familiar with the regulations and guidelines related to waterfront development in Malaysia (average *mean score=3.40*). The mean scores for each regulation are presented in Table 6.6 below.

The results showed that respondents were most familiar with the National Land Code 1965 *(mean score=3.59)*. The Town and Country Planning Act 1976, the Uniform Building By-Law 1984, the Land Acquisition Act 1960 and the Local Government Act 1976 were more familiar to respondents with mean scores greater than 3.50 and were more familiar than the other regulations listed in Table 6.6. The results showed that the lowest mean score was guidelines for riverfront development *(mean=3.05)*. However, respondents were still familiar with this guideline.

On the other hand, of the 20 respondents undertaking waterfront development projects, the results showed that respondents were most familiar with the Uniform Building By-Law 1984 *(mean score=3.85)*, and followed by the Town and Country Planning Act 1976 *(mean*

score=3.70). The results showed that the lowest mean score was guidelines for riverfront development *(mean score=3.45)*.

In contrast, of the 41 respondents did not undertaking waterfront development projects, most of them were familiar with the National Land Code 1965 *(mean score=3.56)*. This is followed by the Town and Country Planning Act 1976 *(mean score=3.51)*, and the Land Acquisition Act 1960 *(mean score=3.46)*. Interestingly, the results showed that the lowest mean score for regulations and guidelines for waterfront development were National Landscape Guidelines and the Guidelines for Riverfront Development Concept with mean score 2.98 and 2.85, indicating that the respondents have heard about the guidelines but not familiar of it.

Table 6.6: Regulations and guidelines for waterfront development – respondents' levels of awareness

Regulation	Mean scores		
	Group 1 Mean score	**Group 2 Mean score**	**Group 3 Mean score**
National Land Code 1965.	3.59	3.65	3.56
Town and Country Planning Act 1976.	3.57	3.70	3.51
Uniform Building By-Law 1984.	3.56	3.85	3.41
Land Acquisition Act 1960.	3.52	3.65	3.46
Local Government Act 1976.	3.51	3.70	3.41
Environment Quality Act 1974.	3.48	3.65	3.39
Street, Drainage and Building Act 1974.	3.38	3.65	3.24
Coastal Zone Development Guidelines.	3.16	3.50	3.00
National Landscape Guidelines.	3.16	3.55	2.98
Guidelines for Riverfront Development Concept	3.05	3.45	2.85
Average mean score = 3.40			

* Scale: From Never heard of it = 1 to Very familiar = 4

**** Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development

To determine the concern that respondents might have about sufficiency of those regulations and guidelines (as listed in Table 6.6 above) to control waterfront development in Malaysia, four options were provided as outlined in Table 6.7 below. Results show that nearly half (44.3%) of the respondents determined that Malaysia did not have sufficient regulations to control waterfront development. About 37.7% of the respondents agreed that the government had provided regulations for waterfront development, but only to a moderate extent. On the other hand, only 6.5% of respondents thought that Malaysia has many such regulations and that these were sufficient for controlling waterfront development, while another 11.5% of the respondents thought that Malaysia has sufficient regulations for waterfront development, and

that no change was needed. This indicates that perhaps the government and the policy makers might need to improve regulations for waterfront development.

On the other hand, from 20 property development companies undertaking waterfront development, nine companies indicate that Malaysia has moderately sufficient regulations for controlling waterfront development; four property development companies indicate Malaysia has too many regulations and; two property development companies indicate that Malaysia has sufficient regulations and no change is needed. However, five of property development companies undertaking waterfront development in Malaysia indicate that Malaysia has insufficient regulations and guidelines for controlling waterfront development.

In contrast, from the 41 respondents did not undertaking waterfront development, 22 companies indicate that Malaysia has insufficient regulations and guidelines for controlling waterfront development while 14 companies indicate that Malaysia has moderately sufficient regulations. None of the property development companies did not undertaking waterfront development projects indicate that Malaysia has too many regulations for controlling waterfront development and only five companies indicate that Malaysia has sufficient regulations.

Table 6.7: Sufficient regulations and guidelines for waterfront development

Concern	G1 N=61 (%)	G2 n=20 (%)	G3 n=41 (%)
Too many regulations.	4 (6.5)	4 (20)	0 (0)
Insufficient regulations.	27 (44.3)	5 (25)	22 (53.7)
Moderately sufficient regulations – could do more.	23 (37.7)	9 (45)	14 (34.1)
Sufficient regulations – no change needed.	7 (11.5)	2 (10)	5 (12.2)

** **Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development

Similar responses were obtained when respondents were asked about the enforcement of regulations for waterfront development in Malaysia. From a range of options as listed in Table 6.8 below, more than half (52.4%) suggested that the Malaysian government moderately enforced the regulations for waterfront development in Malaysia. About 24.6% thought that no enforcement was undertaken by the responsible agencies. On the other hand, only 3.3% of respondents thought that the regulations were enforced strictly, while the remaining 19.7% were unsure whether the regulations were enforced or not. This indicates that perhaps the Malaysian government and the responsible agencies might need to enforce strictly the

regulations for waterfront development. Table 6.8 summarises the responses about the enforcement of waterfront regulations in Malaysia.

Table 6.8: Enforcement of regulations for waterfront development

Concern	G1 N=61 (%)	G2 n=20 (%)	G3 n=41 (%)
Strictly enforced.	2 (3.3)	2 (10)	0 (0)
Moderately enforced.	32 (52.4)	13 (65)	19 (46.3)
Not enforced.	15 (24.6)	5 (25)	10 (24.4)
Unsure.	12 (19.7)	0 (0)	12 (29.3)

** **Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development

From the results, thirteen of the property development companies undertaking waterfront development projects agree that Malaysia has moderately enforced regulations for waterfront development. Moreover, five of the property development companies indicate that Malaysian government has not enforced the regulations while, only two companies indicate that Malaysia has strictly enforced.

In contrast, about nineteen of the property development companies did not undertaking waterfront development indicate that Malaysia has moderately enforced regulations for waterfront development. None of the property development companies indicate that Malaysia has strictly enforced the regulations for controlling waterfront development.

6.3.4.1 Effectiveness of Guidelines for Riverfront Development

A question was included to assess the respondents' reactions to guidelines for riverfront development in terms of the effectiveness of the guidelines as something solely designed for controlling riverfront development in Malaysia. Four factors that were previously suggested by the interviewees in the first phase of data collection were provided as outlined in Table 6.9 below.

Table 6.9: Effectiveness of guidelines for riverfront development

Factors	Mean score		
	Group 1	**Group 2**	**Group 3**
Sufficient to control environment problems.	2.25	2.45	2.15
Provide specific guidance for riverfront development.	2.43	2.25	2.51
Easy to implement the guidelines in practice.	2.43	2.30	2.49
Encourage sustainable riverfront development.	2.57	2.55	2.59
Average mean score = 2.45			

* Scale: from strongly disagree = 1 to strongly agree = 5

**** Group 1** = All respondents; **Group 2** = Respondents who undertook waterfront development; **Group 3** = Respondents who did not undertake waterfront development

Overall, the results indicate that the majority of the respondents disagreed about the effectiveness of the guidelines for riverfront development with an average mean score of 2.45. The mean values for each factor ranges between 2.25 and 2.57, indicating that the respondents disagreed about the effectiveness of the guidelines for controlling waterfront development in Malaysia. For example, the respondents disagreed that the guidelines were sufficient for controlling environmental problems *(mean score=2.25)* that could develop from the waterfront development areas. Guidelines for riverfront development were also identified as not providing specific guidance *(mean score=2.43)* for waterfront development in Malaysia.

By respondent groups, in terms of respondents undertaking waterfront development projects in Malaysia, the results show that the majority disagreed about the effectiveness of the guidelines for riverfront development with a mean score for each factor ranging between 2.25 and 2.55.

Similar responses were obtained from respondents that do not undertake waterfront development. The respondents disagreed that the guidelines were sufficient to control environmental problems *(mean score=2.15),* and also identified that it is not easy to implement the guidelines *(mean score=2.49).*

6.3.5 Recommendations on the Statements for Waterfront Development Guidelines

In the final part of the questionnaire form, a question was included to determine the respondents' levels of agreement about various statements in future waterfront development guidelines for Malaysia. Eighteen statements were provided as outlined in Table 6.10 below. These statements were obtained from the interviews conducted in the first phase of data collection to determine if there were statistically significant statements to be recommended

for future waterfront development guidelines for Malaysia, based on the mean scores. Table 6.10 below summarises the responses.

Table 6.10: Statements about waterfront development guidelines

Statements	Mean score		
	G1	**G2**	**G3**
River reserve beautification.	4.39	4.45	4.37
Participation among stakeholders should be compulsory at every stage of the development.	4.36	4.40	4.34
Environmental Impact Assessment (EIA) is compulsory.	4.33	4.35	4.32
Sharing waterfront benefits (such as view, financial rewards, etc.) among stakeholders (e.g. community, government, developer).	4.31	4.20	4.37
Continuous river rehabilitation.	4.28	4.25	4.20
Upgrading and maintaining sewage systems.	4.26	4.45	4.20
Maintenance & rehabilitation costs are shared between stakeholders.	4.21	4.40	4.20
Provide flood mitigation (e.g. by planting more trees).	4.20	3.95	4.20
Should use environmentally friendly materials in construction.	4.18	4.20	4.15
Encourage economic activities.	4.13	4.25	4.22
Protection of natural resources (water and environment).	4.07	4.20	4.00
Provision of sufficient public facilities and amenities (such as pedestrian, landscaping, access ways, recreation areas, etc.).	3.93	3.85	3.98
Integrate both modern and heritage aspects into development.	3.92	3.60	4.07
Personal security is maintained by means of policing, surveillance cameras, etc.	3.90	4.10	3.80
Restrict type of development.	3.89	3.90	3.88
Continuously educate public about environmental concerns.	3.85	3.85	3.98
Upgrading and maintaining established settlements along the waterfront areas.	3.64	3.30	3.80
Mitigate property speculation.	3.54	3.65	3.49
Average mean score = 4.08			

* Scale: from strongly disagree = 1 to strongly agree = 5

**** G1** = All respondents; **G2** = Respondents who undertook waterfront development; **G3** = Respondents who did not undertake waterfront development

The majority of respondents agreed with all of the statements suggested for future waterfront development guidelines in Malaysia, with an average mean score of 4.08. In particular, from the results, the majority of the respondents indicated that beautification of the river reserve as well as the river itself, was most likely to be included in the waterfront development guidelines *(mean score=4.39)*. It was followed by participation among stakeholders, being compulsory at every stage of the development *(mean score=4.36)* and the Environmental Impact Assessment *(mean score=4.33)* being compulsory in the waterfront development guidelines as suggested by the respondents. Moreover, some respondents were unsure

whether statements such as the provision of sufficient public facilities and amenities *(mean score=3.93)* and personal security maintained by means of policing and surveillance cameras *(mean score=3.90)* should be included in the guidelines. However, results show that each statement indicated mean scores close to 4.0 indicating that respondents agreed that the statement should be included in the future waterfront development guidelines for Malaysia.

The results by respondent group show that the majority of the 20 property development companies undertaking waterfront development indicate that beautification of the river reserve and river itself, and upgrading and maintaining sewage system, were most likely to be included in the waterfront development guidelines with a mean score 4.45 each respectively. These was followed by participation among stakeholders being compulsory at every stage of the development *(mean score=4.40)* and the compulsory sharing maintenance and rehabilitation costs between stakeholders *(mean score=4.40).*

In contrast, the majority of the 41 respondents that did not undertaking waterfront development projects agreed that beautification of the river and river reserve and sharing waterfront benefits among stakeholders were mostly important to be included in the guidelines for waterfront development with a mean score of 4.37 each respectively. Moreover, the respondents also agreed that the participation among stakeholders being compulsory at every stage of the development (*mean score = 4.34*) and the Environmental Impact Assessment (EIA) (*mean score = 4.32*) should be included in the guidelines.

6.4 Cross Tabulation Analysis

6.4.1 Years of Operation and whether the Company Undertakes Waterfront Development or not

Table 6.11 presents the cross tabulation analysis result between years of operations and undertake whether the company undertakes waterfront development. From the results, 57 respondents operated over 10 years in the construction industry in Malaysia while only four respondents operated less than 10 years. For respondents that did not undertake waterfront development shows that 66.7% (38 respondents) have operated over 10 years while only 19 respondents (33.3%) undertake waterfront development operated over 10 years. Moreover, only 1 respondent that undertakes waterfront development has been operating less than 10 years. Table 6.11 summarises these result.

Table 6.11: Cross tabulation between years of operation and whether the company undertakes waterfront development

		Undertakes waterfront development		
		Yes n (%)	No n (%)	Total n (%)
Years of Operation	6-10 years	1 (25)	3 (75)	4 (100)
	Over 10 years	19 (33.3)	38 (66.7)	57 (100)
	Total n (%)	20 (32.8)	41 (67.2)	61 (100)

6.4.2 Number of Employees and whether the Company Undertakes Waterfront Development or not

Table 6.12 presents the cross tabulation analysis result between number of employees and whether the company undertakes waterfront development. From the results, 42 respondents employed over 100 people in their companies while 16 respondents employed less than 100 people. From the 41 respondents that did not undertake waterfront development, 27 respondents employed over 100 peoples, while 7 respondents employed less than 100 and three respondents were unsure about the number of employees in their company. About 15 respondents that undertake waterfront development employed between 11 and 100 people.

Table 6.12: Cross tabulation between number of employees and whether the company undertakes waterfront development

		Undertake waterfront development		
		Yes n (%)	No n (%)	Total n (%)
Number of employees	11-50 people	2 (33.3)	4 (66.7)	6 (100)
	51-100 people	3 (30)	7 (70)	10 (100)
	Over 100 people	15 (35.7)	27 (64.3)	42 (100)
	Do not know / not sure	0 (0)	3 (100)	3 (100)
	Total n (%)	20 (32.8)	41 (67.2)	61 (100)

6.4.3 Years of Operation and Percentage of Waterfront Development Projects

Table 6.13 presents the cross tabulation analysis between the years of operation and the percentage of waterfront development projects undertaken by property development companies. From the 20 property development companies undertaking waterfront development, 19 of them have been operating more than 10 years, and only one company operated less than 10 years. Moreover, about 11 property development companies have been operating over 10 years in the construction industry have undertaken 1-20% of their

development projects as waterfront development, while only five companies have undertaken 21-40% of waterfront development projects and three companies have developed 41-60% waterfront development projects. In contrast, none of the property development companies that operated less than 10 years have undertaken more than 20% of waterfront development projects as a share of their development projects.

Table 6.13: Cross tabulation between the years of operation and the percentage of waterfront development projects

		Waterfront development percentage				
		1-20% n (%)	**21-40% n (%)**	**41-60% n (%)**	**Not applicable* n (%)**	**Total n (%)**
Years of operation	6-10 years	1 (25)	0 (0)	0 (0)	3 (75)	4 (100)
	More than 10 years	11 (19.3)	5 (8.8)	3 (5.2)	38 (66.7)	57 (100)
	Total n (%)	12 (19.7)	5 (8.2)	3 (4.9)	41 (67.2)	61 (100)

* Note: Not applicable refers to respondents that did not undertake waterfront development.

6.4.4 Number of Employees and the Percentage of Waterfront Development Projects

Table 6.14 shows the cross tabulation analysis between the number of employees and the percentage of waterfront development projects undertaken by property development companies. From the results, ten property development companies have that employed over 100 people have undertaken1-20% of waterfront development projects as a share of their total developments, while only five companies have undertaken between 20-60% of their development projects.

Table 6.14: Cross tabulation between the number of employees and the percentage of waterfront development projects

		Waterfront development percentage				
		1-20% n (%)	**21-40% n (%)**	**41-60% n (%)**	**Not applicable n (%)**	**Total n (%)**
Number of employees	11-50 people	0	2 (33.3)	0	4 (66.7)	6 (100)
	51-100 people	2 (20)	1 (10)	0 (0)	7 (70)	10 (100)
	Over 100 people	10 (23.8)	2 (4.8)	3 (7.1)	27 (64.3)	42 (100)
	Do not know / not sure	0 (0)	0 (0)	0 (0)	3 (100)	3 (100)
	Total n (%)	12 (19.7)	5 (8.2)	3 (4.9)	41 (67.2)	61 (100)

* Note: Not applicable refers to respondents that did not undertake waterfront development.

6.5 T-Test Analysis

6.5.1 T-test on the Statements for Waterfront Development Guidelines between Two Groups of Respondents

An independent sample t-test was carried out on eighteen statements recommended for waterfront development guidelines for Malaysia, to determine if there was statistical evidence of difference between how the two respondent groups replied; those that had undertaken development and those that hadn't. Table 6.15shows the mean, standard deviation, *t*-values and *p*-vales of the factors for each group.

Table 6.15: T-test on the statements for waterfront development guidelines between two groups of respondents

Statements	Undertake waterfront development projects	Mean score	SD	*t*-values	*p*-values
River reserve beautification.	Yes No	4.45 4.37	0.510 0.488	0.623	0.536
Participation among stakeholders should be compulsory at every stage of the development.	Yes No	4.40 4.34	0.598 0.825	0.315	0.754
Environmental Impact Assessment (EIA) is compulsory.	Yes No	4.35 4.32	0.745 0.610	0.184	0.855
Sharing waterfront benefits (such as view, financial rewards, etc.) among stakeholders (e.g. community, government, developer).	Yes No	4.20 4.37	0.616 0.733	-0.872	0.387
Continuous river rehabilitation.	Yes No	4.45 4.20	0.605 0.782	1.281	0.205
Upgrading and maintaining sewage systems.	Yes No	4.40 4.20	0.681 0.715	1.067	0.290
Maintenance & rehabilitation costs are shared between stakeholders.	Yes No	4.25 4.20	0.550 0.511	0.384	0.702
Provide flood mitigation (e.g. by planting more trees).	Yes No	4.20 4.20	0.523 0.749	0.029	0.977
Should use environmentally friendly materials in construction.	Yes No	4.25 4.15	0.851 0.691	0.509	0.613
Encourage economic activities.	Yes No	3.95 4.22	0.759 0.652	-1.435	0.157

Statements	Undertake waterfront development projects	Mean score	SD	*t*-values	*p*-values
Protection of natural resources (water and environment).	Yes No	4.20 4.00	0.696 0.671	1.080	0.285
Provision of sufficient public facilities and amenities (such as pedestrian, landscaping, access ways, recreation areas, etc.).	Yes No	3.85 3.98	0.745 0.724	-0.630	0.531
Integrate both modern and heritage aspects into development.	Yes No	3.60 4.07	0.598 0.721	-2.537	0.014
Personal security is maintained by means of policing, surveillance cameras, etc.	Yes No	4.10 3.80	0.788 0.749	1.420	0.161
Restrict type of development.	Yes No	3.90 3.88	0.718 0.600	0.126	0.900
Continuously educate public about environmental concerns.	Yes No	3.85 3.85	0.745 0.654	-0.020	0.984
Upgrading and maintaining established settlements along the waterfront areas.	Yes No	3.30 3.80	0.865 0.782	-2.287	0.026
Mitigate property speculation.	Yes No	3.65 3.49	0.813 0.870	0.698	0.488

* Significant at 5 percent confident level

From the results, there is no significant difference in the responses to the statements recommended for waterfront development for Malaysia between the two groups, the respondents undertaking waterfront development and those that did not undertake waterfront development. However, there is a significant difference on two statements recommended for waterfront development guidelines namely upgrading and maintaining established settlements along the waterfront areas *($p<0.022$)* and integrate both modern and heritage aspects into development *($p< 0.014$)* between the two groups, the respondents undertake waterfront development and the respondents do not undertake waterfront development.

6.6 Exploratory Factor Analysis

The following sections provide the results of the Exploratory Factor Analysis.

6.6.1 Tests for Determining the Appropriateness of Exploratory Factor Analysis

Prior to performing an exploratory factor analysis, the data set for attributes recommended for waterfront development guidelines was examined in order to ensure the appropriateness of the data set for exploratory factor analysis.

6.6.1.1 Examination of the Correlation Matrix

The visual inspection of the correlation matrix showed that there were many substantial correlations above 0.30 as suggested by Pallant (2007), indicating that the data set was appropriate for exploratory factor analysis. Appendix J presents correlation matrix table of the data set.

6.6.1.2 Bartlett's Test of Sphericity

The value of Bartlett's test was statistically significant (sig.<0.05) as suggested by Pallant (2007) and Hinton et al. (2004), indicating that the data set was appropriate for exploratory factor analysis. Table 6.16 presents the results of the Bartlett's test of Sphericity.

Table 6.16: Bartlett's test of Sphericity

Bartlett's Test of Sphericity	Approx. Chi-Square	342.737
	df	153
	Sig.	.000

6.6.1.3 Kaiser-Meyer-Olkin Measure of Sampling Adequacy

The Kaiser-Meyer-Olkin measure of sampling adequacy index was 0.653. Tabachnick and Fidell (2007) defined this value (±0.60) as the minimum value for a good factor analysis, indicating that the data set was appropriate for exploratory factor analysis.

6.6.2 Results of Exploratory Factor Analysis

The results of the tests for determining the appropriateness of exploratory factor analysis for the data set were appropriate for exploratory factor analysis. Consequently, principle component factor analysis was conducted on all of the variables measuring for waterfront development guidelines, which were generated from the information gathered from interviews and the survey questionnaires.

6.6.2.1 Latent Root Criterion

Latent root criterion considers all factors that have eigenvalues greater than 1.0 as significant (Stewart, 1981). Results of the latent root criterion (see Table 6.23) indicated that the 18 variables submitted for factor analysis should be extracted to form six factors. See Table 6.23 below for eigenvalues and the explained percentage of variance of the data set.

6.6.2.2 Percentage of Variance Criterion

The six factors for waterfront development guidelines extracted, explained approximately 66.26% of the variation in the data set and was above 60% as suggested by Hair et al. (2006). See Table 6.17.

Table 6.17: Eigenvalues and the explained percentage of variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.536	25.201	25.201	4.536	25.201	25.201
2	1.778	9.875	35.076	1.778	9.875	35.076
3	1.619	8.993	44.069	1.619	8.993	44.069
4	1.539	8.552	52.620	1.539	8.552	52.620
5	1.241	6.897	59.518	1.241	6.897	59.518
6	1.214	6.742	66.259	1.214	6.742	66.259
7	0.983	5.463	71.723			
8	0.890	4.945	76.668			
9	0.717	3.983	80.651			
10	0.674	3.742	84.393			
11	0.622	3.457	87.850			
12	0.467	2.593	90.442			
13	0.394	2.187	92.630			
14	0.358	1.990	94.620			
15	0.319	1.774	96.394			
16	0.268	1.490	97.884			
17	0.221	1.228	99.111			
18	0.160	0.889	100.000			

6.6.2.3 Scree Test Criterion

According to Hair, Black, Babin, & Anderson (2009), the scree test criterion is used "to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure." As depicted in Figure 6.1, there were six factors extracted before the curve became approximately a horizontal line. The plot slopes steeply downward at the beginning before slowly became approximately a straight line, indicating that the extraction of six factors is qualified for this analysis.

