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# Urban Waterfront Development

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# Urban Waterfront Planning and Design

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# A bstr

Rivers and water are valuable natural resources for human life, environment and national development. Recognition of water resources as national heritage will contribute towards more long-term sustainable property development. Waterfront development is already a well-established phenomenon internationally. as the economy began to change in 1980s, so did the land use along many of the river and waterfront locations. The pressures of new technology coupled with an urban population growth and urbanization began to force a transition from water dependent industry to a variety of non-water dependent developments such as apartments, offices, and retail shopping areas. Residential waterfront development has taken advantage of available land and water amenities and incorporated as a feature or “selling point” of the development. It has been found that wide views of water add an average of 59% to the value of waterfront property, as well as providing attractive landscaping and better property neighborhoods respectively. Development of waterfront lands in Malaysia occurred with limited federal, state, or municipal planning guidance; resulting in cost aspects like flooding and pollution. Although some waterfront development projects continue to remain profitable with a maintained successful public access component, many have not. This paper provides a brief introduction to the research project to address this issue, which is currently on-going.

# *Dedication*

To My homeland Palestine

The place which gave me the most, the warmest place

To My great parents,

who never stop giving of themselves in countless ways, always been there supporting me. Days and nights, I could see my mother's tears and prayers, my father's effort and hope

to my sisters

my inspiration and support, had my back in every step.

to my best friend and soul mate

who been there when I fall and succeed, gave me all what she could and gave me the love and patience and encourage to continue.

My teachers and professors

Who gave me a lot from their knowledge and formed my personality

*No word describes my appreciation Thank you all*

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## Chapter 1: Introduction

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### 1.1 Background

According to the planning department in Seattle's city we can define waterfronts as *"Cities seek a waterfront that is a place of public enjoyment. They want a waterfront where there is ample visual and physical public access – all day, all year - to both the water and the land. Cities also want a waterfront that serves more than one purpose: they want it to be a place to work and to live, as well as a place to play. In other words, they want a place that contributes to the quality of life in all of its aspects – economic, social, and cultural"*<sup>1</sup>. Remaking the Urban Waterfront, the Urban Land Institute.

Between the 17<sup>th</sup> and 19<sup>th</sup> centuries waterfronts in the modern terms were formed in Europe the Spanish trade mainly depended seaborne trade, landing on the seaports , meanwhile trades were established on the coast , which later caused forming development and urban expansion on costal sites, so the most appropriate site for settlement was certainly the one with the adequate level with the water, forming buildings for different functions .

Otherwise this development wasn't limited or formed, and the urban planning considerations were usually disregarded and town sites were mostly determined with the requirements of shipping and commerce.

Planning for these areas requires creative solutions incorporating principles that differ in important ways from traditional urban land-use planning concepts and experience.

Rather than attempting to create linear continuity along the waterfront, reflecting historical development patterns, land use continuity may be achieved by linking waterfront development with uses on land.<sup>2</sup>

Tourism development and its role in planning, was one of the concepts that insured the term 'waterfront', recreational and new functions started to appear along the

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<sup>1</sup> *Seattle Department of Planning and Design, 2012*

<sup>2</sup> *Stephen J. Craig-Smith, Michael Fagence, 1995, page 10*

coast side in a linear form, beaches and residential units were established, which has figured the regeneration of the inner areas.

The future of many of the waterfront projects is sustain the increasing of new and permeant market and multiple functions, generating the new programs of redevelopment the coastlines with improving the planning strategies, as follows:<sup>3</sup>

- 1- Rather than create continuity along the waterfront, land-use continuity is achieved by linking waterfront development with adjacent inland uses.
- 2- Continuity is created through compatible architectural styling, building heights and massing and development scale and density.
- 3- The waterfront should reflect multiple uses consistent with and supporting contiguous development patterns inland from the water.
- 4- The waterfront's activity should serve independent but compatible markets including local residents, recreation and tourism, retail trade, office and other employment activities, and commercial water-related uses.

In Palestine there was a good experience with the settlements and commerce along the Mediterranean Sea before the 1948 war, the situation afterwards limited all types of development including costal and harbor planning. As it is known about the Palestinian case, currently the western coast is under the Israeli control, excluding Gaza district. However, even the development in Gaza is stricter according to the political condition, which limited and any habilitation and improvement for the facilities along the sea coast.