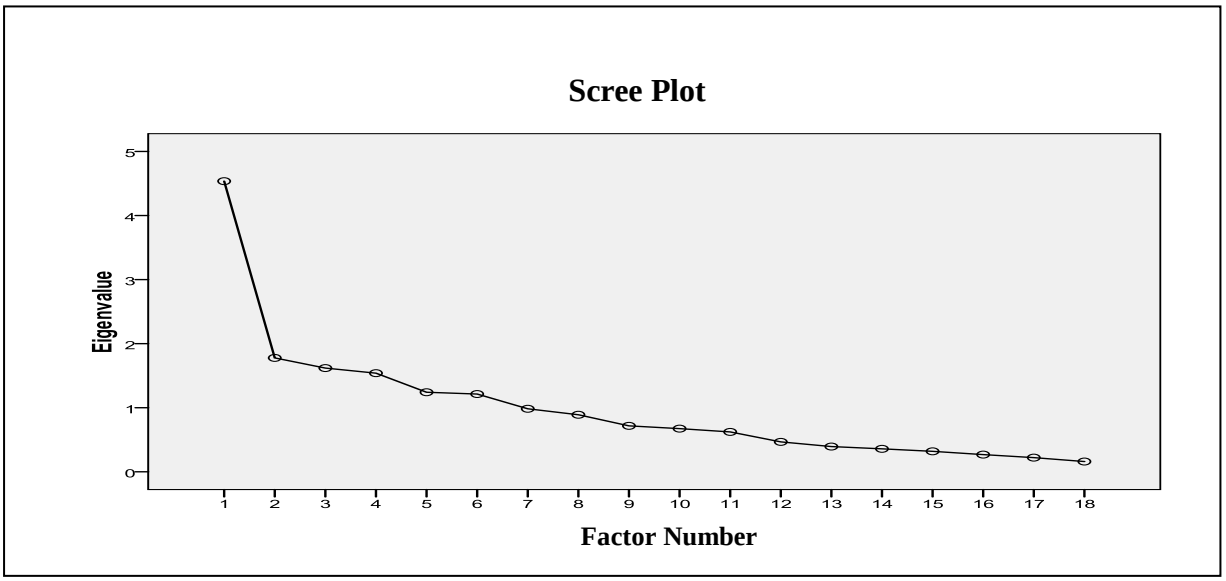


Figure 6.1: Scree test criterion

6.6.2.4 Factor Rotation

The VARIMAX normalised rotation displayed all eighteen variables for waterfront developments guidelines loading in the six factors as presented in Table 6.24 below.

6.6.2.5 Interpretation of the Exploratory Factor Analysis

A principal component factor analysis specifying six factors that included all variables for waterfront development guidelines was attempted with a VARIMAX normalised rotation, to highlight a simple structure amongst the six factors identified.[48] Table 6.18 below summarises

48 In this research, an orthogonal rotation (VARIMAX) was conducted. The latent root criterion and the scree test criterion, which state that only factors with Eigenvalues greater than one should be used, was also considered in the choice of the number of factors to include (Hair, et al., 2006).

the results of the exploratory factor analysis. The six factors extracted by factor analysis explained 66.26% of the variation in the data.

All factor loadings ranged from 0.548 to 0.821. Each factor was named according to the salient themes among the items (Hair, et al., 2006). The final factors were identified as Environment (Factor 1), Waterfront benefits (Factor 2), Mitigation (Factor 3), Beautification (Factor 4), Security (Factor 5), and Type of developments (Factor 6). Hair et al. (2006) determined that items with higher loadings had a greater influence on the name selected to represent a factor and the name assigned to the factor should accurately reflect the items loaded on that factor.

Factor 1 was named *'Environment'* and was strongly correlated with variables associated with environmental matters. The variables included in Factor 1 are listed in Table 6.24 below such as 'Environment Impact Assessment (EIA) is compulsory', 'maintenance and rehabilitation costs are shared between stakeholders' and 'upgrading and maintaining established settlements along the waterfront areas'.

The second factor was named '*Waterfront benefits'*. This Factor included several variables such as 'sharing waterfront benefits such as views, financial rewards, etc. among stakeholders (e.g. community, government officers and developers)' and 'encourage economic activity'.

Factor 3 was named *'Mitigation'* and correlated highly with variables associated with public and developer awareness on waterfront developments. Two variables were loaded in Factor 3 namely, 'mitigate property speculation' and 'continuously educate the public about environmental concerns'.

Factor 4 was named *'Beautification'* which was related to protecting natural resources close to waterfront developments areas. This Factor included two variables namely, 'river reserve beautification' and 'protecting of natural resources e.g. water and environment'.

The collective name for the correlated variables loaded in Factor 5 was *'Security'* and relates to both waterfront users (community) and developers. Two variables loaded within this factor were 'personal security is maintained by means of policing, surveillance cameras, etc.' and 'should use environmentally friendly materials in construction'.

Factor 6 posed a challenge as most variables with high loadings were categorised with other factors. In the end, this Factor was called '*Type of development'* as this was the only variable that remained.

Lastly, the variables loaded in each factor were subjected to a reliability test using Cronbach's Alpha. The next section explains the results for the reliability test conducted for each factor.

Table 6.18: Factor analysis results: Principal Component extraction

Factor variables	Factor					
Factor number / **Factor name**	Factor 1 Environment	Factor 2 Waterfront benefits	Factor 3 Mitigation	Factor 4 Beautification	Factor 5 Security	Factor 6 Type of developments
(1) Environment Impact Assessment (EIA) is compulsory.	.703					
(2) Maintenance & rehabilitation costs are shared between stakeholders.	.697					
(3) Upgrading and maintaining established settlements along the waterfront areas.	.674					
(4) Provision of sufficient public facilities and amenities (such as pedestrian paths, landscaping, access ways, recreation areas, etc.).	.670					
(5) Provide flood mitigation (e.g. by planting more trees).	.636					
(6) Continuous river rehabilitation.	.586					
(7) Integrate both modern and heritage aspects into development.	.574					
(1) Sharing waterfront benefits (such as views, financial rewards, etc.) among stakeholders (e.g. community, government, developers).		.827				
(2) Encourage economic activity.		.691				
(3) Upgrading and maintaining sewage systems.		.656				
(4) Participation among stakeholders should be compulsory at every stage of the development.		.551				
(1) Mitigate property speculation.			.799			
(2) Continuously educate public about environmental concerns.			.718			
(1) River reserve beautification.				.745		
(2) Protection of natural resources (water and environment).				.600		
(1) Personal security is maintained by means of policing, surveillance cameras, etc.					.737	
(2) Should use environmentally friendly materials in construction.					.548	
(1) Restrict type of development.						.821
Percentage Variation Explained	25.201%	9.875%	8.993%	8.552%	6.897%	6.742%
Cumulative Percentage Variation Explained	25.201%	35.076%	44.069%	52.620%	59.518%	66.259%

* Factor loadings in the range of ± .30 to ± .40 are considered to meet the minimal level for interpretation of structure. Loadings ± .50 or greater are considered practically significant, and loadings exceeding ± .70 are indicative of well defined structures (Hair, et al., 2006).

6.6.2.6 Reliability

The eighteen variables were subjected to the reliability test, except for the variable loading in Factor 6 – *Type of development* because it had a loading of only a single variable. Reliability referred to the degree to which the items combined together and Cronbanch's Alpha Coefficient is the most widely used measure for reliability (Hair, et al., 2006). Table 6.19 below summaries the Alpha values for each factor.

Table 6.19: Reliability test – Cronbanch's Alpha Coefficient

Factor	Principles	Cronbanch's Alpha Coefficient	Mean inter-item correlation
Environment	Environment Impact Assessment (EIA) is compulsory. Maintenance & rehabilitation costs are shared between stakeholders. Upgrading and maintaining established settlements along the waterfront areas. Provision of sufficient public facilities and amenities (such as pedestrian paths, landscaping, access ways, recreation areas, etc.). Provide flood mitigation (e.g. by planting more trees). Continuous river rehabilitation. Integrate both modern and heritage aspects into development.	0.778	–
Waterfront benefits	Sharing waterfront benefits (such as views, financial rewards, etc.) among stakeholders (e.g. community, government, developers). Encourage economic activity. Upgrading and maintaining sewage systems. Participation among stakeholders should be compulsory at every stage of the development.	0.717	–
Mitigation	Mitigate property speculation. Continuously educate public about environmental concerns.	0.502	0.343
Beautification	River reserve beautification. Protection of natural resources (water and environment).	0.346	0.220
Security	Personal security is maintained by means of policing, surveillance cameras, etc. Should use environmentally friendly materials in construction.	0.259	0.149
Type of developments	Restrict type of development.	–	–

As depicted in Table 6.19, only two factors (Environment and Waterfront benefits) had Alpha values greater than 0.60 as suggested by Churchill (1979), DeVellis (2003) and Pallant (2007) for exploratory research, while the rest did not. However, it is common to find quite low Alpha values because Cronbach's Alpha Coefficient is sensitive to the number of items in the scale (e.g. scales with fewer than ten items). In the case of low Alpha values, Pallant (2007) recommended it may be appropriate to report the mean inter-item correlation for the items. In this case, the mean inter-item correlation for Factors 3,4 and 5 (Mitigation, Beautification, and Security) were reported as part of the reliability test – as presented in table 6.25 above. Factors 3 and Factor 4 (Mitigation and Beautification) had a strong relationship among the variables with mean inter-item correlation values greater than 0.20 but not for Factor 5 – Security. Although the variables with low mean inter-item correlation (determined as not reliable to group together) were recommended to be removed from the analysis (Pallant, 2007, p. 98), it was decided to allow this factor to remain because the factor analysis and the descriptive statistics results (mean scores) determined that this factor was statistically significant. Further, it was considered that this factor was important to include in the waterfront development guidelines.

6.7 T-test Analysis on Six Factor for Waterfront Development Guidelines between Two Groups of Respondents

An independent sample t-test was carried out on the six factors extracted by exploratory factor analysis. The t-test analysis was conducted to test for a statistically significant difference in response on six factors extracted for waterfront development guidelines between the two groups, the respondents undertaking waterfront development and those that did not undertake waterfront development. Table 6.20 shows the mean, standard deviation, *t*-values and *p*-vales of the factors for each group.

As presented in Table 6.20, the results show that there is no significant difference in any factors on waterfront development guidelines for Malaysia between the two groups of respondents as determined by Pallant (2007) at 0.05 significant levels.

Table 6.20: T-test on six factors for waterfront development guidelines between two groups of respondents

Factor	Undertake waterfront development projects	Mean score	SD	*t*-value	*p*-value
Environment	Yes	4.00	0.47	-0.834	0.408
	No	4.10	0.47		
Waterfront benefits	Yes	4.23	0.50	-0.298	0.766
	No	4.28	0.53		
Mitigation	Yes	3.75	0.71	0.460	0.647
	No	3.67	0.58		
Beautification	Yes	4.32	0.51	1.131	0.263
	No	4.18	0.42		
Security	Yes	4.17	0.61	1.284	0.204
	No	3.97	0.54		
Type of development	Yes	3.90	0.71	0.126	0.900
	No	3.87	0.59		

6.8 Correlation

A correlation was carried out for the six factors extracted by factor analysis. A correlation matrix was conducted to identify associations between the factors extracted for waterfront development guidelines. Information about the correlations explained the extent to which the variables were related to each other (Wagner, 2010, p. 75). The results presented in Table 6.27 explain that each factor was positively correlated with small correlations as suggested by Cohen (1988), except for Factor 1 – Environment, which indicated a strong correlation with Factor 2 – Waterfront benefits at the 1.0 percent level (Sweet & Grace-Martin, 2008). Factor 6 – Type of development, indicates a very poor relationship with each factor and has a negative direction in Factors 3, 4 and 5 (Mitigation, Beautification, and Security).[49] The negative sign indicates a non-linear relationship among them (Sweet & Grace-Martin, 2008). See Table 6.21 for correlation results.

49 Cohen (1988) suggests the following guidelines for interpreting the correlation; Small (r=0.10 to 0.29); Medium (r=0.30 to 0.49); and Large (r=0.50 to 1.0). On the other hand, Sweet & Grace-Martin (2008) determined in the social sciences, that a correlation of 0.30 is considered a "Good" correlation; a correlation above 0.40 is considered "Strong".

Table 6.21: Correlation matrix table

Factor	Environment	Waterfront benefits	Mitigation	Beautification	Security	Type of development
Environment	1					
Waterfront benefits	0.458** 0.000	1				
Mitigation	0.232 0.000	0.199 0.124	1			
Beautification	0.249 0.053	0.234 0.070	0.144 0.270	1		
Security	0.099 0.449	0.116 0.374	0.116 0.372	0.200 0.122	1	
Type of development	0.012 0.925	0.043 0.740	-0.089 0.496	-0.051 0.697	-0.079 0.547	1

** Correlation is significant at the $p < 0.01$ level (2-tailed).

6.9 Discussion

This section discusses the information related to waterfront development in Malaysia. This discussion considers information that was gained from the interviews and statistical analysis that pertains to the research objectives as stated in Chapter 1 – Introduction.

6.9.1 Research Objective One: Current Practices for Waterfront Development in Malaysia.

The results show that only a small number of property development companies had undertaken waterfront development projects in Malaysia. Only a third (32.8%) of the respondents had undertaken waterfront development projects, while the rest had not, even though they had more than 10 years experience in property developments and employed sufficient numbers of staff.

Although the results showed that only a small number of property development companies have undertaken waterfront development projects the number of waterfront development projects in Malaysia is forecasted to increase in the future. From the results, 84% of the interviewees agreed that waterfront development projects in Malaysia will be increased in terms of numbers and more than half (58.5%) of property development companies statistically indicated their interest in waterfront development. This finding was consistent with previous studies that found that waterfronts are a magnet for human populations throughout the world,

for many reasons such as recreation, tourism and leisure (Martinez, et al., 2007; Tumbde, 2005). It was determined that waterfronts are one of the most potentially developed areas in a city. In fact, the world's waterfront population was recorded at 1.2 billion in 1990 (Small & Nicholls, 2003) and this percentage rose to 41% (2.5 billion) in 2002 (United Nations, 2005).

Until year 2011, there was no figure recorded that indicated waterfront populations for Malaysia, but findings from this study forecast that waterfront development projects will increase in the future. Therefore, the researcher would recommend identifying waterfront populations in Malaysia in future research.

Over the last 10 years, Malaysia has begun waterfront redevelopment projects and has focused on recreational, residential and mixed-use development rather than regenerating waterfront businesses (shipping and transportation). The findings of this study indicate that waterfront development undertaken in Malaysia have been mainly for residential (75%), mixed-use (70%) and commercial (40%) purposes. This finding was supported by the literature that indicated that in the past, many waterfront redevelopment areas underwent a transition from abandoned spaces to commercial, residential and recreational areas (Bruttomesso, 1993; Butuner, 2006; Sairinen & Kumpulainen, 2006). Moreover, research conducted by Tumbde (2005) also found that the riverfront redevelopment with emphasis on mixed-use developments helps enhance the economic feasibility of the redevelopment projects. In short, waterfront redevelopment projects can be economically viable with implementation of mixed land use development during the redevelopment processes (Bruttomesso, 2006; Torre, 1989; Tumbde, 2005).

The findings from the interviews indicate that waterfront redevelopment undertaken by the Malaysian government were mainly for public use and environmental improvement such as to provide tourist attractions (33%), to protect natural resources (33%) and to provide community amenities (33%). These findings were supported by other research that indicates that waterfront development by the government were concentrated on environmental improvements and sightseeing rather than economic development, for example in China (Yingxia & Xiaofeng, 2006). Moreover, according to Gaffen (2004), growing numbers of waterfront development were attributed to reasons such as environmental awareness and providing public spaces (recreational).

On the other hand, findings from the research indicate that decisions made by the property development companies undertaking waterfront development projects were greatly influenced

by wanting a profit/financial benefit (35%) and by wanting to diversify their type of property developments (35%). Despite the concentration on environmental concerns, many of the waterfront redevelopment around the world have shared some common goals such as redefining the waterfront's position in the urban context, remaking the urban image, the regeneration of the economy and improving social patterns (Butuner, 2006; Sairinen & Kumpulainen, 2006).

Reasons provided for wanting to undertake waterfront development in the future by the government and property development companies include: to diversify the government's and companies' businesses; to introduce new concepts in development; provide community amenities; cater for demand from buyers; makes profits; reduce environmental damage; offer tourist attractions; protect natural resources and help maintain heritage and cultural values. These reasons are supported by the literature that indicate that the growing number of waterfront development and redevelopment projects throughout the world are attributed to several factors such as environmental awareness and smart growth, preservation and adaptive reuse, recreation, increased tourism and enhanced federal assistance (Gaffen, 2004; Tumbde, 2005). An increasing demand for recreational activities and a number of other factors have become determinants in the redevelopment process and waterfronts have been mostly designed as new public open spaces of cities that are totally different from their former structures (Butuner, 2006; Tsukio, 1984). Moreover, research conducted by Oliva (2006) showed that waterfront development has a positive impact on housing prices (1996-2003) and established a positive relationship between waterfront development and house prices although the impact varied with distance from the water body.

In terms of the governance of waterfront development in Malaysia, the results of this research indicate that the majority (93%) of respondents thought that the management and administration of waterfront resources was not effective. From the results, ineffective governance for waterfront development in Malaysia was attributed to several factors such as low levels of cooperation between stakeholders, inefficient communication systems, low enforcement of regulations, inadequate policies/guidelines, the lack of expertise, external party interference and conflicts of interest. These factors are supported by the literature that show that sustainable governance is required in order to achieve sustainable waterfront development, and sustainable governance can be achieved through the combination of several principles: sustainability, adaptive management, participation and integration (Duxbury & Dickinson, 2007).

The research conducted by Latip et al. (2010) found that the absence of policies and regulations to control waterfront development in Malaysia was identified as a reason for the loss of integration between cities and water bodies. Moreover, inadequate assessment and mitigation of the river environment had deteriorated the quality and quantity of rivers, as well as caused the uncontrolled growth of settlements along the river areas (Yossi & Sajor, 2006). In addition, the failure of city planners responsible for creating properly managed land such as along riversides, had also contributed to environmental problems (Baiquni, 2004).

Therefore in order to maximise the benefits provided by the waterfront and to minimise the conflict and negative effects of waterfront activities, an integrated waterfront management system that consists of legal and institutional frameworks are necessary (Post & Lundin, 1996). In addition, good collaboration and coordination between different government authorities and external stakeholders is highly required and the implementation of and the aims of the interventions should not be contradictory (Yossi & Sajor, 2006).

The results indicate that a third (32%) of interviewees and 41% of the questionnaires returned indicate that Malaysia currently does not successfully implement waterfront development projects. In addition, at least 45% of property development companies which are currently undertaking waterfront development also thought that Malaysia currently did not successfully implement waterfront development projects. Most respondents thought that there are several reasons that prevent the successful implementation of waterfront development in Malaysia such as the following: insufficient financial support, lack of human expertise and technology, difficulty in balancing social, economic and financial issues, the lack of collaboration between stakeholders involved in waterfront development, lower levels of participation (domination by government and less involvement by non-government organisations) and difficulty obtaining planning permission for waterfront development (3.3%). These results are supported by the literature that determined that successful waterfront development could be achieved through a combination of several factors such as financial feasibility, environmental approval, effective management, construction technology, stakeholders participation and sharing benefits etc. (Bertsch, 2008; Bruttomesso, 2006; Mann, 1973; Torre, 1989; Tumbde, 2005). Moreover, a lack of manpower and technical expertise, development approaches that prioritise economic and engineering feasibility and a low priority in the allocation of funds for landscaping and beautification works were identified as reasons the government failed to improve the environmental quality in Malaysia (Dewan Bandaraya Kuala Lumpur, 1984)

Previous research focusing on the social impact of waterfront development indicated that successful waterfront development was significant in increasing household income, job opportunities, regional business sales and tourism (Krausse, 1995; Parsons & Wu, 1991; Rexhausen & Vredeveld, 2003). In addition, waterfront redevelopment provided better safety and access to downtown areas and also created new economic activities (Small & Arnott, 1994). Thus, apparently, in order to achieve and maintain economically viable waterfront development, a combination of several factors that could result in successful waterfront development is recommended, for the practice of waterfront development in Malaysia.

6.9.2 Research Objective Two: An Overseas Approach to Waterfront Development with Emphasis on Guidelines Available.

This section discusses how waterfront development is being implemented in another country. In particular, Wellington's Waterfront in New Zealand and Singapore's Riverfront in Singapore were adopted as an example of a successful waterfront development project from overseas. Due to it functioning successfully as a public space and recreation centre, Wellington's Waterfront has evolved into a world-class waterfront over the past 15 years (Grondelle & Price, 2005) and therefore inclusion of Wellington's Waterfront and Singapore's Riverfront (as an example of an overseas approach) in this research is relevant. The discussion emphasises the governance, the guidelines and the strategies behind the success of Wellington's Waterfront development and Singapore's Riverfront development.

6.9.2.1 Wellington's Waterfront, New Zealand

> "In reality, waterfront is our city's heart and soul – it's our promenade, our playground and a treasured place that all of us who live here care about deeply. Increasingly, we are not just admiring it, but using the water for sailing, swimming, rowing and skiing."
>
> (Grondelle & Price, 2005, p. 5)

Waterfront development has been established in New Zealand for a long time and specifically in Wellington, since the first land reclamations occurred in 1852 followed again in 1975 and continued until the present (Grondelle & Price, 2005; Wellington City Council, 2010). Over the past 15 years, the waterfront has turned into a world-class waterfront and presently is seen as a vital element in Wellington's future prosperity.[50] The transition of Wellington's

50 Known as "Te Whanganui a Tara – the great harbour of Tara", Wellington harbour was the centre of activity in pre-European times. Until the 20th century, Wellington was established as New Zealand's premier port and was handling half of the trade.

Waterfront from a working port to a vibrant part of the city for recreational uses and public life grew in the 1970s and 1980s after the port administrator decided to redevelop the abandoned waterfront areas.[51] A joint-venture agreement to develop the area was signed by the Harbour Board and the City Council in 1986. The agreement established a special development zone, a concept plan and the formation of two companies to provide the management and administration for the Wellington Waterfront project: Lambton Harbour Overview Limited and Lambton Harbour Management Limited (LHML), a Local Authority Trading Enterprise (LATE). This meant that it was owned by the Harbour Board and the Council but run as a separate company. Since then, Wellington's Waterfront has grown and also has set aside much land for public space. In fact, according to the Wellington City Council (2001), almost 80% of the waterfront area will be kept as open space and all the land along the waterfront area will be publicly accessible.

It is important to note that the concept plan in Wellington's Waterfront framework[52] was developed after several public consultations and a lot of controversy. The involvement of the public in the decision making process for Wellington's Waterfront is important for the successful future direction of the waterfront development (Wellington City Council, 2001).

6.9.2.1.1 Governance of Wellington's Waterfront

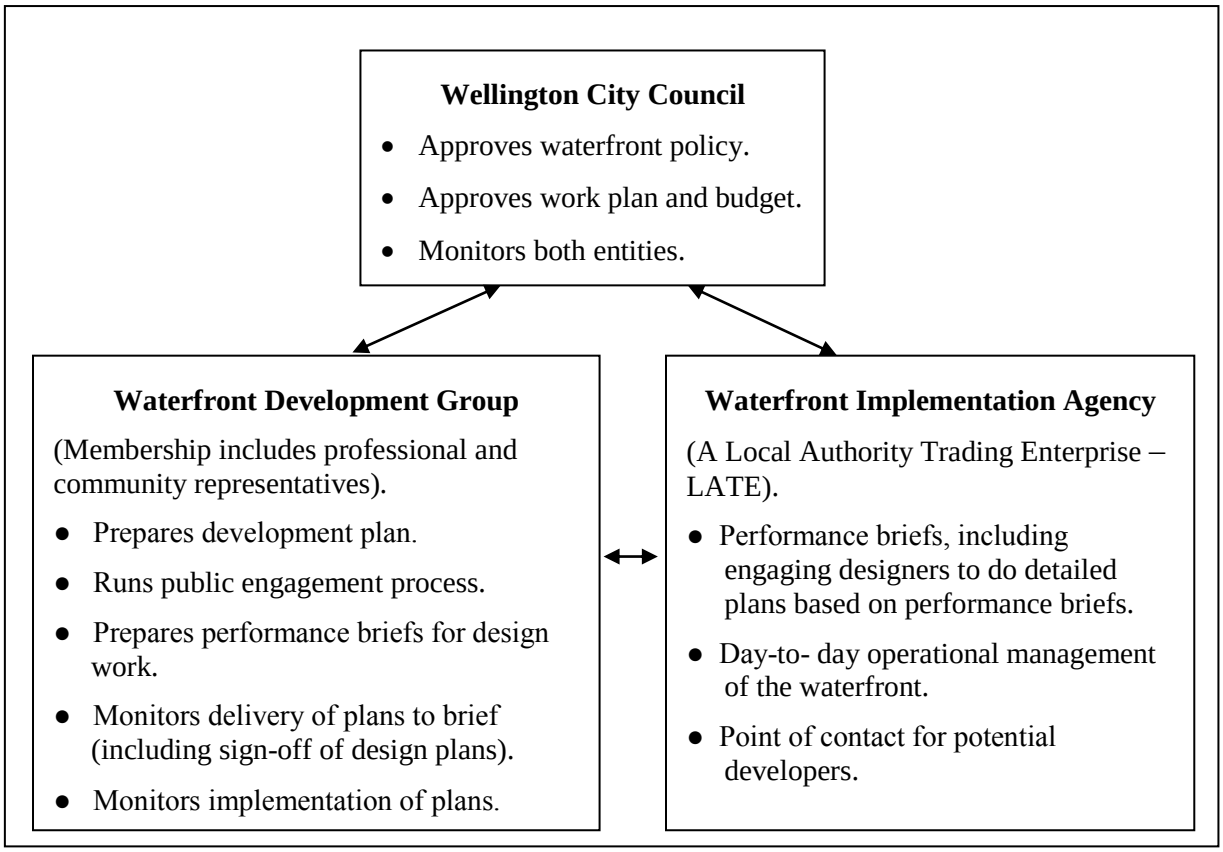
> "Wellington's Waterfront is a special place that welcomes all people to live, work and play in the beautiful and inspiring spaces and architecture that connect our city to the sea and protect our heritage for future generations."
>
> (Wellington City Council, 2001, p. 11)

According to the Wellington City Council (2001), there are two entities[53] responsible for management and administration of Wellington's Waterfront namely: the Waterfront Development Group and the Waterfront Implementation Agency. The structure of management and administration for Wellington's Waterfront and the roles of each entity are summarised in Figure 6.2 below.

51 In the 1960s, Wellington's port declined due to several reasons such as the beginning of air travel, the upgrading of port facilities (containerisation) and the decline of the shipping industry.

52 Wellington's Waterfront framework is a platform for the development of the waterfront. The Wellington waterfront framework was carried out by the Waterfront Leadership Group (appointed by the Wellington City Council) in September 2000 to recommend a vision for the waterfront and the principles and values and urban design for the waterfront for the future.

53 The Waterfront Development Group consists of professional and community representatives, while the Waterfront Implementation Agency includes a Local Authority Trading Enterprise (LATE).



(Adopted from: Wellington City Council, 2001)

Figure 6.2: Governance structure for Wellington's Waterfront

As well as the well structured governance for Wellington's Waterfront, the Waterfront Leadership Group also outlined six principles as a guide for the management and administration process for Wellington's Waterfront (Wellington City Council, 2001). The principles are used to guide management and administration for Wellington's Waterfront and includes: (i) Transparency, (ii) Public engagement, (iii) Momentum, (iv) Separation of planning and implementation, (v) Arm's length governance, and (vi) Final accountability with the council. The Wellington City Council (2001) identified that public engagement and transparency were important principles in driving the management and administration for Wellington's Waterfront. The Waterfront Leadership Group believed that disclosing all information about the waterfront development to the public (Wellingtonians) as an "owner" of the waterfront and include input from them in the decision making processes of waterfront development was and is important so as to have confident in the decisions being made. This is also supported by the literature that highlights participation, adaptive management, full cost allocation and integration etc. as essential principles in administering natural resources and the waterfront resources, and maintaining the economic value of the waterfront area (Costanza, et al., 1997; Duxbury & Dickinson, 2007).

Therefore, incorporating all the principles driving the management and administration for Wellington's Waterfront into the governance structure for waterfront development in Malaysia would promote effective management of the waterfront resources and is recommended for the future.

6.9.2.1.2 Objectives and Principles of Wellington's Waterfront

According to the Wellington City Council (2001), the development of Wellington's Waterfront aimed to achieve seven objectives as follows:

(i) That the waterfront is locally and internationally recognised for its design.

(ii) That the waterfront is readily accessible to all people.

(iii) That the waterfront is and is perceived to be safe at all times.

(iv) That the waterfront is seen as an attractive place that draws Wellingtonians and visitors alike.

(v) That the waterfront successfully caters for a wide range of events and activities.

(vi) That significant heritage buildings are protected on the waterfront.

(vii) That activities on the waterfront are integrated with those on the harbour.

In order to achieve these objectives, the development of Wellington's Waterfront has followed several key principles as a fundamental element of the development. These principles were set out by the Waterfront Leadership Group and take into consideration all issues related to waterfront development. Table 6.22 lists key principles for Wellington's Waterfront.

Table 6.22: Key principles for Wellington's Waterfront

Principle	Description
Principle 1: Expression of heritage and history	Heritage and the history of the waterfront are important parts of the identity of the waterfront. There is a range of aspects to the pre- and post-colonial history of the waterfront, including maritime, social and economic aspects, and all these stories need to be told. Heritage buildings are an important aspect of the history of the waterfront and should be restored and reused.
Principle 2: Expression of	Maori cultural heritage will have a strong presence on the waterfront and play a key role in identifying the waterfront.

Principle	Description
Maori heritage and presence	Maori cultural presence on the waterfront should be an active one – to show a living culture – and will include a focus on Waka culture. Maori history and heritage will be reinforced by a variety of methods.
Principle 3: Sense of place for Wellingtonians	The waterfront as a whole is, and will remain, a unique asset to the city that is a draw card in its own right. Any development will be of a high quality. Any new buildings will be complementary to, and in a scale appropriate to, the existing buildings around them. The identity developed for each area will be in character with the waterfront as a whole. The design and use of buildings should be orientated outwards to maximise the unique value of the waterfront location. The waterfront is part of Wellington and new work will complement the buildings and public spaces in the adjacent city.
Principle 4: Diversity of experience	The waterfront is somewhere to live, work and play. The waterfront will meet the needs of a diverse range of people. Recreational, cultural and civic uses are particularly appropriate for the waterfront, complementary to similar uses in other parts of the city. There will be an allowance for some commercial development on the waterfront. Public space development does not depend for funding on commercial development. New buildings can be considered for the waterfront. Ecological values of the waterfront will be maintained – bearing in mind that this is a highly modified environment. The entire waterfront is predominantly for people, not motor vehicles. Pedestrian and non-motorised transport will be able to use the waterfront safely. However, service vehicle access needs to be provided for.
Principle 5: Sense of collective ownership	The waterfront is predominantly a public area. The public should be consulted – either through the stage two process or through a statutory planning process – about any proposed new buildings and any significant changes to existing buildings. Ground floor of buildings will be predominantly accessible to the public.
Principle 6: Experience of space and openness	The harbour is the primary open space on the waterfront. There will be a network of paths throughout the area. A series of different open spaces that cater for diverse uses and activities will predominate. In addition to Frank Kitts Park there will be a second large green open space at Chaffers. There will be a variety of open spaces – some green, some sheltered and some paved. Important views and vistas from the city to the sea will be protected and important

Principle	Description
	new ones created. Panoramic views from the water's edge, along with framed views of the waterfront, are important. Buildings will support the open spaces, both in their design and their associated uses and activities.
Principle 7: Ease of access for all	There will be a public walkway/promenade along the length of the waterfront, predominantly at the water's edge. There will be better pedestrian access from the city to the waterfront. There will be better access points for pedestrians. Improvements to pedestrian access points will include the provision of shelter. The council encouraged implementing the proposed upgrade of the quays and streets, including landscaping and improving street crossings. The waterfront needs to be linked to the rest of the city, in terms of both physical access and visual links such as views and signage. More private and public transport drop-off points are needed. There should be opportunities for people to gain access to and from the water. The waterfront should be accessible for people with special needs. The waterfront will be designed with safety and security in mind. Natural surveillance achieved through good design is preferred to electronic or formal methods of surveillance. Ideally, surface parking should be progressively removed as developments takes place. The parking requirements of Te Papa, Circa, Chaffers Marina and other waterfront venues need to be considered. Parking provided on the waterfront will be primarily for waterfront users.

(Adopted from: Wellington City Council, 2001)

As presented in Table 6.28 above, all principles set up for the development of Wellington's Waterfront area emphasised the integration between heritage and modern, conservation and preservation, public participation, open spaces and public accessibility. For example, Principle 1, Principle 2 and Principle 3 have clearly stated the importance of maintaining the heritage and history of the waterfront area and maximising the unique value of the waterfront area while developing the waterfront area. Principle 4, Principle 5, Principle 6 and Principle 7, emphasised the importance of open spaces, public participation at every stage of the development and public accessibility to waterfront areas. Apparently, all the principles that were recommended for Wellington's Waterfront have provided full consideration and attention to the public's interest in the waterfront area and provided protection for the waterfront itself, and these principles were also determined as being essential for maintaining

the economically viability and success of the waterfront development (Bertsch, 2008; Bruttomesso, 2006; Torre, 1989; Tumbde, 2005).

In relation to Malaysia, waterfront development is growing in popularity and is currently focusing more on recreational and mixed-use development purposes. Inclusion of all the principles recommended for Wellington's Waterfront, is necessary for developing any waterfront areas in Malaysia particularly for recreational purposes. It is important for Malaysia to consider all the principles for achieving successful waterfront development and maintaining economically viable waterfront areas as achieved by other countries, and Wellington's Waterfront specifically.

Therefore, in order to guarantee the economic viability and success of waterfront projects in Malaysia in future as gained by Wellington's Waterfront for example, the government which includes Federal, State and Local Governments is required to:

1. Review guidelines for developments close to water areas in Malaysia by adopting and integrating the key principles set up for Wellington's Waterfront to give more economic benefit to the country.

2. Consistently promote and integrate the application of the key principles of the governance for Wellington's Waterfront into the governance of waterfront development in Malaysia to more effectively and efficiently manage the waterfront resources.

3. Encourage agencies that are directly and indirectly related to waterfront development in Malaysia to make provision, where appropriate, for the key principles of governance and the key principles for development close to water areas, as recommended by Wellington's Waterfront, to be consistent with the objectives of the development and the regulations.

6.9.2.2 Singapore's Riverfront, Singapore

This section discusses how waterfront development has been implemented in Singapore. Singapore's Riverfront was adopted as an overseas example of a successful waterfront development. The next section discusses the history and strategies behind the success of Singapore's Riverfront development.

6.9.2.2.1 Singapore's Riverfront, Singapore

Singapore an island city has been blessed with a long coastline and waterbodies right in the heart of the city centre. The 3.0 kilometre long Singapore River and runs through the City Centre and was an excellent place for trading and warehousing activities since Singapore's colonial days. During that time, many office buildings and jetties were developed to facilitate trading activities along the riverbank (Urban Redevelopment Authority, 2010).

By the 1860s, almost three quarters of all shipping business in Singapore was done along the Singapore River. However, by the 1970s, both the river banks and water became polluted due to increased numbers of business activities and squatters along the river, and consequently the river became an open sewer (Chang & Huang, 2005).

Beginning in 1977, the task to clean up Singapore River began and involved many government agencies. An enormous river clean up has transformed the river from open sewer to green landscape (Dobbs, 2002).[54]

After ten years of clean up, the river was ready for a new lease of life. In year 1990s, the waterfront was redeveloped under the Urban Redevelopment Authority's Development Guide Plan (DGP)[55] for the Singapore River (Urban Redevelopment Authority, 1994). The redevelopment has changed from a "working river" to "heritage and entertainment site.

6.9.2.2.2 Characteristics of Singapore's Riverfront

According to the Master Plan for Singapore's Riverfront (Urban Redevelopment Authority, 1994), the development of Singapore's Riverfront has several characteristics that were a fundamental element of the development. These characteristics take into consideration all issues related to waterfront development. The characteristics of Singapore's Riverfront are presented in Table 6.23 below;

[54] The task to clean up Singapore River was an enormous one, and involved many government agencies. To start off, all boats were moved out to Pasir Panjang as container shipping had replaced this earlier mode of transporting goods from the ships to the godowns, and also removal derelict warehouses. As a result, tonnes of garbage were dredged from the river (Dobbs, 2002).

[55] The Urban Redevelopment Authority is Singapore's national planning authority. Micro planning is accomplished through 55 development guide plans (DGPs) which are detailed plans that lay down guidelines on land zoning, density and height of developments for specific areas in Singapore.

Table 6.23: Characteristics of Singapore's Riverfront

No.	Characteristics	Details
1.	Theme	• The Singapore River is regarded as the cultural heritage of the city. • The historical structures along the Singapore River were conserved for adaptive reuse. These were balanced with leisure attractions from boating to dining. • For example, pedestrian promenades were planned along the entire River to make walking a pleasurable experience.
2.	Image	• The Singapore's Riverfront maintains the old image of trading port by preserving elements related to the river's cultural heritage, for example shop houses and "bumboats".[56] • Before redevelopment: the river vessels packed along the river. • After redevelopment: old structures have been replaced by a continuous promenade and outdoor dining. "Bumboats" are now used for tourist transportation.
3.	Authenticity	• After the cleaning up of the Singapore River, the Singapore's Riverfront had brought back to life activities such as regattas and outdoor cafes.
4.	Functions	• The Singapore's Riverfront has functioned as a public space and recreation centre. • Pedestrian accessible to the lively outdoor eating area and entertainment centre gives visitors the chance to enjoy the river environment along with convenient services for residential and working districts.

(Source: Urban Redevelopment Authority, 1994)

As presented in Table 6.23, the four characteristics set up for Singapore's Riverfront were important in order to create an outstanding image to revitalise the riverfront. For example, "theme" is closely related to the riverfront's image, therefore emphasising "theme" in the development process can be important in order to create a sense of identity to the place. Moreover, in order to attract users, the design elements should fulfil the user's needs. Taking account of all four characteristics adopted for Singapore's Riverfront within the development of waterfront areas in Malaysia could aid in creating an equally appealing waterfront development in Malaysia that creates a sense of place and pride in the waterfront resources as valuable assets for the country.

Clearly, all the characteristics that were set up for Singapore's Riverfront are important for maintaining the economical and sustainable viability and success of the waterfront development as outlined by Bertsch (2008) and Tumbde (2005).

[56] "Bumboats" mean the traditional workhorses of the river.

6.9.2.2.3 Key Strategies for Redevelopment of Singapore's Riverfront

According to the Master Plan for the Singapore's Riverfront (Urban Redevelopment Authority, 1994), the redevelopment of Singapore's Riverfront adopted three key strategies as presented in Table 6.24 below;

Table 6.24: Key strategies for development of Singapore's Riverfront

No.	Strategy for development	Details
1.	Creating an activity corridor for recreation and leisure through mixed land-uses.	• According to the Master Plan for the Singapore's Riverfront, the river was zoned for a mixture of land uses that include commercial, residential, hotel and institutional uses. • These mixed-use developments would attract people to the area. • The new developments are required to have activity generating uses on the ground floor to ensure that the area is lively at the street level. • A guideline for the Kiosks and Outdoor Refreshment Areas was released by Urban Redevelopment Authority (URA) mainly to encourage more development to locate their commercial activities onto the waterfront promenade areas.
2.	Mixing old and new developments.	• The identity and character for the Singapore River would be preserved through selective conservation of architecturally significant buildings and integrating them with new development. • The old buildings must be kept for the benefit of future generations. • The adjacent land can be used more intensively for commercial and residential purposes. • The conserved buildings would be allowed to be adapted for new uses to increase their viability.
3.	Forging a public / private sector partnership.	• The government implemented the key infrastructure works to make the area attractive for redevelopment. • Many parts of the river walls which had fallen into disrepair were reconstructed and strengthened. • The bridges across Singapore River were upgraded. • Underpasses were constructed to provide continuous pedestrian access along the river banks. • The government provided the planning framework and guidelines for the private sector to carry out the redevelopment along the river using private resources. • In order to encourage the private sector to participate in the transformation of the Singapore River, State land and conserved buildings were sold through the Government Land Sales Programme. • The urban design guidelines were designed by Urban Redevelopment Authority, to guide developers to design their buildings at a compatible scale with rivers cape, and design the riverfront promenade to complement their development. • All the vision for Singapore's River Waterfront was thus realised through a public / private partnership.

(Source: Urban Redevelopment Authority, 1994)

Incorporating the appropriate key strategies used for the redevelopment of Singapore's Riverfront into the development of waterfront areas in Malaysia could improve the likelihood of achieving sustainable waterfront development and could aid in creating outstanding waterfront areas in Malaysia.

6.9.3 Research Objective Three: Evaluation of Current Regulations and Guidelines Related to Waterfront Development in Malaysia.

This section evaluates current regulations and guidelines related to waterfront development in Malaysia. Specifically, the effectiveness of the Guidelines for riverfront development is examined because it was identified as the only guidelines designed for riverfront development in Malaysia. Even though the Malaysian government also developed Coastal Zone Guidelines, it is beyond the scope of this research and not relevant to the riverfronts.

The findings from the results indicate that overall, property development companies are somewhat familiar with regulations and guidelines related to waterfront development in Malaysia such as the National Land Code 1965 (*mean score=3.59*), the Town and Country Planning Act 1976 (*mean score=3.57*), the Building By-Law 1984 (*mean score=3.56*), the Land Acquisition 1960 (*mean score=3.52*) and guidelines for riverfront development (*mean score=3.05*) (just to name a few of the regulations and guidelines). The findings from the interviews show that 84% of interviewees were aware of the guidelines for riverfront development designed by the Department of Drainage and Irrigation Malaysia.

The findings from the results also indicate that almost half (44.3%) of the property development companies disagreed that Malaysia had sufficient regulations for waterfront development. Also, only a quarter (24.6%) of property development companies agreed that Malaysia has enforced the regulations and guidelines developed for waterfront development, sufficiently. These findings, are consistent with previous studies conducted by Latip et al. (2010) that showed that several reasons contributed to the loss of integration between cities and their water bodies in Malaysia such as an absence of policies and guidelines for waterfront development, the lack of policies and guidelines suitable for waterfront development, policies and guidelines developed and implemented in isolation by different government agencies, and some guidelines that are not gazetted. Subsequently, insufficient regulations and guidelines to control waterfront development in Malaysia and poor enforcement by the policy makers, has possibly caused unsustainable waterfront development in Malaysia. These findings are supported by the literature that indicate that various forms of

regulations are important for successful waterfront development (Riley & Shurmer-Smith, 1988). In addition, adequate regulations and guidelines formulated for waterfront regeneration could have a significant impact upon waterfronts and subsequently considerably enhance waterfront areas (Breen & Rigby, 1996; West, 1989).

In terms of the guidelines for riverfront development, about 85.7% of interviewees disagreed that these guidelines are sufficient to control waterfront development in Malaysia. The questionnaires returned also indicate that a majority of property development companies disagreed about the effectiveness of the guidelines for riverfront development, to control waterfront development in Malaysia (*average mean score=2.45*). Using the benchmark of 3.0 or higher to indicate acceptability of the characteristics used to evaluate the guidelines, the average mean score for all the characteristics were below the mid-point of the satisfaction scale (mean scores range from between 2.25 and 2.57).

The research findings indicate four issues that contributed to ineffective guidelines for riverfront development for controlling waterfront development: (i) they are not sufficient to control environmental problems, (ii) they do not provide specific guidance for riverfront development in Malaysia, (iii) they are difficult to implement in practice and (iv) they do not encourage sustainable riverfront development. Moreover, the guidelines are neither law nor gazetted and this causes difficulty with implements.

The lack of ability to control environmental problems has had a negative impact on the environment with problems such as flooding and pollution. Previous research conducted indicates that the growth of waterfront development has also caused the environmental impact to worsen, especially in regard to flooding and pollution (for example see: Bialaszewski & Newsome, 1990; Eves, 1999, 2001, 2002, 2004; Fibbens, 1992; Guttery, Poe, & Sirmans, 1998; Guttery, Poe, & Sirmans, 2004). Subsequently, extreme negative effects from flooding and drought can alter property values (Kauko, 2002; Kauko, Hooimeijer, & Hakfoort, 2002; Mooney & Eisgruber, 2001). Therefore, to avoid the negative impact on property values, flooding needs to be avoided and therefore highlighted as an important factor for control in the guidelines for riverfront development. In addition, clear and coherent principles and/or policy are important in order to maximise the positive effects of waterfront development (Riley & Shurmer-Smith, 1988; Yossi & Sajor, 2006) and subsequently are highly required in order to control waterfront development in Malaysia.

6.9.4 Research Objective Four: Recommendations for New Guidelines towards More Sustainable Development of Waterfronts in Malaysia.

This section discusses the results used for achieving research objective four in this research. As stated in Chapter one – Introduction, research objective four is to recommend guidelines for more sustainable waterfront development in Malaysia and to examine the relationships between them. These results were derived from the interviews and the results were confirmed by statistical analysis.