## 1.2 Research Problem.

The case that the research is mainly discussing is the idea of waterfront in the Palestinian actuality, and the need for such projects in the Palestinian authorities especially that there's no projects has been applied in the West Bank according to the leak of water sources such as, coasts, rivers or lacks.

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<sup>3</sup> *Stephen J. Craig-Smith, Michael Fagence, 1995, page 47*

The only city that its attached to the coast is Gaza city, but according to the political situation and the continuous prevention for any entry to the city, we had to find an alternative for the locals in West Bank.

What increases the value of the waterfront project is the local need for the entertainment and functional facilities, and waterfront project provide the local need with the expected facilities.

The need for the project is more about connecting the coast with diverse uses of urban development, as the atheistic value that will be achieved through emerging the nature and development in one picture.

When we usually mention the term “waterfront” we can encounter the term of sustainable tourism, inserting these terms in the Palestinian community and increasing the consciousness about the importance of implementing it.

The need of new modern architectural projects, that follows the urban planning and design strategies is important to create a sustainable modern community, and although the current waterfronts in the west bank that located at the dead sea is leaking a lot of work. However, development plans are seeking to change this by providing a long-term strategy that aims at transforming the city’s waterfront into a world-class tourism destination.

### 1.3 Project’s Importance

The importance of the research is to explore the role of waterfront development in urban development in Palestine. The aim is to focus on the fact that waterfronts are used to re-establish physical links between parts of the city.

Waterside areas merge a number of functions within a city environment: It can act as a traffic artery, a location for industrial and commercial activities, a drain or reservoir, residential area as well as a recreational resource. The diversity in usage indicates a number of different groups who use the waterfront for various reasons. It can be a place of residence, work or recreation. These are the major usages of waterfronts which lead to a number of features within a waterside area such as housing, industry, commerce, transport and numerous leisure and recreational facilities.



the characteristic of having a waterfront location such as the proposed location at the dead sea area make it interesting for tourism uses. Especially the tourism value for the dead sea internationally Regarding recreational and tourism use of waterfront areas, accessibility, parking, open-space facilities, water quality, sports areas etc. may be of high importance. Pedestrian access and open spaces offer visitors the opportunity to engage in a variety of activities. Also, if waterfronts provide convenient linkages.

between their internal parts it encourages the exploration of that area, in particular for pedestrian tourists<sup>4</sup>. In general, tourism precincts such as waterfronts perform a number of functions for the visitor that can be characterized as facilitating, place connecting and state-of-mind functions.

The need of the diversity within the Palestinian community at the social and the economic levels is important to drive the community for a higher living stander, presenting sustainability and livability within applying the functions of landscape and housing.

#### 1.4 The research's objectives form the guideline for the project's importance:

- 1- Identify key themes for waterfront planning and development.
- 2- Explore the representation of tourism in the planning documents relevant to the waterfront development in Palestine.
- 3-Compare the role of tourism in the waterfront planning and development with regards to another waterfront renewal project from around the world.
- 4-Confirm the Palestinian rights in the public water sources.
- 5- Provide the local authorities with a Palestinian project that achieves modern terms such as sustainability, sustainable tourism, multifunctional land-use, urban environment.

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<sup>4</sup> *Krolkowski & Brown, 2008.*

6- increasing the private sector and citizens consciousness about big scale projects.

These objectives and aims will create a better understanding of the role of waterfront development in urban regeneration in Palestine. The following themes are explored based on the above-mentioned aims: the linkage between the different theoretical concepts, the historical overview of waterfronts, the different zones within waterfront development, and lastly, the formulation of a possible strategy for urban regeneration.

## 1.5 Methodology

1) Theoretical and conceptual review: The theoretical framework in scientific research is the set of theoretical pages that are recorded in the scientific research methodology or dissertation. Its represented in the importance of the study and its objectives, the scientific methods used in the study, the terminology, the hypotheses formulated by the researcher, and the help of the author or scholar. Previous studies contribute to its deepening in the study of all aspects of the problem in question.