> "The construction sector is not only to deliver buildings and infrastructures, but to look beyond on opportunities that can reduce the usage of resources and energy, minimise pollution and waste, and enhance economic efficiency and social objectives. It is time for industry players to think in different dimensions, rather than just on construction costs and immediate profits."
>
> (Hussein, 2010)

The construction industry is an important element of the Malaysian economy.[57] According to Hussein (2010), the construction sector is determined to be an enabler of economic growth in Malaysia as well as helping in stimulating domestic demand, in the creation of wealth and in improving the quality of life for Malaysians. Even when the whole global economy was reeling from the economic crisis in 2009, in Malaysia the affect was tolerable and cushioned by government aid. The increasing number of development projects is a good indication that the Malaysian economy is relatively healthy at present.

Even though the output from construction is worthwhile, the increasing environmental problems in Malaysia such as water pollution and flooding and the consequential impact on socio-economic activities has resulted in an increased awareness in Malaysia about the development sector and the need for it to act more sustainably. In short, rapid changes in land use in many developing countries, including Malaysia has been blamed for environmental degradation (Saiful Arif & Nakagoshi, 2006). For example, the continuous and rapid changes in land use has been recognised as bringing severe environmental degradation to natural ecosystems such as forest ecosystems (Endress & Chinea, 2001), wetland ecosystems (Zarin, et al., 2001), riverside ecosystems (Yunus, Nakagoshi, & Ibrahim, 2003) and coastal ecosystems (Nazery, 2009).

57 The output of the construction industry in Malaysia is in Malaysian Ringgits about 50 billion a year (NZ$ 21.7 billion). It accounts for 3-5% of Gross Domestic Product (GDP) and provides employment for around 800,000 workers (Construction Industry Development Board Malaysia, 2009).

In practice, the trend in managing the impact from development, as well as those derived from waterfront development, is by reducing the risk associated with each development through improving the management strategies and programmes including revising some development guidelines. Thus, for example, the government through The Construction Industry Master Plan (CIMP),[58] has expressed the government's commitment to preserving the environment through Strategic Thrust no. 3, which is to strive for the highest standard of quality, occupational safety and health, and environmental practices (Hussein, 2008). Moreover, the 2011 budget speech presented on 15th October 2010 by the Malaysian Prime Minister stated that the government had introduced the Government Transformation Programme (GTP). The Government Transformation Programme (GTP) aims to position Malaysia as a developed and high-income economy with inclusive and sustainable development (Malaysian Department of the Prime Minister, 2010).

Therefore, in this research, a set of recommendations which outline several priorities for the waterfront development guidelines, and the desire to achieve sustainable development in the undertaking of waterfront development in Malaysia is presented. The recommendations take into consideration suggestions and opinions from stakeholders involved in waterfront development, as well as property development companies in Malaysia. The recommended guidelines are presented in Table 6.25 below. The six factors drawn in this research will complement the existing waterfront development guidelines – called guidelines for *riverfront development concept*.

The findings indicate that the 'Environment' is the most important factor to include in future riverfront development guidelines for Malaysia. Maintaining the green corridor along the water body will provide an important amenity for residents and visitors. Conserving the waterfront and waterfront environment will also preserve it for future generations. According to Bertsch (2008), several principles such as integration of the history, the culture and existing

58 The Construction Industry Master Plan (CIMP) launched by Prime Minister, Dato' Sri Najib Tun Razak in December 2007, aims mainly to achieve four objectives as follows:

i. To develop a global reputation for Malaysia as a country that promotes sustainability in construction and that has the resources, expertise and technology to deliver efficient services.

ii. To monitor and ensure the sustainability of domestic and imported supplies of construction materials.

iii. To promote and monitor certification ISO 14000 (Environment management system or EMS) within the construction industry.

iv. Strive for the incorporation of best environmental practices at sites, into the Uniform Building By-Laws and construction procurement processes (Hussein, 2008).

architecture and the involvement of multitudes of interested parties, should be compulsorily taken into consideration while developing waterfront development so that an economically viable waterfront is maintained. Moreover, environmental approval from various agencies should be required and considered a rule of thumb for successful waterfront development (Torre, 1989). Sustainable waterfront development would then be achievable (Bruttomesso, 2006).

Table 6.25: Guidelines for riverfront development for Malaysia

Environment	Statements: (1) Environmental Impact Assessment (EIA) is compulsory. (2) Maintenance & rehabilitation costs are shared between stakeholders. (3) Upgrading and maintaining established settlements along waterfront areas. (4) Provision of sufficient public facilities and amenities (such as pedestrian, landscaping, access ways, recreation areas, etc.). (5) Provide flood mitigation (e.g. by planting more trees). (6) Continuous river rehabilitation. (7) Integrate both modern and heritage aspects into development. * Note: All the statements loaded in the 'Environment' is range between 0.574 and 0.703 which are indicated practically significant as determined by Hair et al. (2006). The "Environment" had alpha values greater than 0.6 which is high reliability as suggested by Pallant (2007), and also has strong correlation as determined by Sweet & Grace-Martin (2008). Therefore "Environment" is considered high priority to be included in future guidelines for riverfront development.
Waterfront benefits	Statements: (1) Sharing waterfront benefits (such as view, financial rewards, etc.) among stakeholders (e.g. waterfront community, government, developers). (2) Encourage economic activity. (3) Upgrading and maintaining sewage systems. (4) Participation among stakeholders should be compulsory at every stage of the development. * Note: All the statements loaded in the 'Waterfront benefits' is range between 0.551 and 0.827 which are considered well defined structures as determined by Hair et al. (2006). The "Waterfront benefits" had alpha values greater than 0.6 which is high reliability as suggested by Pallant (2007), and also has strong correlation as determined by Sweet & Grace-Martin (2008). Therefore "Waterfront benefits" is considered high priority to be included in future guidelines for riverfront development.

Table 6.25: Guidelines for riverfront development for Malaysia	
Mitigation	Statements: (1) Mitigate property speculation. (2) Continuously educate public about environmental concerns. * Note: All the statements loaded in the 'Mitigation" is range between 0.718 and 0.799 which are considered practically significant as determined by Hair et al. (2006). The "Mitigation" had alpha values 0.5 which is acceptable reliability as suggested by Pallant (2007), and also has low correlation as determined by Sweet & Grace-Martin (2008). Therefore "Waterfront benefits" is considered medium priority to be included in future guidelines for riverfront development.
Beautification	Statements: (1) River reserve beautification. (2) Protection of natural resources (water and environment). * Note: All the statements loaded in the "Beautification" is range between 0.60 and 0.745 which are considered practically significant as determined by Hair et al. (2006). The "Beautification" had alpha values less than 0.5 which are considered low reliability as suggested by Pallant (2007), and also has low correlation as determined by Sweet & Grace-Martin (2008). Therefore "Beautification" is considered important to be included in the future guidelines for riverfront development with medium priority.
Security	Statements: (1) Personal security is maintained by means of policing, surveillance cameras, etc. (2) Should use environmentally friendly materials in construction. * Note: All the statements loaded in the "Security" is range between 0.348 and 0.737 which are considered practically significant as determined by Hair et al. (2006). The "Beautification" had alpha values less than 0.5 which are considered low reliability as suggested by Pallant (2007), and also has low correlation as determined by Sweet & Grace-Martin (2008). Therefore "Beautification" is considered important to be included in the future guidelines for riverfront development with medium priority.
Type of development	Statement: (1) Restrict type of development. * Note: Only one statement loaded in the "Type of development" with factor loading 0.821 which is considered well defined structures as determined by Hair et al. (2006). The "Type of development" has low correlation as determined by Sweet & Grace-Martin (2008). Therefore "Beautification" is considered important to be included in the future guidelines for riverfront development with a medium priority.

The 'Waterfront benefit' is the second most important factor identified to include in the riverfront development guidelines. Ensuring that waterfront benefits such as waterfront views are shared amongst the waterfront development stakeholders such as government, waterfront community and developers are important aspects to achieve. As determined by Bertsch (2008), the success of a waterfront development could only be achieved by balancing public benefit and developer profitability.

As well as sharing waterfront benefits among waterfront development stakeholders, the participation of all stakeholders should be compulsory at each stage of the waterfront development. The emerging role of the government in development projects (acting as a facilitator and/or a provider) is common and the involvement of the public in the planning and implementation of local initiatives is required. Choguill (1996) suggests that local participation is important particularly to solve local problems including resource management and development. Thus, the use of locally generated solutions, the active involvement of residents in their own affairs and a facilitating government, would be expected to be a sound basis for the success of waterfront development in Malaysia. Bruttomesso (2006) believed that public participation is an essential element to securing the long-term successful use of resources as well as the long-term success of the waterfront areas.

The third factor recommended to include in the riverfront development guidelines is 'Mitigation'. "Mitigation" emphasises the desirability for public awareness towards environmental concerns. According to Tong & Chen (2002), one of the greatest causes of poor water quality problems is the consequence of built up urban land use areas and the increasing intensity of human activities. In addition, land use and land cover changes can play a pivotal role in environmental changes and contribute to global change (Meyer & Turner, 1994). Therefore, continuously educating people about environmental concerns by providing them with updated information about waterfront development projects is important in helping to maintain the quality of the environment. In addition, including public consideration at every stage of the waterfront development process helps to increase public awareness and responsibility towards the waterfront environment (self-belonging to the waterfront project) (Torre, 1989).

The forth factor that it is recommended to include in riverfront development guidelines for Malaysia is 'Beautification'. Preserving the natural resources, for example the water resource, helps to maintain the economic value of the river and helps to provide a pleasant environment for water sports and picnic activities. According to Torre (1989), maintaining original values in the waterfront and areas surrounding the waterfront is important for a successful waterfront development. Moreover, Bruttomesso (2006) determined that the continuous beautification work of waterfront areas, protecting the river resources and securing the quality of the water and the environment, are important elements for sustainable waterfront development. Therefore, including the 'Beautification' factor in the guidelines for riverfront development in Malaysia is important for maintaining the economic value of waterfront areas.

The fifth factor to include in the guidelines for riverfront development is 'Security'. As well as recreation space and the availability of goods and services, security was also identified as an important factor that aids good development. Security can include serviced security and the full fencing of the property (Logan, 2001). Although historical records show that there are very few vehicle accidents involving open waterways, there is a perception that unfenced bodies of water may pose a safety threat to children. Thus, a combination of security factors is appropriate for new guidelines.

The last factor to be included in the riverfront development guidelines is the type of development. According to Yunus et al. (2003), the types of development (land-uses) are significantly correlated to water quality. For example, built up areas along the Penang river indicate a strong negative relationship with water quality (r=-0.911 in 2000), as compared to forested areas (r=0.861 in 2000). These findings confirm that one of the greatest causes of water quality problems is derived from the land-use type and is the result of the increasing intensity of human activity. Tong & Chen (2002) also identified that runoff from different types of land use may be polluted with different kinds of contaminants. Moreover, Bruttomesso (2006) and Tumbde (2005) determined that prioritising mixed-use development types is necessary for achieving sustainable waterfront development. Thus, land use type is an important consideration for planners and decision makers in designing the plans for water quality matters and for the developer in developing a waterfront project.

To secure the long-term growth of the waterfront resource, it is important for waterfront areas to be used strategically to maintain the economic value and enhance the specific features or image. Therefore, inclusion of all the factors (as presented in Table 6.25) in the proposed guidelines for riverfront development for Malaysia is appropriate and highly recommended.

6.10 Summary

The outcomes of the qualitative and quantitative methods were discussed in this chapter. The purpose for using the qualitative method was to determine attributes for waterfront development from the waterfront development stakeholders. It was also to identify several statements that could be important for waterfront development guidelines in Malaysia. The qualitative analyses were undertaken within three case study areas: Kuching Waterfront, Malacca Waterfront and Glenmarie Cove Riverfront. From the interviews, several reasons that motivated the waterfront stakeholders to initiate waterfront development and invest in waterfront properties were identified. The qualitative results also revealed that the majority of

stakeholders participating in waterfront development projects confirmed that Malaysia did not have specific regulations to control waterfront development. The specific guidelines designed for the control of development near to river areas, were identified as being too general and not sufficient to achieve successful waterfront development. At the end, interviewees were asked what they think should be recommended in the guidelines for waterfront development, to achieve the best practices for waterfront development in Malaysia in the future.

The quantitative analyses were undertaken with property development companies listed under Bursa Malaysia. The objective of the quantitative analyses was to determine whether the identified attributes for waterfront development in Part one of this research (qualitative approach) were statistically different from one another. The involvement in this research of waterfront stakeholders in the qualitative study was considered important to providing good information about waterfront development, while the inclusion of property development companies registered under Bursa Malaysia was considered necessary as the financial and skill-based capabilities of their companies are required in order to undertake waterfront development.

Factor analysis was carried out in order to group the statements recommended for waterfront development guidelines and this led to the classification of six main factors, namely: Environment, Waterfront benefits, Mitigation, Beautification, Security and Type of development. The T-test results indicate that there is no significant difference on six factors extracted for waterfront development guidelines between two groups of respondents; the respondents undertaking waterfront development projects and the respondents did not undertaking waterfront development projects in Malaysia. The correlation results indicate that overall, each factor was correlated with some positive relationships as well as some negative relationships. Only Environment and Waterfront benefits indicated a strong relationship between factors, while the rest indicated that they related to each other, but it was not a strong relationship. Therefore, based on the qualitative and quantitative results (mean scores, factor analysis and correlation), all the factors were shown to be significant and thus were included in recommendations for waterfront development guidelines in Malaysia.

Chapter 7
Summary and Recommendations

This chapter provides a brief summary of the research, its conclusions and some recommendations. The final section outlines the limitations of the research and proposes potential areas for future research.

7.1 Summary

While many waterfront development projects are being carried out around Malaysia, these kinds of development remain an issue for Malaysia, as detrimental effects outweigh beneficial effects, and some projects have been abandoned altogether. Although the Malaysian government has pursued many regulations and guidelines to tackle these issues, such as the Environmental Quality Act 1974, the Environment Impact Assessment, and the guidelines for riverfront development, it seems that they are not sufficient to achieve the stated objectives or are not successful in resolving the issues. For example, there was a significant reduction in the number of clean river basins in 2008 as compared with 2007; there were 53% (76 out of 146) clean river basins in 2008, compared with 62% (91 out of 146) in 2007 (Malaysian Department of Environment, 2010).

The introduction to and motivation for this research as well as the research questions proposed were discussed in Chapter 1. The purpose of the research is to offer guidelines and recommendations for more successful waterfront development in Malaysia. The main objective was therefore, to examine waterfront development in Malaysia, identifying the main constraints currently existing and to identify significant attributes for successful waterfront development.

Chapter 2 presented an overview of waterfront development theory and provided the theoretical basis for the research problem. This theoretical context included a definition of waterfronts and waterfront development, successful experiences from other developed countries and guidelines and principles for successful waterfront development. Views on the principles for sustainable governance for waterfront development as well as the attributes involved in sustainable waterfront development also aided the evolvement of suggestions in the development of guidelines for waterfront development in Malaysia.

The next chapter reviewed the background of waterfront development in Malaysia. In this research, the term waterfront development is limited to any development in front of river areas. Coastal zone development in Malaysia for example, are separately dealt with compared to riverfront development and are subject to different managerial, administrative and market challenges. The chapter started by identifying the importance of water resources. The next section discussed the emergence of waterfront development in Malaysia including several factors associated with the transformation of waterfront from trading settlements to recreation and urban centres. This chapter also provided some theoretical context for the development process and the governance and regulations associated with waterfront resources. The limited sources of literature in regard to the Malaysian context were a challenge to the researcher.

To accomplish the research's objectives, a mixed method research strategy comprising a qualitative phase followed by a quantitative phase was pursued as described in Chapter 4. The exploratory nature of the research made it well suited to a mixed method design where the open-ended nature of qualitative research provided an opportunity for the identification of new and unanticipated ideas to be considered, which would be confirmed quantitatively through statistical analysis. For this reason the strengths of both qualitative (identification) and quantitative (confirmation) methods were combined to provide solid and comprehensive results. At the same time, the use of the mixed method strategy decreased uncertainties in interpretation and led to multiple inferences that validated and strengthened each other. The driver for the research was predominantly inductive with the qualitative phase forming the basis of the mixed method approach.

The qualitative phase took the form of multiple case studies to provide in-depth information that contributed to the establishment of waterfront development in Malaysia, as well as to determine the attributes to be considered when developing guidelines for waterfront development. These attributes were then used in the development of a questionnaire to be sent to property development companies during the quantitative phase. Three case study areas were selected: Kuching Riverfront, Malacca Waterfront and Glenmarie Cove Riverfront. The selection of a number of case study areas with similar characteristics, which were project developed in front of river areas, enabled adequate information to be better achieved.

A judgemental sampling method was adopted as a sampling procedure for selecting respondents in the qualitative phase (interviews) in this research. In total, 25 respondents were interviewed, which included these parties involved in the development of Kuching Riverfront, Malacca Waterfront and Glenmarie Cove Riverfront. Semi-structured personal interviews

were conducted with all parties involved in waterfront projects. This was also complemented by document reviews for the waterfront development projects. The gathering of data from a variety of sources assisted with data triangulation.

Recorded interviews and document reviews were transcribed and analysed with assistance from Microsoft EXCEL. This software assisted with the organisation of the qualitative data. The attributes identified that were associated with waterfront development were used in developing a questionnaire that was then mailed and e-mailed to the property development companies in Malaysia. The purpose of the survey questionnaire was to confirm the findings reached in the qualitative phase and provide more support for these findings. The respondents were identified from property development companies listed under Bursa Malaysia in 2009.

After experiencing numerous problems in contacting the respondents, for example, some were in official outstations, in total about 25 face-to-face interviews were conducted within three months from May to July 2009. The interviews were sufficiently well answered to allow a response rate of 100% to be obtained.

Qualitative analysis showed that respondents believed that rivers have significantly affected Malaysian life in the past and would do so in the future, for example for water resources, transportation and sources of food. However, it was noted that the importance of rivers is changing due to urbanisation and the improvement of land transportation. Respondents were also aware about the historical emergence of waterfront development in Malaysia.

The interviews also revealed that waterfront development in Malaysia has followed a similar development process as other types of development and that they also include the participation of similar stakeholders in the land development processes. The majority of respondents agreed that Malaysia does not have effective governance for managing waterfront resources which leads on to the increasing negative effects from development, such as environmental and social problems. From interviews, two very important reasons for ineffective governance of waterfront resources in Malaysia were identified: (i) low levels of cooperation between stakeholders and (ii) inefficient communication systems between relevant agencies.

Furthermore, from the interviews, 84 percent of respondents indicated that they are familiar with guidelines for riverfront development but they disagreed that these guidelines are effective for controlling development close to river areas in Malaysia. From the interviews, four reasons were identified for ineffective guidelines for riverfront development: (i) were not

sufficient to control environmental issues, (ii) did not encourage sustainable waterfronts, (iii) were too general and did not provide specific guidance and (iv) were difficult to implement in practice.

Finally, the interviews revealed 18 statements for the best practice for waterfront development as suggested by the respondents. These suggestions could be used for developing guidelines for waterfront development in Malaysia.

Next, of the 91 sets of questionnaires that were sent to property development companies in Malaysia, a total of 61 questionnaires were returned, resulting in a 67% useable response rate. The 67% response rate was obtained within three months of data collection (from April to July 2009) and after the respondents were personally informed about the survey and various follow-ups were made to encourage the completion of the questionnaire.

The survey results indicated that some 32.8% of property development companies undertook waterfront development projects while most (67.2%) were not involved in waterfront projects either in Malaysia or outside the country. More than half (58.6%) of the property development companies are motivated to undertake waterfront development in the future, while some 14.6% had decided not to undertake waterfront development in the future, and another 26.8% were not sure. These figures reveal statistically that waterfront development in Malaysia is forecast to increase in the future. As expected, the property development companies had undertaken waterfront development projects for profit and financial benefit reasons (35%) and/or to diversify the type of property development undertaken by their companies (35%).

In terms of the successful implementation of waterfront development in Malaysia, almost half (45%) of the property development companies who were currently undertaking waterfront projects, stated that Malaysia did not have successful waterfront development for several reasons such as the difficulty in balancing the social, economic and environmental goals between stakeholders, and that there is no collaboration between the stakeholders involved in the development processes. A few of the companies indicated that Malaysia does have successful implementation of waterfront development, while some respondents were unsure about that.

Moreover, the results showed that introducing a new concept for development, as the main reason, explained why property development companies were undertaking a waterfront development project. The results also revealed statistically, that protection of natural resources and maintaining heritage and cultural values are the least important reasons for

developers to initiate waterfront development in Malaysia in the future.

The statistical results also showed the mean scores for all statements suggested for guidelines for waterfront development, and subsequently, the statements were ranked according to the mean scores. Based on the results, all 18 statements suggested for the guidelines for waterfront development showed a mean score range between 3.54 and 4.39, indicating that respondents agreed that all the statements should be included for guidelines for waterfront development for Malaysia. In particular, river reserve beautification had the highest mean score (*mean score=4.39*) indicating that the majority of respondents were agreed that river reserve beautification is the most important statement to be included in the guidelines. Although mitigating property speculation was identified as the least important statement (*lowest mean score=3.54*) the respondents never-the-less agreed that it should be included in the guidelines for waterfront development for Malaysia in the future.

Factor analysis was carried out to identify and order the statements suggested for guidelines for waterfront development. A Principal Component Analysis (PCA) specified six factors that included all 18 statements with Eigenvalues exceeding 1.0, and explained 66.26% of the variation in the data. Each factor was then allocated a name: (i) Environment, (ii) Waterfront benefits, (iii) Mitigation, (iv) Beautification, (v) Security, and (vi) Type of developments.

The factor analysis results were then subjected to a reliability test except for the statement loading on 'Type of development', as this factor has only a single statement. Reliability tests indicated that only 'Environment' and 'Waterfront benefits' had Alpha values greater than 0.6 as recommended by Churchill (1979)[59] indicating the internal consistency of the variables in the exploratory study. The reported mean inter-item correlations were appropriate for the remaining factors. The 'Security' factor reported weak mean inter-item correlations and indicated not to be reliable to group together and could have been removed from the analysis (Pallant, 2007), nevertheless, 'Security' was allowed to remain because factor analysis and the mean scores determined that the 'Security' factor was statistically significant. Moreover, 'Security' was determined as important to be included in the waterfront development guidelines as explained in the previous research (see Logan, 2001).

The focus of this research was to develop guidelines for best practice for waterfront development in Malaysia. The qualitative and quantitative investigations were therefore used

59 Cronbach's alpha greater than 0.60 is adequate for a newly developed questionnaire for the scale to express reliability (Churchill, 1979).

together to support and confirm the findings which ensured that the study benefitted from the synergy of the mixed methods approach. When considering the results from interviews and questionnaires as discussed in an earlier thesis chapter, this study confirmed that 18 statements loaded in six factors are important for taking into consideration when planning a waterfront development project. Instead of guideline recommendations, enforcement of the guidelines by the responsible institutions was considered by respondents to be highly desirable in order to achieve successful waterfront development in Malaysia as is evidenced in other countries.

The main contributions of this research are summarised, as follows:

1. The research confirmed that the level of awareness of regulations and guidelines relating to waterfront development among the respondents is high. However, the effectiveness of these regulations for control and achieving successful waterfront development is relatively low. For example, most of the respondents agreed that Malaysia did not implement successful waterfront development and also agreed that Malaysia did not have sufficient regulations and guidelines for waterfront development.

2. The government has undertaken waterfront development projects for re-imaging cities and/or redeveloping waterfront areas for recreational use as public space. However, private developers think differently about waterfront development and are motivated predominantly by financial gain.

3. A review of related documents from another country (in this research, Wellington's waterfront, New Zealand and Singapore's Riverfront were selected) showed that an emphasis was placed on waterfront governance and key successful factors that enabled the achievement of successful waterfront development. This provides a best practice example on how to achieve successful and sustainable waterfront development.

4. Value attributes associated with best practice in waterfront development were identified for the purpose of being used as guidelines by developers when they undertake waterfront development.

7.2 Research Limitations

This study was subject to a number of limitations relating to the research method, the scope of the research and the conduct of it.

The findings of this research were drawn from interviews (Government officers, Property developers and the Waterfront community) and from a survey of property development companies listed under Bursa Malaysia. The limited number of cases in this research may confine the results to the data collected. Therefore, generalising the results to other officers and property development companies should be done with caution.

A further limitation of this research is related to its scope of study. It dealt with development in front of rivers. This was a problem when introducing the research topic to the respondents being interviewed because some of them thought that waterfront development referred to coastal development, but it did not. Waterfront development was commonly associated with coastal areas but for the purposes of this study, this was excluded.

The final limitation related to the translation of the interview data. The interviews were conducted in Malay and English, so it was time consuming to translate the Malay words into English. The most difficult part was the translation of technical terminology into another language without losing its true meaning. This was a very challenging task.

7.3 Conclusion and Recommendations

The focus of this study was to examine waterfront development in Malaysia as well as to identify the attributes of waterfront development, in order to develop guidelines for waterfront development. The findings of this research were based on interviews conducted with Government officers, Property developers, and the Waterfront community from three case study areas (qualitative phase), and from questionnaires mailed and e-mailed to property development companies listed under Bursa Malaysia (quantitative phase). The attributes identified were then recommended to be used as guidelines to assist developers when undertaking waterfront projects in the future.

7.3.1 Recommendations for Best Practice for Waterfront Development in Malaysia

In this section, a set of recommendations is provided to improve practices in waterfront development. These recommendations emerge from the conclusions drawn from this research and are aimed at enhancing waterfront development in Malaysia. The following recommendations are presented in five categories:

1. There is a need to strengthen the governance in the waterfront development process, to alleviate problems and/or issues arising from waterfront development. Therefore, the Malaysian government needs to restructure management and administration specifically for managing waterfront resources.

2. If the government decides to reconstruct waterfront governance, it should place an emphasis on participation and collaboration among the stakeholders that has proved successful in other waterfront development. Establishment of an administration system for the entire development process would also help encourage more successful waterfront projects.

3. Upgrade the quality of information provided by the agencies and departments responsible for waterfront development. In the short term, the existing officers could be re-trained and provided with performance based incentives. In the long term, the government needs to appoint more skilled technical officers in relation with water resource management.

4. The government needs to revise the existing regulations for controlling waterfront development in Malaysia, by adopting the recommended guidelines for waterfront development as presented in Table 6.25 – Guidelines for riverfront development for Malaysia. In this regard, they should recognise the importance of environmental concerns and sharing costs and benefits among the stakeholders involved during the waterfront development process. This would help the government facilitate and control waterfront development in Malaysia.

5. The government and specifically the policy makers should strictly enforce the guidelines recommended for best practice for waterfront development in Malaysia in order to achieve successful waterfront outcomes similar to other countries.

7.3.2 Recommendations for Future Research

This study concludes with some suggestions for future research. These largely relate to the limitations discussed above.

A limited number of cases were identified in this research. Future research that would advance the knowledge would consider all waterfront development projects throughout Malaysia and also include listed and unlisted property development companies, in order to

draw more generally applicable conclusions and recommendations. Further research to assess each of these groups (Government officers, Property developers, Waterfront community), for example to determine what encourages them to be involved in waterfront development and what strategies they use to develop successful waterfront development, may be required in order to evaluate the ability to generalise the findings.

This research dealt with developments in front of rivers and with projects developed for recreational and mixed-use purposes. Further research could be carried out at different water bodies such as lakesides and also the crucial coastal development areas.

The interviews were conducted in the Malay and English languages and required time consuming translation prior to analysis. Further research could be fully conducted in the English language. To avoid the time consuming translation process further, it would help to provide an outline of the research and the information needed prior to the interviews, so that they could be better prepared to answer the questions.

This study identified a set of recommendations to use as guidelines for achieving successful waterfront outcomes in Malaysia that would avoid the problems that arose under the previous guidelines. These recommendations relate to property development companies, policy makers and the community who are involved in waterfront development. Further research could be undertaken to examine if the recommendations have been adopted and how successful they have been to waterfront development projects and how the parties involved have been influenced in or affected by them.

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Appendix A – Objectives and Function of the Institutions Involved in Waterfront Development in Malaysia

Table 7.1: Objectives and function of the institutions involved in waterfront development in Malaysia

Institution	Resources	Objectives	Functions
(1) Ministry of Natural Resources and Environment (MONRE)		1. To ensure well balanced management of natural resources and environment in achieving sustainable development. 2. To ensure efficient and effective service delivery system of natural resources and environment management. 3. To ensure efficient and effective implementation of development projects. 4. To establish training and research and development (R&D) as an innovative exploration catalyst in natural resources management and environmental conservation. 5. To ensure a clean, safe, healthy, productive and unpolluted environment	2. Legislate policy, laws, procedure and guidelines related to natural resources management and environmental conservation. 3. Monitor, coordinate and assess the implementation of policy, laws, procedure, guidelines and services while performing continuous restoration on natural resources management and environmental conservation. 4. Manage training programmes and human resource developments to produce competent working society and members of knowledge society. 5. Provide adequate infrastructure and tools to equip departments and agencies. 6. Inspire research and development (R&D) efforts in natural resources management and environmental conservation to enhance value added natural development. 7. Ascertain and maintain boundary issues to assure national interest, sovereignty and security. 8. Leading in information establishment and management of national geospatial and a spatial. 9. Ensuring natural resources planning and development with environmental conservation are well integrated. 10. Coordinate, supervise and enforce the legislations of natural resources management and environmental conservation. 11. Acts as a focal point for multi-lateral negotiations focusing on natural resources and environmental matters.

Institution	Resources	Objectives	Functions
			12. Safeguarding national interest in regional and international negotiations in terms of natural resources and environment. 13. Enhancing public awareness and public support in identifying the importance of well balanced utilization of natural resources and conservation of the environment. 14. Establish smart partnership among various authorities in managing natural resources and environment. 15. Ensure continuous improvement of the service delivery system in managing natural resources and environment.
(2) Department of Irrigation and Drainage, MONRE	Water resources, drainage and hydrology	1. To ensure that formulation of policies, strategies and programs are based on the Cabinet and NRE's top managements decisions while implement action base on current needs. 2. To ensure that implementation of policies, strategies and programs are monitored efficiently and effectively. 3. To ensure that all matters related to Cabinet Papers, Concept Papers, Reports and relevant documents are properly prepared and updated. 4. To ensure that Parliament matters are managed according to the standard procedures. 5. To ensure that planned project development will have positive impact on the nation's developments; and 6. To ensure that monitoring of project development being done consistently.	1. To formulate policies/ guide lines/ rules and regulation for water resources management. 2. To formulate strategies for the implementation of National Water Resources Management and Seashore Management. 3. To monitor issues related to development allocation of DID and NAHRIM. 4. To manage and coordinate NRE functions that is related to Water Resources. 5. To identify and evaluate the implementation of DID's and NAHRIM's Policies and Strategies; and. 6. To manage matters related to Cabinet Paper and Parliament on Water Resources issues.
(3) Department of Mineral and Geo-sciences, MONRE	Minerals	1. To plan and set policies and directions for the development and enhancement of the mineral and geo-science sector.	1. To formulate and legislates policy, laws, regulations and development programmes of minerals and geosciences sector.

Institution	Resources	Objectives	Functions
		2. To ensure that policies and legislations related to the development of minerals and geo-science is constantly relevant and contributes to the development of the industry and economy progress and is implemented in an environmentally friendly manner.	2. To plan, determine way forward and prepare short and long terms strategic plan for minerals and geosciences sector. 3. To collect and promote data and information for planning and developing minerals and geosciences sector. 4. To monitor, coordinate and evaluate execution of policy, programme, laws, regulations and service and doing value adding continuously for minerals and geosciences sector. 5. To process the application and produce export permit for minerals and ores of all kinds. 6. To establish multilateral/bilateral relationship and safe guard the nations interest at international level for minerals and geosciences sector. 7. To operate management and financial activities to support Division's functions.
(4) Department of Forestry of Peninsular Malaysia; Department of Wild life and National Park, Peninsular Malaysia	Biodiversity and Forestry Management	1. To ensure the advancement in forestry sector by conservation and development of forest area to achieve sustainable forest management objective for the conservation of environmentally stability. 2. Protection, management and preservation of biodiversity for the production of optimum benefits. 3. Protection and development of protected areas for the purpose of research, education, economic, aesthetic, recreation and ecological purposes. 4. Enhancement of knowledge, awareness and public support on the importance of biodiversity conservation.	1. Implementation of sustainable forest management in ensuring sufficient timber resources and conservation of environmental stability. 2. Research and development in forestry sectors and forest produce in effort of optimizing and varied the resources use. 3. To upgrade the forest management based on the Malaysian Criteria and Indicator or MC&I according to national policy and strategy. 4. To ensure and upgrade the role of the sector according to national and international forestry and environmental objective as agreed in international forums.

Institution	Resources	Objectives	Functions
(5) Department of Environment, MONRE	Environmental management and climate change	1. To establish a holistic policy framework to ensure a healthy, clean, safe and productive environment so as to achieve sustainable development. This division also responsible to ensure that the country's interest in global and regional environmental issues is protected.	1. Plan, formulate and coordinate the implementation of policy, strategy and environment program. 2. Coordinate the implementation of Multilateral of Environmental Agreements, MEAS. 3. Monitor the environmental programs and activities. 4. Enhance and promote the environmental knowledge and encourage public to actively participate in the environmental culture.
(6) Department of Director General of lands and Mines; Department of Survey and Mapping, Malaysia	Land, survey, and mapping	1. To ensure that the implementation of land administration in the country and the provision of survey and mapping services are in line with current government's policy. 2. To enable the National Land Council to function as an effective forum in ensuring the uniformity and consistency of land administration in the country.	1. To draft/coordinate the drafting of legislations / regulations / policies on land matters, survey and mapping. 2. Monitor and consolidate the implementation of policies/legislation/regulations and Ministry's decisions that are related with the land, survey and mapping. 3. To assist the Minister in the implementation of his powers and functions under the various legislations/regulations related to land matters, survey and mapping. 4. To coordinate follow-up actions on the incoming issues or instructions from the cabinet with the various departments/agencies within the Ministry on land matters, survey and mapping. 5. To act as the secretariat and coordinate Malaysian international border meetings and inter-state border meetings. 6. Consolidate and manage the National Land Council meetings.

(Source: Malaysian Department of Drainage and Irrigation, 2009)

Appendix B – Interview Questions

DEVELOPING GUIDELINES FOR RIVERFRONT DEVELOPMENT

IN MALAYSIA

INTERVIEW QUESTIONS

Dear Sir / Madam

Thank you for taking time to do this interview with me. My name is *Azlina Binti Md. Yassin*. I am a post graduate student from Lincoln University, Canterbury, New Zealand. I am currently doing research on waterfront development in Malaysia. Waterfront in this research refers to any development areas in front of river such as Kuching riverfront and Malacca waterfront. The purpose of this study is to look at waterfront development practice in Malaysia with emphasis on guidelines related to the development process.

The information gathered from this interview will comprise the main evidence for the study and be used for the thesis write up and subsequent journal publications. Individual responding to the survey will not be personally identified in the results.

Therefore, I would appreciate if you would contribute to this research. It will take approximately one hour to complete the interview sessions. Your valuable participation will be deeply appreciated.

Thank you for assisting in my research

Azlina Binti Md. Yassin

PhD Student,
Priperty studies, Commerce Division,
Lincoln University, Canterbury,
New Zealand.

Part 1: Source of Information

The purpose of this opening section is to provide some background details of your company.

Name of Organisation : _____

Name of Department : _____

Address of Organisation : _____

_____

Telephone : _____

Fax Number : _____

Website / E-mail : _____

Name of Respondents : _____

Your Position : _____

E-Mail : _____

Part 2: Waterfront development in Malaysia

(1) What do you think the importance of the boundary between the river and the country?

(2) Early human settlement and cities in Malaysia developed along the river area. Could you please comment about this history?

(3) What did the areas looks like at that time specifically the development you are associated with?

(4) Waterfront development in Malaysia has changed over the decades and the current pattern of development is more focussed on public uses (recreational) and mix use development. Are you aware of this transformation?

(5) What are the most influential factors contribute to the successful implementation of waterfront development in other countries?

(6) What are important reasons in a decision to initiate a waterfront development project?

(7) What reasons most influence people interested in waterfront property?

(8) Do you think waterfront development in Malaysia has reaped the similar achievement like in other countries? Please comment with reasons.

(9) What is your expectation about the future of waterfront development in Malaysia?

(10) Does the waterfront development process differ from the general development process?

(11) Any development usually involves many parties which integrated into the development process. How about waterfront development in Malaysia?

(12) How does Malaysia practice governance for waterfront project? Please comment.

(13) In your opinion, what are the reasons that constrain for effective administration and management for waterfront resources and waterfront development in Malaysia?

(14) Based on your observation and knowledge, what are the effects might be derived from waterfront development projects?

(15) Based on your knowledge, what are the regulations associated with waterfront development in Malaysia?

(16) The guideline for riverfront development concept is designed mainly to control development in front of water areas, particularly close to river areas. Do you aware about this guideline?

(17) Is this guideline considered effective towards successful riverfront development?

(18) Considering of all barriers and limitations, what is your recommendation relating to a new guideline for waterfront development in Malaysia incorporating economical, environmental and social factors?

Appendix C – Approval Letter and Research Pass

UNIT PERANCANG EKONOMI
Economic Planning Unit
JABATAN PERDANA MENTERI
Prime Minister's Department
BLOK B5 & B6
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62502 PUTRAJAYA
MALAYSIA

EPU
ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT, MALAYSIA

Telefon : 603-8888 3333
Telefax : 603-888

Ruj. Tuan:
Your Ref.:

Ruj. Kami: UPE: 40/200/19/2377
Our Ref.:

Tarikh: 25 February 2009
Date:

Azlina binti Md. Yassin
No 9 Washbourne Rd,
Wigram, Hornby,
Christchurch 8042
New Zealand
Email: mdyassia@lincoln.ac.nz

APPLICATION TO CONDUCT RESEARCH IN MALAYSIA

With reference to your application dated **17 Desember 2008**, I am pleased to inform you that your application to conduct research in Malaysia has been *approved* by the **Research Promotion and Co-Ordination Committee, Economic Planning Unit, Prime Minister's Department.** The details of the approval are as follows:

Researcher's name	:	**AZLINA BINTI MD. YASSIN**
Passport No. / I. C No:		**791209-01-6382**
Nationality	:	**MALAYSIA**
Title of Research	:	**DEVELOPING GUIDELINES FOR WATERFRONT DEVELOPMENT IN MALAYSIA**

Period of Research Approved: **THREE YEARS**

2. Please collect your Research Pass in person from the Economic Planning Unit, Prime Minister's Department, Parcel B, Level 4 Block B5, Federal Government Administrative Centre, 62502 Putrajaya and bring along two (2) passport size photographs. You are also required to comply with the rules and regulations stipulated from time to time by the agencies with which you have dealings in the conduct of your research.

3. I would like to draw your attention to the undertaking signed by you that you will submit without cost to the Economic Planning Unit the following documents:

a) A brief summary of your research findings on completion of your research and before you leave Malaysia; and

b) Three (3) copies of your final dissertation/publication.

4. Lastly, please submit a copy of your preliminary and final report directly to the State Government where you carried out your research. Thank you.

Yours sincerely,

(MUNIRAH ABD. MANAN)
For Director General,
Macro Economic Section,
Economic Planning Unit,
E-mail: munirah@epu.gov.my
Tel: 88882809/2818/2958
Fax: 88883798

ATTENTION

This letter is only to inform you the status of your application and **cannot be used as a research pass**

RESEARCH PASS

Appendix D – Invitation Letter for Conducting Interviews

Lincoln University
Te Whare Wānaka o Aoraki

Commerce Division
PO Box 84, Lincoln University,
Canterbury 8150, New Zealand
Telephone 64 3 325-2811
Facsimile 64 3 325-3847
www.lincoln.ac.nz

Date: 01st February 2009

TO WHOM MAY IT CONCERN

Dear:

Sir / Madam

PERMISSION TO OBTAIN INFORMATION

This is to confirm that ***Ms. Azlina Binti Md. Yassin*** *(Student ID: 1080175)* is a PhD (Property) student at Lincoln University, Canterbury, New Zealand. Ms. Azlina is working under my supervision on the research topic "Waterfront development for residential in Malaysia". In order for her to conduct this research, she needs some data and information from your institution.

I am writing this letter on behalf requesting permission to conduct this research at your institution. The general background of this study and data required from your institution are enclosed together with this letter.

I would be grateful if you could render her your assistance with regards to her request to conduct this research at your institution. If you have any questions or concerns, please feel free to email me, mcdonagj@lincoln.ac.nz or chris.eves@qut.edu.au.

Thank you.

Your sincerely,

.....

John McDonagh
For Prof. Christopher Eves
Commerce Division,
Lincoln University,
Canterbury, NEW ZEALAND.

Appendix E – List of Property Development Companies

Table 7.2: List of property development companies

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
1.	S P SETIA BERHAD	Setia Corporate Tower, 5A, Jalan Setia Nusantara U13/17, Seksyen U13, Setia Alam, 40170 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	2.	SUNWAY CITY BERHAD	The Property Gallery, Lobby Level, Menara Sunway, Jln Lagoon Timur, Bandar Sunway, 46150 Petaling Jaya, selangor Darul Ehsan, MALAYSIA.	3.	UEM LAND HOLDINGS BERHAD	Nusajaya Centre, 8 Ledang Heights, Nusajaya, 81560, Johor, MALAYSIA.
4.	KLCC PROPERTY HOLDINGS BERHAD	Level 4&5, City Point, Kompleks Dayabumi, Jalan Sultan Hishamuddin, P.O. Box 13214, 50050 Kuala Lumpur, MALAYSIA.	5.	MAH SING GROUP BERHAD	Wisma Mah Sing, Penthouse Suite 1, No. 163 Jalan Sungai Besi, 57100 Kuala Lumpur, MALAYSIA.	6.	SELANGOR PROPERTIES BERHAD	Level 2, Block D, Kompleks Pejabat Damansara, Jalan Dungun, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.
7.	KRISASSETS HOLDINGS	Level 32, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, MALAYSIA.	8.	PRIME GROUP	Suite 27-01, 27th Floor, Menara MSC cyberport, 5, Jalan Bukit Meldrum, 80300 Johor Bahru, Johor Darul Takzim, MALAYSIA.	9.	IJM LAND BERHAD	Ground Floor, Wisma IJM, Jalan Yong Shook Lin, 46050 Petaling Jaya, Selangor, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
10.	E & O PROPERTY DEVELOPMENTS BHD	Level 3A (Annexe), Menara Milenium, No. 8, Jln Damanlela, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.	11.	SUNRISE BERHAD,	Penthouse, Wisma Sunrise, Plaza Mont'Kiara, No.2, Jalan Kiara, Mont'Kiara, 50480 Kuala Lumpur, MALAYSIA.	12.	GUOCOLAND (Malaysia) BERHAD,	Level 8, Wisma Hong Leong,18 Jalan Perak, 50450 Kuala Lumpur, MALAYSIA
13.	YNH PROPERTY BHD & KAR SIN BHD	2272, Jln Dato Yu Neh Huat, Taman Samudera, 32040 Sri Manjung, Perak, MALAYSIA.	14.	YTL CORPORATION BERHAD,	11th Floor, Yeoh Tiong Lay Plaza, 55, Jln B. Bintang, 55100 Kuala Lumpur, MALAYSIA.	15.	PLENITUDE BERHAD,	No.213, Jalan Perdana, 3/1, Bandar Perdana, 08000 Sungai Petani, Kedah Darul Aman, MALAYSIA.
16.	MK LAND HOLDINGS BERHAD	No.19, Jalan PJU 8/5H, Perdana Business Centre, Bandar Damansara Perdana, 47820 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	17.	JOHOR LAND BERHAD.	Kompleks Mutiara Johor Land Jalan Bukit Mutiara, Bandar Dato' Onn, 81100 Johor Bahru, Johor, MALAYSIA.	18.	DAIMAN DEVELOPMENTS BERHAD	Room 501. 5th Floor, Wisma Daiman, No. 64, Jalan Sulam, Taman Sentosa, 80150 Johor Bahru, Johor Darul Takzim, MALAYSIA.
19.	UNITED MALAYAN LAND BHD,	Suite 1.1, 1st Floor, Kompleks Antarabangsa, Jalan Sultan Ismail, 50250 Kuala Lumpur, MALAYSIA.	20.	KUMPULAN HARTANAH SELANGOR BERHAD	Lot 1A, Level 1A, Plaza Perangsang, Persiaran perbandaran, 40000 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	21.	METRO KAJANG HOLDINGS BERHAD	Ground Floor, Wisma Metro Kajang, Jalan Semenyih, 43000 Kajang, Selangor Darul Ehsan, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
22.	DIJAYA CORPORATION BERHAD	Lot 301, 3rd Floor, Wisma Dijaya, 1A Jalan SS 20/1, Damansara Utama, 47400 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	23.	GLOMAC BERHAD	12th Floor, Wisma Glomac 3, Kompleks Kelana Centre Point, Jalan SS7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	24.	LBS BINA GROUP BERHAD	Plaza Seri Setia, Level 1-4 No. 1, Jalan SS9/2 Seri Setia, 47300 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.
25.	GOLDEN PLUS HOLDINGS BERHAD	Suite 6-7 & 6-8, Wisma UOA, Damansara II, No. 6, Jalan Changkat Semantan, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.	26.	A & M REALTY BERHAD	10th Floor, Menara A&M, Garden Business Center, No. 3, Jalan Istana, 41000 Klang,Selangor Darul Ehsan, MALAYSIA.	27.	CRESCENDO CORP. BHD.	Lot 18.02, 18th Floor, Public Bank Tower, 19, Jalan Wong Ah Fook, 80000 Johor Bahru, MALAYSIA.
28.	TAHPS GROUP BERHAD,	5th Floor, Bangunan Yee Seng, No. 15, Jalan Raja chulan, 50200 Kuala Lumpur, MALAYSIA.	29.	AP LAND BERHAD	468-16, 3rd Mile, Jalan Ipoh, 51200 Kuala Lumpur, MALAYSIA.	30.	MUTIARA GOODYEAR DEVELOPMENTS BERHAD	P.S. No.46, Tingkat 11, Menara Tun Razak, Jalan Raja Laut, 50350 Kuala Lumpur, MALAYSIA.
31.	BOLTON BERHAD	6th Floor Campbell Complex, 98 Jalan Dang Wangi, 50100 Kuala Lumpur, MALAYSIA.	32.	KELADI MAJU BERHAD	Wisma Keladi, 11-A, Level 7, Jalan Bank, 08000 Sungai Petani, Kedah Darul Aman, MALAYSIA.	33.	TALAM CORPORATION,	Level 1, Menara Maxisegar, Jalan Pandan Indah 4/2, Pandan Indah, 55100 Kuala Lumpur, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
34.	MAHAJAYA PROPERTY DIVISIONS	No. 1-1-1, Wisma Mahajaya, Block A, Megan Salak Park, Jalan 2/125E, Taman Desa Petaling, 57100 Kuala Lumpur, MALAYSIA.	35.	MUI PROPERTIES BERHAD (MPB),	5th Floor, Menara PMI, No. 2, Jalan Changkat Ceylon, 50200 Kuala Lumpur, MALAYSIA.	36.	MAGNA PRIMA BERHAD	Lot No. C-G11 & C-G12, Block C, Jalan Persiaran Surian, 47810 Kota Damansara, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.
37.	ORIENTAL INTEREST BHD	Room 102 1st Floor, Wisma Penang Garden 42, Jalan Sultan Ahmad Shah, 10500 Pulau Pinang, MALAYSIA.	38.	ASIAN PAC HOLDING	12th Floor, Menara SMI, No.6 Lorong P. Ramlee, 50250 Kuala Lumpur, MALAYSIA.	39.	BCB BERHAD	7th floor, Plaza BCB (Hotel Tower Block), No. 20, Jln Bakawali, 86000 Kluang, Johor Darul Takzim, MALAYSIA.
40.	OSK PROPERTY HOLDINGS BERHAD	16th Floor, Plaza OSK, Jalan Ampang, 50450 Kuala Lumpur, MALAYSIA.	41.	MERGE HOUSING BERHAD	Suite 13A-2, Menara Uni.Asia, 1008, Jalan Sultan Ismail, 50250 Kuala Lumpar, MALAYSIA.	42.	TRIplc BERHAD	No. 6 & 8, Jalan Apollo CH U5/CH, Bandar Pinggiran Subang, Seksyen U5, 40150 Shah Alam, Selangor Darul Ehsan, MALAYSIA.
43.	GROMUTUAL BERHAD	Suite 15.3A, Level 15, Menara Pelangi, No.2, Jln Kuning, Tmn Pelangi, 80400, Johor Bahru, Johor Darul Takzim, MALAYSIA.	44.	HUA YANG BERHAD	C-21, Jalan Medan Selayang 1, Medan Selayang, 68100 Batu Caves, Selangor Darul Ehsan, MALAYSIA.	45.	PETALING TIN BERHAD	1st Floor, No.118 Jalan Semangat, 46300 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
46.	NILAI RESOURCES GROUP BERHAD	11/F Wisma Tractors, 7 Jalan SS16/1, 47500 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	47.	MEDA INCORPORATION BHD	No. 11, USJ Sentral, Jalan USJ Sentral 3, Persiaran Subang, 47600 UEP Subang Jaya, Selangor Darul Ehsan, MALAYSIA.	48.	PERDUREN (M) BERHAD	38-3-1, Jalan 4/91, Taman Shamelin Perkasa, 56100 Cheras, Kuala Lumpur, MALAYSIA.
49.	GAMUDA LAND	No 56, Jln SS22/25 Damansara Jaya, 47400 Petaling Jaya, Selangor, MALAYSIA.	50.	FOCAL AIMS HOLDINGS BHD	Suite 338, 3rd Floor, Johor Tower, Jalan Gereja, 80100 Johor Bahru, Johor Darul Takzim, MALAYSIA.	51.	MENANG CORPORATION (M) BERHAD	8th Storey South Block Wisma Selangor Dredging, 142-A Jalan Ampang, 50450 Kuala Lumpur, MALAYSIA.
52.	MULPHA LAND BERHAD	Bangunan Mulpha, 17 Jalan Semangat, 46100 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	53.	FARLIM GROUP (M)	1 Lintang Angsana , Bandar Baru Ayer Itam, 11500 Penang, MALAYSIA.	54.	SOUTH MALAYSIA INDUSTRIES BHD	Suite 1301, 13th Floor, City Plaza, Jalan Tebrau, 80300 Johor Bahru, Johor Darul Takzim, MALAYSIA.
55.	Y&G CORPORATION BHD	No. 14, Jalan Tengku Ampuan Zabedah 9/A, Seksyen 9, 40000 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	56.	LBI CAPITAL BERHAD	Lot 1282, Jalan Bukit Kemuning, Seksyen 32 Shah Alam, 40460 Selangor, MALAYSIA.	57.	MAJUPERAK HOLDINGS BERHAD (MHB)	6th Floor, Wisma Wan Mohamed, Jln Panglima Bukit Gantang Wahab, 30000 Perak Darul Ridzuan, MALAYSIA.
58.	TANCO HOLDINGS BERHAD	No, 1, Persiaran Ledang, Off Jalan Duta, 50480 Kuala Lumpur, MALAYSIA.	59.	NAIM INDAH CORPORATION BERHAD	Suite 12A, 03 - 05, Level 12A Plaza, Permata Jln Kampar, Off Tun Razak, 50400 Kuala Lumpur MALAYSIA.	60.	SBC CORPORATION BERHAD	Wisma Siah Brothers, 74, Jalan Pahang, 53000 Kuala Lumpur, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
61.	PARAGON UNION BHD	Lot 14, Jalan Satu, Kawasan Perindustrian Cheras Jaya, Batu 11, Cheras, 43200 Selangor Darul Ehsan, MALAYSIA.	62.	TA GLOBAL BHD	34th Floor, Menara TA One, 22, Jalan P. Ramlee, 50250 Kuala Lumpur, MALAYSIA.	63.	PLENITUDE TEBRAU SDN. BHD.	No. 1 Jalan Harmonium, Taman Desa Tebrau, 81100 Johor, Johor Darul Takzim, MALAYSIA.
64.	LAND & GENERAL BERHAD	Level 2, Block D,Seri Damansara Business Park, Persiaran Industry, Bandar seri Damansara, 52200 Kuala Lumpur, MALAYSIA.	65.	LIEN HOE CORPORATION BERHAD	18th Floor, Menara Lien Hoe, No. 8 Persiaran Tropicana, Tropicana Golf and Country Resort, 47400 Petaling Jaya, MALAYSIA.	66.	MALTON BERHAD	19-0, Level 19, Pavilion Tower, 75, Jalan Raja Chulan, 50200 Kuala Lumpur, MALAYSIA.
67.	KARAMBUNAI CORPORATION BERHAD	1 Nexus Drive East, Karambunai, Menggatal, Kota Kinabalu, Sabah, MALAYSIA.	68.	FIMA CORPORATION BERHAD,	Suite 4.1, Level 4, Plaza Damansara, 45 Jalan Medan Setia 1, Bukit Damansara, 50490 Kuala Lumpur MALAYSIA.	69.	MAHAJAYA BERHAD	No. 1-1-1, Wisma Mahajaya, Block A, Megan Corporate Park, Jalan 2/125E, Taman Desa Petaling, 57100 Kuala Lumpur, MALAYSIA.
70.	BINA DARULAMAN BERHAD	Level 9 & 10, Menara BDB, 88 Lebuhraya Darulaman, 05100 Alor Star, Kedah Darul Aman, MALAYSIA.	71.	PJ DEVELOPMENTS HOLDINGS BERHAD	17th & 18th Floor, Plaza OSK, Jalan Ampang, 50450 Kuala Lumpur, MALAYSIA.	72.	COUNTRY VIEW BERHAD	Unit 26-01, Level 26, Mail Box 261, Menara Landmark, No. 12, Jalan Ngee Heng, 80000 Johor Bahru, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
73.	DAMANSARA REALTY BERHAD	Level 2, Persada Johor International Convention Centre, Jalan Abdullah Ibrahim, 80000 Johor Bahru, Johor Darul Takzim, MALAYSIA.	74.	DNP HOLDINGS BERHAD	5 Jalan SS23/11, Taman SEA, Petaling Jaya, 4700 Selangor, Selangor Darul Ehsan, MALAYSIA.	75.	SAPURA RESOURCES BERHAD	1st floor, Sapura @ Mines, No.7, Jalan Tasik, The Mines Resort City, 43300 Seri Kembangan, MALAYSIA.
76.	BERJAYA CORPORATION BERHAD	Level 12 (East Wing), Berjaya Times Square, No. 1, Jalan Imbi, 55100 Kuala Lumpur, MALAYSIA.	77.	ENCORP BERHAD.	Level 18, Wisma Sunway Mas, No. 1, Jalan Tengku Ampuan Zabedah C9/C, Section 9, 40100 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	78.	EKRAN BERHAD	Lot 5428-5429, Block 16, KCLD, Lorong Lapangan Terbang Baru 1, 93350 Kuching, Sarawak, MALAYSIA.
79.	IGB CORPORATION BERHAD	Level 32, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, MALAYSIA.	80.	ASAS DUNIA BERHAD	Wisma Asas, No. 228-B, Lebuh Chulia, 10200 Penang, MALAYSIA.	81.	EQUINE CAPITAL BERHAD	Equine Capital Berhad No 1, Jalan Putra Permai 1A, Taman Equine, 43300 Seri Kembangan Selangor Darul Ehsan, MALAYSIA.
82.	PARAMOUNT BERHAD	Level 8, Uptown 1, Jalan SS21/58, Damansara Uptown, 47400 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	83.	HUNZA PROPERTIES BERHAD	5-4-8/11, Hunza Complex, Jalan Gangsa, Island Park, 11600 Penang, MALAYSIA.	84.	SHL CONSOLIDATED BERHAD	16th Floor, Wisma Sin Heap Lee, 346 Jalan Tun Razak, 50400 Kuala Lumpur, MALAYSIA.

No.	Name of company	Address	No.	Name of company	Address	No.	Name of company	Address
85.	IBRACO BERHAD	Ibraco House, No. 898 Jalan Wan Alwi Tabuan Jaya, 93350 Kuching, Sarawak, MALAYSIA.	86.	BINAIK EQUITY BERHAD	Suite 13.1, Level 13, Menara Pelangi, Jalan Kuning, Taman Pelangi, 80400 Johor Bahru, Johor Darul Takzim, MALAYSIA.	87.	KSL GROUP BERHAD	Wisma KSL, 148 Batu 1 1/2 , Jalan Buloh Kasap, 85000 Segamat, Johor Darul Takzim, MALAYSIA.
88.	I-BERHAD	No. 3 Jalan Astaka, U8/84 Section U8 Bukit Jelutong, 40150 Shah Alam, Selangor Darul Ehsan, MALAYSIA.	89.	BERTAM ALLIANCE BERHAD	Brem House, Level 3A, Crystal Crown Hotel, No. 12 Lorong Utara A, Off Jalan Utara, 46200 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	90.	COUNTRY HEIGHTS HOLDINGS BERHAD	10th Floor, Block C, Mines Waterfront Business Park, No. 3, Jalan Tasik, Mines Resort City, 43300 Seri Kembangan, Selangor Darul Ehsan, MALAYSIA.
91.	MALAYSIA PACIFIC CORPORATION BERHAD	21st Floor, Wisma MPL, Jalan Raja Chulan, 50200 Kuala Lumpur, MALAYSIA.						

Appendix F – Survey Questionnaire

Questionnaire No.:_____

Dear Sir / Madam

My name is *Azlina Binti Md. Yassin*. I am a post graduate student from Lincoln University, Canterbury, New Zealand. I am currently doing research on waterfront development in Malaysia. Waterfront in this research refers to any development areas in front of river. The purpose of this study is to look at waterfront development practice in Malaysia with an emphasis on guidelines related to the development process.

The information gathered from this questionnaire will comprise the main evidence for the research and be used for the thesis write up and subsequent journal publications. Individuals responding to the survey will not be personally identified in the results.

I would be most appreciative if you would contribute to this research. It will take approximately 15 minutes to complete the questionnaire. Your valuable participation will make the research more meaningful.

Thank you for assisting in my research

Azlina Binti Md. Yassin
PhD Student,
Commerce Division, Lincoln University,
Canterbury, New Zealand.

INSTRUCTIONS

For each question, please tick the box alongside your answer(s); otherwise follow the instructions given to answer the questions.

SECTION A: COMPANY PROFILE

Please tick [√] **which is appropriate:**

A1) Property services offered

1. Residential
2. Commercial (Office and Retail)
3. Industrial
4. Others (please specify)

_____

_____

_____

A2) In which location does your company operate in?

1. Nationally (within Malaysia) ☐
2. Internationally (outside Malaysia) ☐
3. Both nationally and internationally ☐

A3) Years Operational

1. Less than 1 year ☐
2. 1-5 years ☐
3. 6-10 years ☐
4. Over 10 years ☐
5. Not sure ☐

A4) How many people are employed at your organisation?

1. Less than 10 people ☐
2. 10 – 50 people ☐
3. 51 – 100 people ☐
4. Over 100 people ☐
5. Do not know / Not sure ☐

SECTION B: WATERFRONT DEVELOPMENT IN MALAYSIA

Using the 1 – 4 scale below, Please tick [√] which is appropriate:

B1) Does your company currently undertake waterfront development?

1. Yes [ ] Go to Question B3 onwards 2. No [ ] Go to Question B2

B2) If your company is not already involved in waterfront development, are you considering undertaking any in the future?

1. Yes [ ] Go to Question B6 onwards 2. No [ ] Go to Question B6 onwards

3. Unsure [ ] Go to Question B6 onwards

B3) What percentage of your development projects involve development of the waterfront?

1. 1 – 20% [ ]
2. 21% – 40% [ ]
3. 41% – 60% [ ]
4. 61% – 80% [ ]
5. 81% - 100% [ ]

B4) What type of waterfront development is your company involved in? *(You can tick more than one)*.

1. Residential scheme [ ]
2. Industrial [ ]
3. Mixed use scheme [ ]
4. Commercial (Office / Retail) [ ]
5. Recreational [ ]
6. Others (please specify)

_____ [ ]

_____ [ ]

_____ [ ]

B5) What are your <u>primary</u> motives for undertaking a waterfront development project? (*Please tick <u>one</u> option only*).

1. Environmental improvement. [ ]
2. Profit / financial benefits. [ ]
3. To diversify the property type developed. [ ]
4. Conservation of natural resources. [ ]
5. Others (please specify)

_____ [ ]

B6) Each of the following factors could be a reason for applying waterfront development. From your perspective, please rank the factors below from "1" is most influential factor to "9" is least influential factor.

No.	Factors	Rank
1.	To introduce a new concept of development	
2.	To cater for demand from buyers	
3.	To create an investment for investors	
4.	To make higher profits	
5.	To maintain heritage and cultural values	
6.	Tourist attraction	
7.	To protect natural resources	
8.	To provide community amenities	
9.	To reduce environmental damage	

B7) Do you think successful implementation of waterfront development in Malaysia is progressing in line with developed countries?

1. Yes ☐ 2. No ☐ 3. Unsure ☐

B8) In your opinion, what are the obstacles for successful implementation of waterfront development in Malaysia? *(Please choose the <u>three most important</u> obstacles and rank them with "1" being most important to "3" being least important).*

1. Insufficient financial resources. ☐
2. Balancing the various social, economic and financial need of the various stakeholders (e.g. community, government, developer). ☐
3. Less participation (domination by government and less involvement by non-government organisations). ☐
4. No collaboration between stakeholders. ☐
5. Lack of viable location options. ☐
6. Difficulty in obtaining planning permission ☐
7. Others (Please specify)

_____ ☐

_____ ☐

_____ ☐

SECTION C: REGULATIONS RELATED TO WATERFRONT DEVELOPMENT IN MALAYSIA

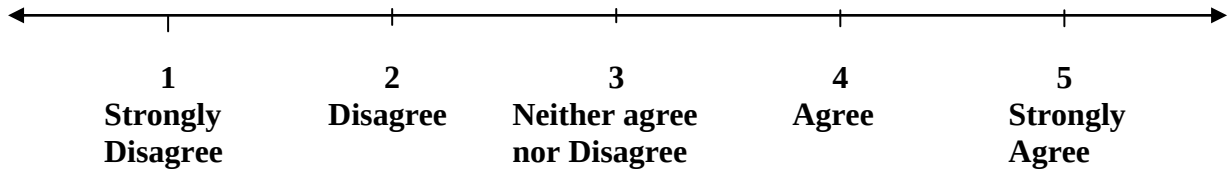
Please tick [√] **where appropriate:**

C1) How familiar are you with the following guidelines and legislation:

1 = Never heard of it
2 = Have heard of it
3 = Somewhat familiar
4 = Very familiar

	Guidelines and Regulation	1	2	3	4
1.	National Land Code 1965.				
2.	Uniform Building By Laws 1984.				
3.	Land Acquisition Act 1960.				
4.	Act 172 in Town and Country Planning Act 1976				
5.	Act 171 in Local Government Act 1976.				
6.	Act 127 in Environmental Quality Act 1974.				
7.	Act 133 in Street, Drainage & Building Act 1974.				
8.	Guidelines for riverfront development concept.				
9.	Coastal Zone guidelines.				
10.	National Landscape Guidelines.				

For Question C2, Please use the scale below.



C2) The Department of Drainage and Irrigation, Malaysia has designed the guidelines for riverfront development. Using the scale above, please tick [√] which box best represents your answer about the effectiveness of these guidelines from the list of statements below.

No.	Statement	Scale				
They:		1	2	3	4	5
1.	Provide specific guidance					
2.	Are easy to implement					
3.	Are sufficient to control environmental problems					

4.	Encourage sustainable waterfront development					

C3) Do you think there are sufficient regulations <u>to control</u> waterfront development in Malaysia? *(Please tick <u>one</u> option only)*.

1. Too many ☐
2. Sufficient - No change needed ☐
3. Moderate - Could do more ☐
4. Insufficient ☐
5. Others (please specify) ☐

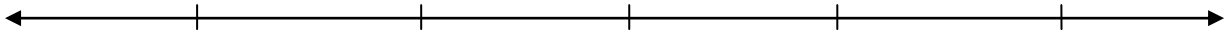
_____ ☐

_____

C4) How well are the government regulations relating to waterfront development in Malaysia being enforced? (Please tick <u>one</u> option only).

1. Strictly enforced ☐
2. Moderately enforced ☐
3. Not enforced ☐
4. Unsure ☐

For question C5, please use the scale given below.



1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor Disagree	Agree	Strongly Agree

C5. Below are the statements about "best practice" towards sustainable waterfront development in Malaysia. Please provide your level of agreement on these.

No	Statements	Scale				
		1	2	3	4	5
1.	Environmental Impact Assessment (EIA) is compulsory.					
2.	Maintenance & rehabilitation costs are shared between stakeholders.					
3.	Should use environmentally friendly materials in construction.					
4.	Provides flood mitigation (e.g. by planting more trees).					
5.	Protection of natural resources (water and environment).					
6.	Personal security is maintained by means of policing; surveillance cameras; etc.					
7.	Provision of sufficient public facilities and amenities (such as pedestrian, landscaping; access ways; recreation areas; etc.)					
8.	Upgrading and maintaining established settlement along the waterfront area.					
9.	Upgrading and maintaining sewage system.					
10.	Continuous river rehabilitation.					
11.	River reserve beautification.					
12.	Restrict type of development.					
13.	Integrate both modern and heritage aspects into development.					
14.	Encourage economic activities.					
15.	Sharing waterfront benefits (such as view; financial rewards; etc.) among stakeholders (e.g. community; government; developer).					
16.	Participation among stakeholders should be compulsory at every stage of the development.					
17.	Continuously educate public about environmental concerns.					
18.	Provide regulation and policies that mitigate market speculation for waterfront properties.					

C6) Please provide your comments and suggestions towards "best practice" of waterfront development application in Malaysia.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

-Thank you for completing this questionnaire-

Your participation in this survey is greatly appreciated. Thank you for your time and if you have further comments about this questionnaire, please feel free to comment in the space provided below. Once again, we assure you that your identity will remain **STRICTLY CONFIDENTIAL.**

Please return your completed survey in the envelope provided.

Comments:

_____
_____
_____
_____
_____
_____
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_____
_____
_____
_____
_____
_____

Appendix G – Invitation Letter for Conducting Survey Questionnaire

Lincoln University
Te Whare Wānaka o Aoraki
CHRISTCHURCH•NEW ZEALAND

Property Studies Group
15th March 2010

To Whom It May Concern

Re: Azlina Binti Md Yassin

Dear Sir/Madam

I am writing this letter of introduction for Azlina Md Yassin, who is currently a PhD candidate at Lincoln University, New Zealand and is under my supervision.

Azlina is undertaking research for her PhD thesis "Waterfront development in Malaysia". An important aspect of Azlina's research is the collection of data including the distribution of a questionnaire to respondents.

Any assistance that your organisation can provide Azlina would be most appreciated as this is a very worthy research project that will have long term benefits for waterfront development projects in Malaysia.

Your participation is completely voluntary but Azlina needs a high rate of full responses for her results to have any meaning. We would be grateful if you could take the time to complete the survey.The survey should take approximately 10-15 minutes to complete. All individual responses will be kept confidential and your name will not be made identifiable in any material published. The information collected will only be accessible by myself and Azlina.

Once you have completed the survey could you please mail it back in the free-post envelope provided by 30th April 2010. Alternatively, you may complete the survey and send it back by electronic mail. We appreciate your time and professional courtesy in participating in this study.

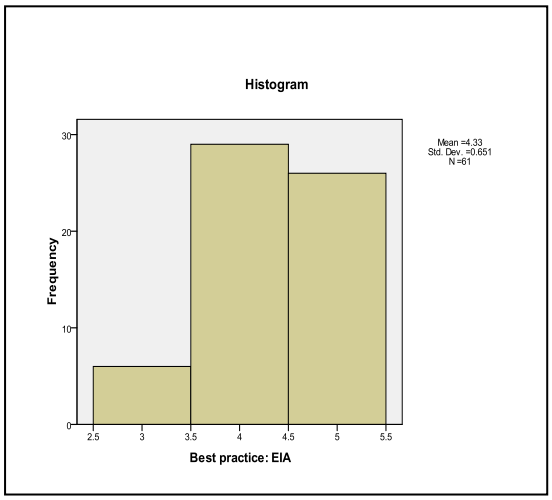
Please do not hesitate to contact me (email: sandy.bond@lincoln.ac.nz) if I can provide any further information that could assist in relation to Azlina gaining access to her required data.

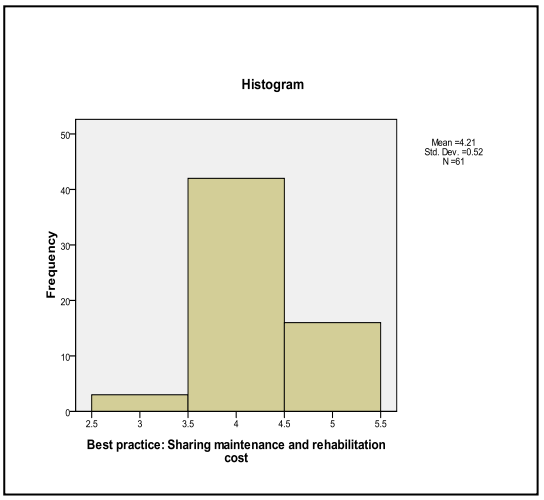
Yours faithfully,

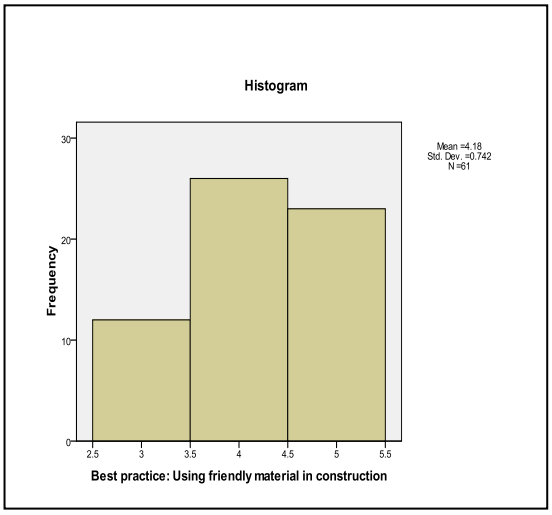
Professor Dr Sandy Bond
Professor of Property Studies,
Commerce Division,
P O Box 84, Lincoln University,
Lincoln 764, Christchurch,
New Zealand.

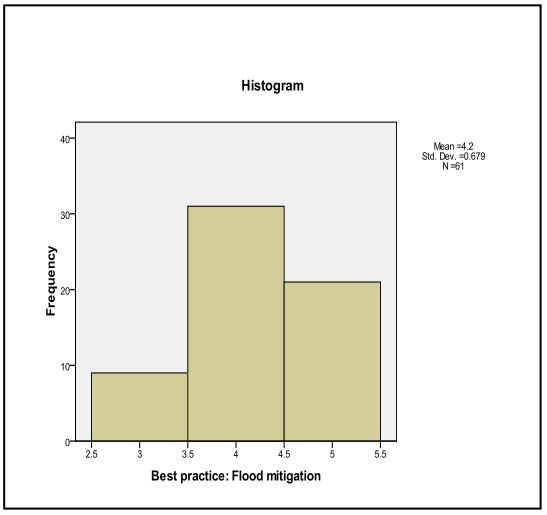
New Zealand's specialist land based university

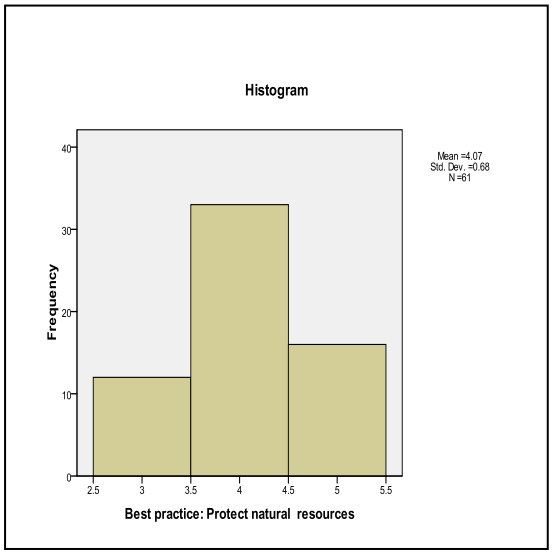
Appendix H – Normality of the Distribution in the Data

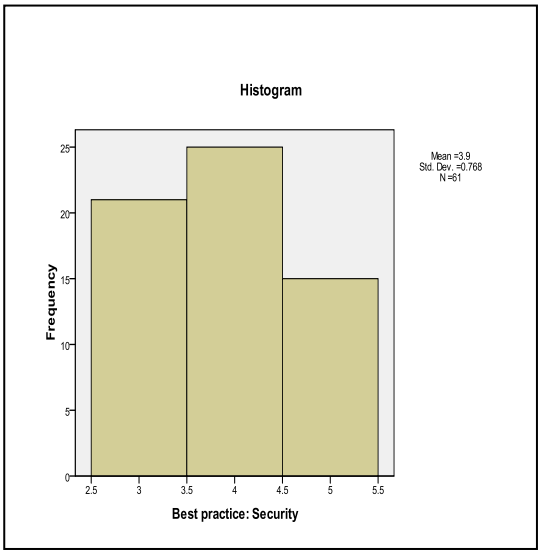


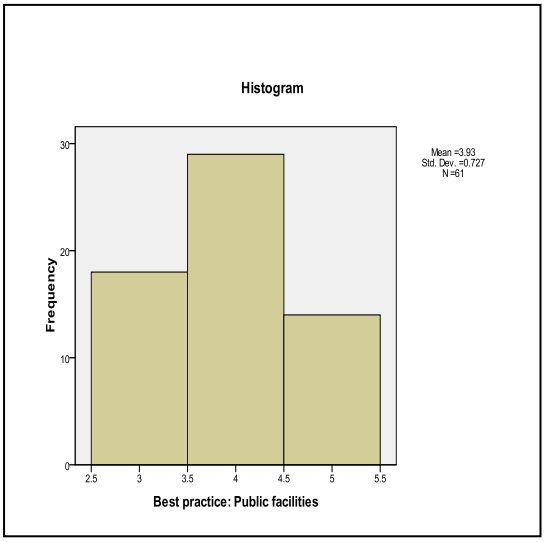


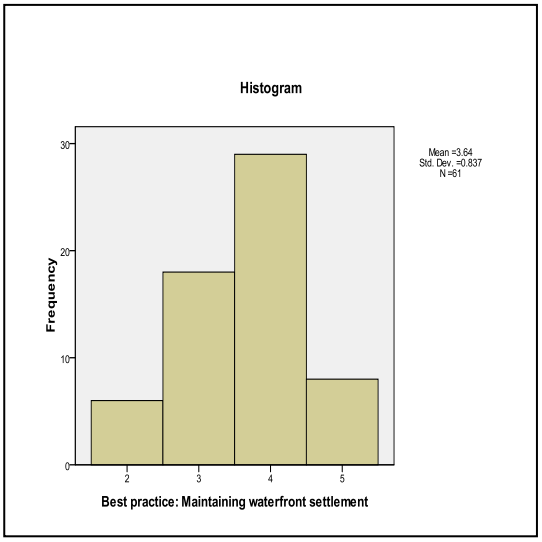


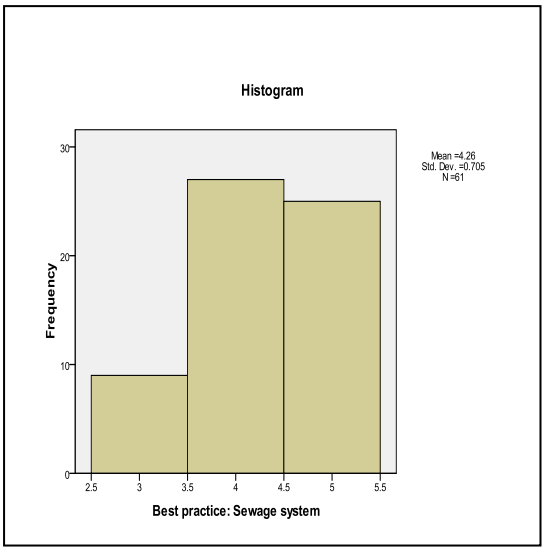


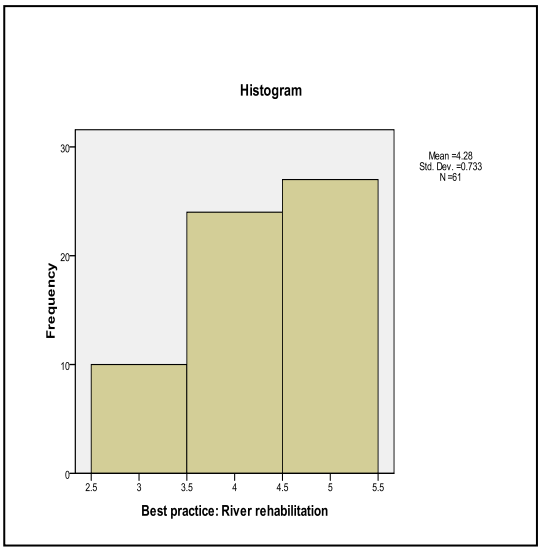


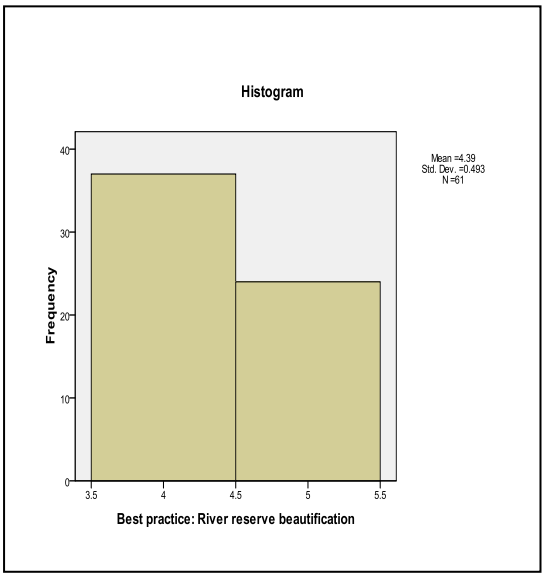


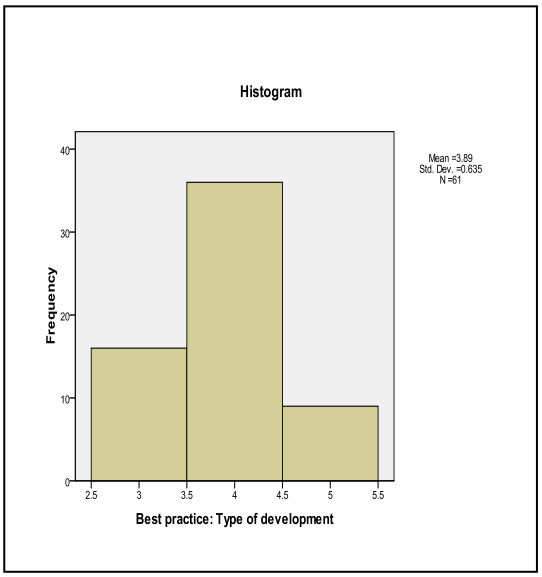

Histogram
Mean =3.93
Std. Dev. =0.727
N =61
Frequency
Best practice: Public facilities

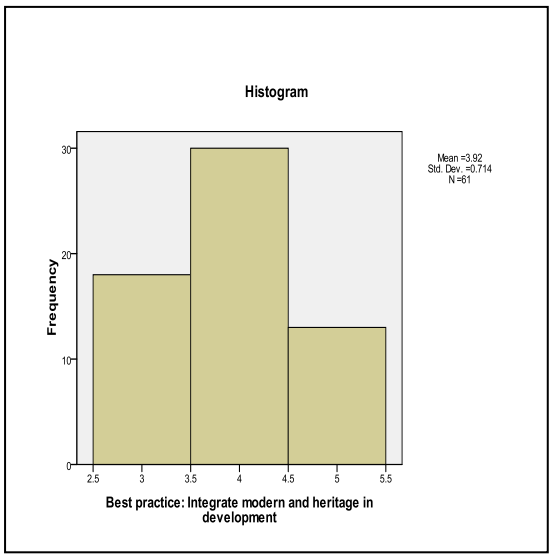

Histogram
Mean =3.64
Std. Dev. =0.837
N =61
Frequency
Best practice: Maintaining waterfront settlement

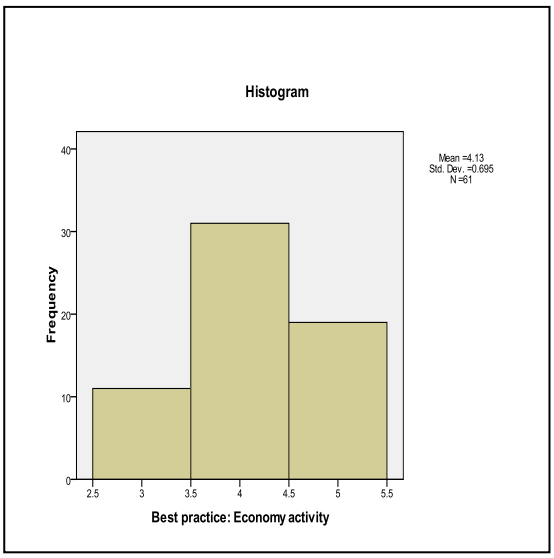

Histogram
Mean =4.26
Std. Dev. =0.705
N =61
Frequency
Best practice: Sewage system

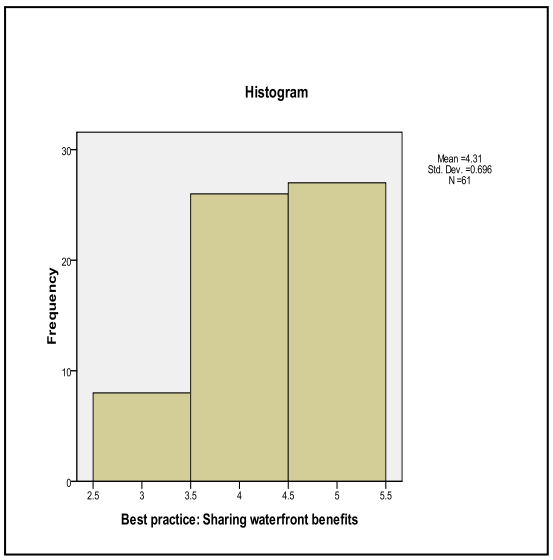

Histogram
Mean =4.28
Std. Dev. =0.733
N =61
Frequency
Best practice: River rehabilitation

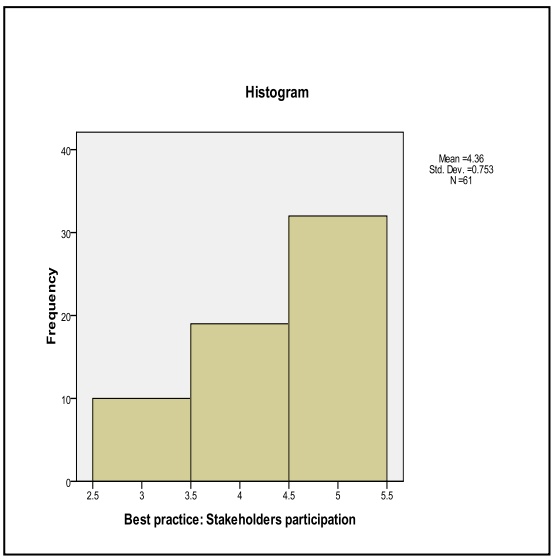

Histogram
Mean =4.39
Std. Dev. =0.493
N =61
Frequency
Best practice: River reserve beautification

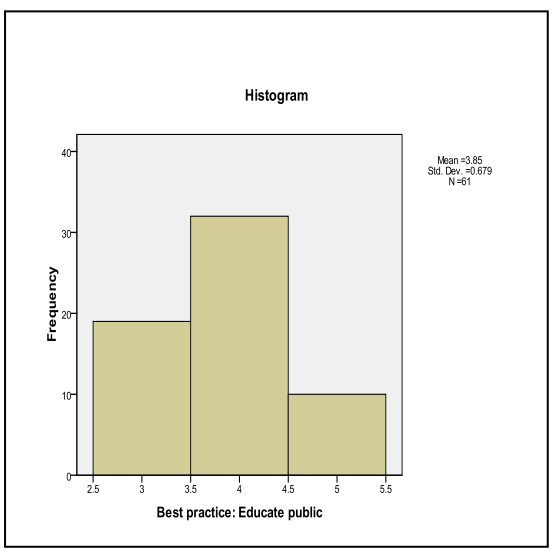

Histogram
Mean =3.89
Std. Dev. =0.635
N =61
Frequency
Best practice: Type of development

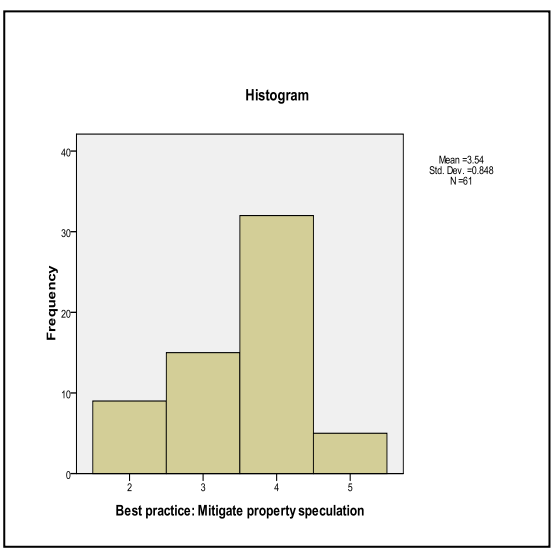

Histogram
Mean =3.92
Std. Dev. =0.714
N =61
Frequency
Best practice: Integrate modern and heritage in development


Histogram
Mean =4.13
Std. Dev. =0.695
N =61
Frequency
Best practice: Economy activity


Histogram
Mean =4.31
Std. Dev. =0.696
N =61
Frequency
Best practice: Sharing waterfront benefits


Histogram
Mean =4.36
Std. Dev. =0.753
N =61
Frequency
Best practice: Stakeholders participation


Histogram
Mean =3.85
Std. Dev. =0.679
N =61
Frequency
Best practice: Educate public


Histogram
Mean =3.54
Std. Dev. =0.848
N =61
Frequency
Best practice: Mitigate property speculation

Appendix I – List of Property Development Companies Who Participated in the Survey

Table 7.3: List of property development companies who participated in the survey

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
1.	UEM LAND HOLDINGS	17-Nov-08	Nusajaya Centre, 8 Ledang Heights, Nusajaya, 81560, JOHOR, MALAYSIA.	6.	GAMUDA LAND	1995	No 56, Jln SS22/25 Damansara Jaya, 47400 Petaling Jaya, Selangor, MALAYSIA.
2.	AP LAND BERHAD	1961	468-16, 3rd Mile, Jalan Ipoh, 51200 Kuala Lumpur, MALAYSIA.	7.	GOLDEN PLUS HOLDINGS	16 Jan 1984	Suite 6-7 & 6-8, Wisma UOA Damansara II, No. 6, Jalan Changkat Semantan, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.
3.	A & M REALTY	20-Jan-95	10th Floor, Menara A&M, Garden Business Center, No. 3, Jalan Istana, 41000 Klang, Selangor Darul Ehsan, MALAYSIA.	8.	KLCC PROPERTY HOLDINGS	17-Aug-04	Level 4&5, City Point, Kompleks Dayabumi, Jalan Sultan Hishamuddin,P.O. Box 13214, 50050 Kuala Lumpur, MALAYSIA.
4.	BOLTON BERHAD	15 July 1964	6th Floor Campbell Complex, 98 Jalan Dang Wangi, 50100 Kuala Lumpur, MALAYSIA.	9.	KARAMBUNAI CORPORATION BERHAD		1 Nexus Drive East, Karambunai, Menggatal, Kota Kinabalu, Sabah, MALAYSIA.
5.	FIMA CORPORATION BERHAD	1960	Ste. 4.1, Level 4, Block C, Plz Damansara 45, Jln Medan Setia 1, Bukit Damansara, Kuala Lumpur, 50490, MALAYSIA.	10.	MAGNA PRIMA BERHAD	16 Jan 1997	Lot No. C-G11&12, Block C, Jln Persiaran Surian, Palm Spring, 47810 Kota Damansara, Petaling Jaya, Selangor, MALAYSIA.

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
11.	BCB BERHAD	3 Dec 1996	7th floor, Plaza BCB (Hotel Tower Block), No. 20, Jln Bakawali, 86000 Kluang, Johor Darul Takzim, MALAYSIA.	17.	IBRACO BERHAD	15 Jun 2004	Ibraco House, No.898 Jalan Wan Alwi Tabuan Jaya, 93350 Kuching, Sarawak, MALAYSIA.
12.	PERDUREN (M) BERHAD	28 Dec 1992	38-3-1, Jln 4/91, Tmn Shamelin Perkasa, 56100 Cheras, Kuala Lumpur, MALAYSIA.	18.	IGB CORPORATION BERHAD	2 Jan 1986	Level 32, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, MALAYSIA.
13.	OSK PROPERTY HOLDINGS	28 Jan 1997	16th floor, Plaza OSK, Jln Ampang, 50450 Kuala Lumpur, MALAYSIA.	19.	MALTON BERHAD	1980	19-0, Level 19, Pavilion Tower, 75, Jalan Raja Chulan, 50200 Kuala Lumpur, MALAYSIA.
14.	MALAYSIA PACIFIC CORPORATION BERHAD (MPCB)	23 May 1972	21st Floor, Wisma MPL, Jalan Raja Chulan, 50200 Kuala Lumpur, MALAYSIA.	20.	MENANG CORPORATION (M) BERHAD	2 Jan 1986	8th Storey South Block Wisma Selangor dredging, 142-A Jln Ampang, 50450 Kuala Lumpur, MALAYSIA.
15.	HUA YANG BERHAD	28 Nov 2002	C-21, Jln Medan Selayang 1, Medan Selayang, 68100 Batu Caves, Selangor Darul Ehsan, MALAYSIA.	21.	SP SETIA BERHAD	12 April 1993	Setia Corporate Tower, 5A, Jalan Setia Nusantara U13/17, Seksyen U13, Setia Alam, 40170 Shah Alam, Selangor, MALAYSIA.
16.	PETALING TIN BERHAD	14 Feb 1986	1st Floor, No.118 Jalan Semangat, 46300 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	22.	SELANGOR PROPERTIES BERHAD	12 Oct 1963	Level 2, Block D, Kompleks Pejabat Damansara, Jalan Dungun, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
23.	EQUINE CAPITAL	1992	Equine Capital Berhad No 1, Jalan Putra Permai 1A, Taman Equine, 43300 Seri Kembangan Selangor Darul Ehsan, MALAYSIA.	29.	GLOMAC BERHAD	13 Jun 2000	12th Floor, Wisma Glomac 3, Kompleks Kelana Centre Point, Jalan SS7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor, MALAYSIA.
24.	IJM LAND BERHAD	19-Dec-91	Ground Floor, Wisma IJM, Jalan Yong Shook Lin, 46050 Petaling Jaya, Selangor, MALAYSIA	30.	PARAMOUNT BERHAD		Level 8, Uptown 1, 1 Jln SS21/58, Damansara Uptown, 47400 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.
25.	SUNWAY CITY	8 July 1996	The Property Gallery, Lobby Level, Menara Sunway, Jln Lagoon Timur, Bandar Sunway, 46150 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	31.	DIJAYA CORPORATION BERHAD	18 Aug 1992	Lot 301, 3rd Floor, Wisma Dijaya, 1A Jalan SS 20/1, Damansara Utama, 47400 Petaling Jaya, Selangor MALAYSIA.
26.	MAH SING GROUP BERHAD	28 Oct 1992	Wisma Mah Sing, Penthouse Suite 1, No. 163 Jalan Sungai Besi, 57100 Kuala Lumpur, MALAYSIA.	32.	SHL CONSOLIDATED	22 Jun 1995	16th Floor, Wisma Sin Heap Lee, 346 Jalan Tun Razak, 50400 Kuala Lumpur. MALAYSIA
27.	HUNZA PROPERTIES BERHAD	23 March 2000	5-4-8/11, Hunza Complex, Jln Gangsa, Island Park, 11600 Penang, MALAYSIA.	33.	YTL LAND & DEVELOPMENTS	9 Jan 1986	11th Floor, Yeoh Tiong Lay Plaza, 55, Jalan Bukit Bintang, 55100 Kuala Lumpur, MALAYSIA.
28.	CRESCENDO CORPORATION BERHAD	8 Apr 1997	Lot 18.02, 18th Floor, Public Bank Tower, 19, Jalan Wong Ah Fook, 80000 Johor Bahru, MALAYSIA.	34.	MUI PROPERTIES	1986	5th Floor, Menara PMI, No. 2, Jalan Changkat Ceylon, 50200 Kuala Lumpur, MALAYSIA.

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
35.	PLENITUDE BERHAD	17 Nov 2003	No.213, Jalan Perdana, 3/1, Bandar Perdana, 08000 Sungai Petani, Kedah Darul Aman, MALAYSIA.	40.	GROMUTUAL BERHAD	3 Nov 1995	Suite 15.3A, Level 15, Menara Pelangi, No.2, Jln Kuning, Tmn Pelangi, 80400, Johor Bahru, Johor Darul Takzim, MALAYSIA.
36.	EASTERN & ORIENTAL PROPERTY DEVELOPMENTS BHD.	7 Jan 1986	Level 3A (Annexe), Menara Milenium, No. 8, Jalan Damanlela, Damansara Heights, 50490 Kuala Lumpur, MALAYSIA.	41.	FARLIM GROUP (M) BERHAD	26 July 1995	1 Lintang Angsana, Bandar Baru Ayer Itam, 11500 Penang, MALAYSIA.
37.	ASAS DUNIA BERHAD	25 Jan 1995	Wisma Asas, No. 228-B, Lebuh Chulia, 10200 Penang, MALAYSIA.	42.	LAND & GENERAL BERHAD	21 May 1964	Block D, Sri Damansara Business Park, Persiaran industry, Bandar Sri Damansara, 52200 Kuala Lumpur, MALAYSIA.
38.	LBS BINA GROUP BERHAD	10 Oct 1994	Plaza Seri Setia, Level 1-4 No. 1, Jalan SS9/2 Seri Setia, 47300 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	43.	BINA DARUL AMAN		Aras 9, Menara Bina Darulaman Berhad, Lebuhraya Darulaman, Alor Star, 05100, MALAYSIA
39.	ENCORP BERHAD	2 March 2000	Level 18, Wisma Sunway Mas, No. 1, Jln Tengku Ampuan Zabedah C9/C, Section 9, 40100 Shah Alam, Selangor, M'SIA.	44.	JOHOR LAND BERHAD	31 Dec 1996	Kompleks Mutiara Johor Land Jalan Bukit Mutiara, Bandar Dato' Onn, 81100 Johor Bahru, Johor, MALAYSIA.

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
45.	MK LAND HOLDINGS BERHAD	15 Sept 1993	No.19, Jalan PJU 8/5H, Perdana Business Centre, Bandar Damansara Perdana, 47820 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.	51.	TAHPS GROUP	2 Aug 1988	5th Floor, Bangunan Yee Seng, No. 15, Jalan Raja Chulan, 50200 Kuala Lumpur, MALAYSIA.
46.	KRISASSETS HOLDINGS BERHAD	19 Feb 1997	Level 32, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, MALAYSIA.	52.	UNITED MALAYAN LAND BERHAD	1986	Suite 1.1, 1st Floor, Kompleks Antarabangsa, Jalan Sultan Ismail, 50250 Kuala Lumpur, MALAYSIA.
47.	MAHAJAYA BERHAD	28 March 1995	No. 1-1-1, Wisma Mahajaya, Block A, Megan Corporate Park, Jalan 2/125E, Taman Desa Petaling, 57100 Kuala Lumpur, MALAYSIA.	53.	MULPHA LAND BERHAD	9 Jun 1997	Bangunan Mulpha, 17 Jalan Semangat, 46100 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.
48.	MAJUPERAK HOLDINGS BERHAD	20 Dec 1990	6th Floor, Wisma Wan Mohamed, Jln Panglima Bukit Gantang Wahab, 30000 Perak Darul Ridzuan, MALAYSIA.	54.	DAIMAN DEVELOPMENTS	29 Jun 1992	Room 501. 5th Floor, Wisma Daiman, No. 64, Jalan Sulam, Taman Sentosa, 80150 Johor Bahru, Johor Darul Takzim, MALAYSIA.
49.	NAIM INDAH CORPORATION BERHAD	1986	Suite 12A, 03 - 05, Level 12A Plaza, Permata Jln Kampar, Off Tun Razak, 50400 Kuala Lumpur, MALAYSIA.	55.	KUMPULAN HARTANAH SELANGOR BERHAD	1 Jul 1996	Lot 1A, Level 1A, Plaza Perangsang, Persiaran Perbandaran, 40000 Shah Alam, Selangor Darul Ehsan, MALAYSIA.
50.	GUOCOLAND (MALAYSIA) BERHAD	1986	Level 8, Wisma Hong Leong, 18 Jalan Perak, 50450 Kuala Lumpur, MALAYSIA	56.	BINAIK EQUITY	14 Aug 2002	Suite 13.1, Level 13, Menara Pelangi, Jalan Kuning, Taman Pelangi, 80400 Johor Bahru, MALAYSIA.

No.	Company's Name	Commencement Year	Address	No.	Company's Name	Commencement Year	Address
57.	COUNTRY VIEW BERHAD	29 May 2002	Unit 26-01, Level 26, Mail Box 261, Menara Landmark, No. 12, Jalan Ngee Heng, 80000 Johor Bahru, MALAYSIA.	60.	LIEN HOE CORPORATION BERHAD	July 1970	18th Floor, Menara Lien Hoe, No. 8 Persiaran Tropicana, Tropicana Golf and Country Resort, 47400 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA.
58.	SOUTH MALAYSIA INDUSTRIES BHD	27 March 1969	Suite 1301, 13th Floor, City Plaza, Jalan Tebrau, 80300 Johor Bahru, Johor Darul Takzim, MALAYSIA.	61.	MUTIARA GOODYEAR DEVELOPMENTS BERHAD	1990	P.S. No.46, Tingkat 11, Menara Tun Razak, Jalan Raja Laut, 50350 Kuala Lumpur, MALAYSIA.
59.	DAMANSARA REALTY BERHAD	1955	Level 2, Persada Johor, International Convention Centre, Jln Abdullah Ibrahim, 80000 Johor Bahru, Johor Darul Takzim, MALAYSIA.				

Appendix J – Correlation Matrix and Anti-image Matrices Table

Table 7.4: Correlation matrix

		EIA	Sharing maintenance and rehabilitation cost	Using Environment friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Correlation	EIA	1.000	.528	.083	.342	.365	.066	.363	.373	.209
	Sharing maintenance and rehabilitation cost	.528	1.000	.158	.399	.243	.095	.346	.294	.300
	Using friendly material in construction	.083	.158	1.000	.061	.141	.149	-.070	-.055	.259
	Flood mitigation	.342	.399	.061	1.000	.333	.166	.567	.274	.378
	Protect natural resources	.365	.243	.141	.333	1.000	.172	.278	.247	.346
	Security	.066	.095	.149	.166	.172	1.000	.137	.073	.233
	Public facilities	.363	.346	-.070	.567	.278	.137	1.000	.426	.262
	Maintaining waterfront settlement	.373	.294	-.055	.274	.247	.073	.426	1.000	.276
	Sewage system	.209	.300	.259	.378	.346	.233	.262	.276	1.000

Table 7.4: Correlation Matrix (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy Activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Correlation	EIA	.294	.059	-.069	.310	.198	.175	.163	.224	.187
	Sharing maintenance and rehabilitation cost	.453	.123	.025	.272	.244	.182	.056	.043	-.039
	Using friendly material in construction	.029	.122	-.168	-.066	.115	.180	-.029	.318	.054
	Flood mitigation	.558	-.036	-.063	.309	.263	.115	.217	.317	.160
	Protect natural resources	.297	.220	.056	-.057	.087	.062	.278	.166	.284
	Security	.109	.016	.045	-.015	.025	-.035	-.197	.004	-.045
	Public facilities	.379	-.066	.056	.407	.281	.206	.226	.385	.167
	Maintaining waterfront settlement	.221	-.135	.140	.396	.169	.139	-.055	-.066	-.049
	Sewage system	.501	.082	.106	.242	.507	.442	.290	.187	.010

Table 7.4: Correlation Matrix (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using Environment friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Correlation	River rehabilitation	.294	.453	.029	.558	.297	.109	.379	.221	.501
	River reserve beautification	.059	.123	.122	-.036	.220	.016	-.066	-.135	.082
	Type of developments	-.069	.025	-.168	-.063	.056	.045	.056	.140	.106
	Integrate modern and heritage in developments	.310	.272	-.066	.309	-.057	-.015	.407	.396	.242
	Economy activity	.198	.244	.115	.263	.087	.025	.281	.169	.507
	Sharing waterfront benefits	.175	.182	.180	.115	.062	-.035	.206	.139	.442
	Stakeholders participation	.163	.056	-.029	.217	.278	-.197	.226	-.055	.290
	Educate public	.224	.043	.318	.317	.166	.004	.385	-.066	.187
	Mitigate property speculation	.187	-.039	.054	.160	.284	-.045	.167	-.049	.010

Table 7.4: Correlation Matrix (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy Activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Correlation	River rehabilitation	1.000	.061	-.038	.395	.581	.186	.147	.184	.048
	River reserve beautification	.061	1.000	-.173	-.049	-.105	.074	.150	-.023	-.159
	Type of developments	-.038	-.173	1.000	-.021	-.003	.007	.018	-.156	-.007
	Integrate modern and heritage in developments	.395	-.049	-.021	1.000	.358	.387	.087	.284	.074
	Economy activity	.581	-.105	-.003	.358	1.000	.431	.195	.254	.047
	Sharing waterfront benefits	.186	.074	.007	.387	.431	1.000	.481	.205	-.205
	Stakeholders participation	.147	.150	.018	.087	.195	.481	1.000	.431	.133
	Educate public	.184	-.023	-.156	.284	.254	.205	.431	1.000	.343
	Mitigate property speculation	.048	-.159	-.007	.074	.047	-.205	.133	.343	1.000

Table 7.4: Correlation Matrix (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using Environment friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Sig. (1-tailed)	EIA		.000	.263	.004	.002	.308	.002	.002	.053
	Sharing maintenance and rehabilitation cost	.000		.112	.001	.030	.233	.003	.011	.009
	Using friendly material in construction	.263	.112		.321	.139	.126	.295	.338	.022
	Flood mitigation	.004	.001	.321		.004	.101	.000	.016	.001
	Protect natural resources	.002	.030	.139	.004		.092	.015	.027	.003
	Security	.308	.233	.126	.101	.092		.145	.287	.035
	Public facilities	.002	.003	.295	.000	.015	.145		.000	.021
	Maintaining waterfront settlement	.002	.011	.338	.016	.027	.287	.000		.016
	Sewage system	.053	.009	.022	.001	.003	.035	.021	.016	

Table 7.4: Correlation Matrix (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy Activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Sig. (1-tailed)	EIA	.011	.326	.299	.008	.063	.088	.105	.041	.075
	Sharing maintenance and rehabilitation cost	.000	.173	.425	.017	.029	.080	.335	.370	.383
	Using friendly material in construction	.413	.175	.098	.307	.189	.083	.413	.006	.339
	Flood mitigation	.000	.392	.315	.008	.020	.189	.046	.006	.110
	Protect natural resources	.010	.044	.333	.330	.252	.318	.015	.101	.013
	Security	.202	.452	.366	.454	.425	.394	.064	.489	.366
	Public facilities	.001	.306	.335	.001	.014	.056	.040	.001	.100
	Maintaining waterfront settlement	.044	.150	.140	.001	.097	.143	.338	.307	.353
	Sewage system	.000	.265	.209	.030	.000	.000	.012	.075	.471

Table 7.4: Correlation Matrix (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using Environment friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Sig. (1-tailed)	River rehabilitation	.011	.000	.413	.000	.010	.202	.001	.044	.000
	River reserve beautification	.326	.173	.175	.392	.044	.452	.306	.150	.265
	Type of developments	.299	.425	.098	.315	.333	.366	.335	.140	.209
	Integrate modern and heritage in developments	.008	.017	.307	.008	.330	.454	.001	.001	.030
	Economy activity	.063	.029	.189	.020	.252	.425	.014	.097	.000
	Sharing waterfront benefits	.088	.080	.083	.189	.318	.394	.056	.143	.000
	Stakeholders participation	.105	.335	.413	.046	.015	.064	.040	.338	.012
	Educate public	.041	.370	.006	.006	.101	.489	.001	.307	.075
	Mitigate property speculation	.075	.383	.339	.110	.013	.366	.100	.353	.471

Table 7.4: Correlation Matrix (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy Activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Sig. (1-tailed)	River rehabilitation		.322	.387	.001	.000	.075	.129	.077	.356
	River reserve beautification	.322		.091	.354	.211	.285	.124	.431	.111
	Type of developments	.387	.091		.436	.491	.479	.444	.115	.480
	Integrate modern and heritage in developments	.001	.354	.436		.002	.001	.253	.013	.284
	Economy activity	.000	.211	.491	.002		.000	.066	.024	.359
	Sharing waterfront benefits	.075	.285	.479	.001	.000		.000	.057	.056
	Stakeholders participation	.129	.124	.444	.253	.066	.000		.000	.153
	Educate public	.077	.431	.115	.013	.024	.057	.000		.003
	Mitigate property speculation	.356	.111	.480	.284	.359	.056	.153	.003	

Table 7.5: Anti-image matrices

		EIA	Sharing maintenance and rehabilitation cost	Using friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Anti-image Covariance	EIA	.552	-.235	.036	-.008	-.101	-.025	.016	-.118	.046
	Sharing maintenance and rehabilitation cost	-.235	.532	-.126	-.055	.021	.028	-.075	.019	-.002
	Using friendly material in construction	.036	-.126	.584	-.019	-.031	-.030	.130	-.036	-.101
	Flood mitigation	-.008	-.055	-.019	.471	-.028	-.042	-.155	.002	-.061
	Protect natural resources	-.101	.021	-.031	-.028	.517	-.084	-.022	-.137	-.051
	Security	-.025	.028	-.030	-.042	-.084	.794	-.076	.070	-.140
	Public facilities	.016	-.075	.130	-.155	-.022	-.076	.458	-.152	.046
	Maintaining waterfront settlement	-.118	.019	-.036	.002	-.137	.070	-.152	.517	-.093
	Sewage system	.046	-.002	-.101	-.061	-.051	-.140	.046	-.093	.457

Table 7.5: Anti-image matrices (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Anti-image Covariance	EIA	.023	-.012	.083	-.034	-.016	-.028	-.009	-.056	-.083
	Sharing maintenance and rehabilitation cost	-.097	-.052	-.072	-.021	.015	.002	.003	.093	.060
	Using friendly material in construction	.043	-.070	.085	.128	.008	-.131	.181	-.235	-.049
	Flood mitigation	-.137	.087	.081	-.017	.078	.043	-.049	-.023	.000
	Protect natural resources	-.090	-.165	-.054	.161	.062	-.018	-.069	.002	-.182
	Security	.017	.010	-.033	.016	.040	.003	.158	-.017	.072
	Public facilities	.005	-.017	-.046	-.007	-.027	-.046	.013	-.147	-.034
	Maintaining waterfront settlement	.061	.135	-.035	-.173	-.003	.052	.034	.123	.123
	Sewage system	-.082	-.042	-.094	.016	-.108	-.088	-.062	.020	-.021

Table 7.5: Anti-image matrices (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Anti-image Covariance	River rehabilitation	.023	-.097	.043	-.137	-.090	.017	.005	.061	-.082
	River reserve beautification	-.012	-.052	-.070	.087	-.165	.010	-.017	.135	-.042
	Type of developments	.083	-.072	.085	.081	-.054	-.033	-.046	-.035	-.094
	Integrate modern and heritage in developments	-.034	-.021	.128	-.017	.161	.016	-.007	-.173	.016
	Economy activity	-.016	.015	.008	.078	.062	.040	-.027	-.003	-.108
	Sharing waterfront benefits	-.028	.002	-.131	.043	-.018	.003	-.046	.052	-.088
	Stakeholders participation	-.009	.003	.181	-.049	-.069	.158	.013	.034	-.062
	Educate public	-.056	.093	-.235	-.023	.002	-.017	-.147	.123	.020
	Mitigate property speculation	-.083	.060	-.049	.000	-.182	.072	-.034	.123	-.021

Table 7.5: Anti-image matrices (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Anti-image Covariance	River rehabilitation	.370	-.029	.037	-.106	-.198	.087	.000	.023	.059
	River reserve beautification	-.029	.741	.150	-.082	.093	.039	-.085	.057	.161
	Type of developments	.037	.150	.845	-.004	.014	.017	-.041	.058	-.011
	Integrate modern and heritage in developments	-.106	-.082	-.004	.450	.024	-.179	.112	-.135	-.123
	Economy activity	-.198	.093	.014	.024	.466	-.123	.042	-.051	-.051
	Sharing waterfront benefits	.087	.039	.017	-.179	-.123	.396	-.207	.079	.179
	Stakeholders participation	.000	-.085	-.041	.112	.042	-.207	.430	-.179	-.055
	Educate public	.023	.057	.058	-.135	-.051	.079	-.179	.426	-.057
	Mitigate property speculation	.059	.161	-.011	-.123	-.051	.179	-.055	-.057	.626

Table 7.5: Anti-image matrices (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Anti-image Correlation	EIA	.778[a]	-.434	.063	-.015	-.190	-.037	.032	-.221	.092
	Sharing maintenance and rehabilitation cost	-.434	.754[a]	-.226	-.110	.041	.043	-.152	.035	-.005
	Using friendly material in construction	.063	-.226	.335[a]	-.036	-.056	-.044	.251	-.066	-.196
	Flood mitigation	-.015	-.110	-.036	.823	-.057	-.069	-.333	.004	-.130
	Protect natural resources	-.190	.041	-.056	-.057	.648	-.130	-.046	-.265	-.105
	Security	-.037	.043	-.044	-.069	-.130	.531	-.127	.109	-.233
	Public facilities	.032	-.152	.251	-.333	-.046	-.127	.775	-.312	.101
	Maintaining waterfront settlement	-.221	.035	-.066	.004	-.265	.109	-.312	.606[a]	-.192
	Sewage system	.092	-.005	-.196	-.130	-.105	-.233	.101	-.192	.810[a]

Table 7.5: Anti-image matrices (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Anti-image Correlation	EIA	.052	-.018	.122	-.068	-.032	-.060	-.018	-.116	-.141
	Sharing maintenance and rehabilitation cost	-.219	-.083	-.107	-.043	.030	.004	.007	.196	.104
	Using friendly material in construction	.092	-.107	.120	.250	.015	-.272	.361	-.472	-.081
	Flood mitigation	-.328	.147	.128	-.037	.166	.100	-.109	-.051	.000
	Protect natural resources	-.206	-.266	-.082	.333	.125	-.040	-.145	.005	-.321
	Security	.032	.013	-.040	.028	.065	.006	.271	-.030	.102
	Public facilities	.013	-.030	-.074	-.016	-.059	-.108	.029	-.333	-.064
	Maintaining waterfront settlement	.141	.219	-.053	-.358	-.005	.115	.072	.263	.216
	Sewage system	-.200	-.073	-.151	.036	-.233	-.206	-.140	.045	-.040

Table 7.5: Anti-image matrices (Cont.)

		EIA	Sharing maintenance and rehabilitation cost	Using friendly material in construction	Flood mitigation	Protect natural resources	Security	Public facilities	Maintaining waterfront settlement	Sewage system
Anti-image Correlation	River rehabilitation	.052	-.219	.092	-.328	-.206	.032	.013	.141	-.200
	River reserve beautification	-.018	-.083	-.107	.147	-.266	.013	-.030	.219	-.073
	Type of developments	.122	-.107	.120	.128	-.082	-.040	-.074	-.053	-.151
	Integrate modern and heritage in developments	-.068	-.043	.250	-.037	.333	.028	-.016	-.358	.036
	Economy activity	-.032	.030	.015	.166	.125	.065	-.059	-.005	-.233
	Sharing waterfront benefits	-.060	.004	-.272	.100	-.040	.006	-.108	.115	-.206
	Stakeholders participation	-.018	.007	.361	-.109	-.145	.271	.029	.072	-.140
	Educate public	-.116	.196	-.472	-.051	.005	-.030	-.333	.263	.045
	Mitigate property speculation	-.141	.104	-.081	.000	-.321	.102	-.064	.216	-.040

Table 7.5: Anti-image matrices (Cont.)

		River rehabilitation	River reserve beautification	Type of developments	Integrate modern and heritage in developments	Economy activity	Sharing waterfront benefits	Stakeholders participation	Educate public	Mitigate property speculation
Anti-image Correlation	River rehabilitation	.730	-.055	.067	-.261	-.478	.227	-.002	.058	.122
	River reserve beautification	-.055	.383	.189	-.142	.158	.073	-.151	.101	.237
	Type of developments	.067	.189	.466	-.006	.022	.029	-.069	.097	-.016
	Integrate modern and heritage in developments	-.261	-.142	-.006	.598	.053	-.424	.255	-.309	-.232
	Economy activity	-.478	.158	.022	.053	.735	-.287	.094	-.115	-.094
	Sharing waterfront benefits	.227	.073	.029	-.424	-.287	.544	-.500	.192	.359
	Stakeholders participation	-.002	-.151	-.069	.255	.094	-.500	.517	-.418	-.105
	Educate public	.058	.101	.097	-.309	-.115	.192	-.418	.555	-.111
	Mitigate property speculation	.122	.237	-.016	-.232	-.094	.359	-.105	-.111	.444