2) Empirical study:

1. Research approach: A qualitative approach is used in this dissertation. The reason for using this type of approach is that it focuses on collecting and analyzing information in as many forms as possible, although this approach is primarily non-numeric.<sup>5</sup> A qualitative approach aims to achieve an in-depth understanding of the study, rather than a general overview.<sup>6</sup> The study explores the role waterfronts play in cities and the surrounding environment. The methodological framework selected for this dissertation study is case studies.
2. Research method: The case study involves the study of an issue that is explored through one or more circumstances within a bounded system.<sup>7</sup> Case studies can have a quantitative or qualitative approach, of which the qualitative approach is appropriate for this study because it focuses on

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<sup>5</sup> Kanbur, 2001, page 12

<sup>6</sup> Blaxter et al., 2010, page 61

<sup>7</sup> Creswell, 2007, page 73

eliminating unwanted case studies.<sup>8</sup> This approach is essential to ensure that uninformative or case studies with no value do not influence the result. Case studies can take the form of instrumental, intrinsic or multiple case studies, and a multiple case study design is used for this research.<sup>9</sup>

## 1.6 References

1- Scholarly publications (Journals) and books: A scholarly publication contains articles written by experts in waterfront urban development and generation. These articles generally report on original research or case studies.

2- Official sources: The Palestinian Government Printing Office disseminates information. Additionally, the many departments of the government publish reports, data, statistics, white papers, consumer information, transcripts of hearings, and more. Some of the information published by government offices is technical and scientific. Other information is meant for the general public.

3- Institutional resources: Papers, researches, and information presented at conferences or profit and nonprofit institutions working in planning or society fields, such as (GIZ), (BEIT SELEM). Proceedings are sometimes peer-reviewed and are often the first publication of research that later appears in a scholarly publication.

4- Theses & Dissertations: the result of the individual student's research, the data and information were collected personally through surveying and workshops, or by witnessing and analyzing.

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<sup>8</sup> Creswell, 2007, page 73

<sup>9</sup> Herriott & Firestone, 1983

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## Chapter 2: Theoretical and conceptual review

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### 2.1 Introduction

The literature review is the main component of any research and scientific messages, without it the research won't be a straight scientific research, it will just become regular and long article without any research frameworks.

In this research we will consider concepts related to the waterfront zone design, with all the functions and uses related to the concept, such as landscape, land use, urban design, urban development and any other related concepts, examining these theories would lead us to a clear vision to the research's project and concept.

The literature review includes an overview of waterfronts and the role in urban development. The history of national and international waterfronts is described, as well as the role of waterfronts in urban development, economic factures, the concept of urban regeneration, and the evolution of waterfronts.

Subsequently, the literature study will lay the foundation for the empirical study using the different resources depending on three stages, international case, regional case (middle east), and a local case

### 2.2 Waterfront

A waterfront is defined by a stretch of land or area located along or in direct contact with a body of water, or a stretch of land fronting on sea (rivers, lakes, oceans, bays and creeks)<sup>10</sup>. It can be a harbor district of a town or a city of any size (Timur, 2013: 170). Furthermore, a waterfront should not only be seen as a line along the water's edge, but rather a network of places, functions and additional uses. A waterfront should be a center between the shoreline and the city, as well as between the harbor activities and urban activities. Moreover, waterfronts should be seen as a concentration of functions including production, cultural, relational, recreational and residential functions and an area of public use.

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<sup>10</sup> Carta, 2006, page 88 and Dong, 2004, page 7



Figure 1 Vancouver Waterfront, source: lmnarchitects.com

### 2.3 Origin of waterfronts

It is important to understand the origin of waterfronts as they were embedded in economic trade goods. The history of trade started between individuals within villages, and later between different villages.<sup>11</sup> Seaports developed at a later stage to improve the quality of goods and the time that traders took to transport goods from one place to another, which included silk, gold, silver, spices, jewels, porcelains and medicines.<sup>12</sup> Furthermore, travelers transported goods on common roads that were easy to access in all directions.<sup>13</sup> History shows that the geographic landscape determined the trade routes. The first trade<sup>14</sup> routes were down the Rhine and then eastward along the coast of the North Sea and the Baltic, laying the foundations of the trading towns.

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<sup>11</sup> Curtin, 1984, page 2.

<sup>12</sup> Bernstein, 2008, page 1.

<sup>13</sup> Curtin, 1984, page 3.

<sup>14</sup> As revealed by Curtin 198, page 3

As the foundations were laid, the only problem was the time it took to transport goods from one place to another. Consequently, a cheaper and safer method to transport the goods was needed. The solution came through the exploration of water transportation. Soon after these new transport methods were identified, the need for resting locations arose. Travelers discovered new locations to rest and re-stock their supplies before continuing on their journey. Finally, the only thing needed was for an area to remove their cargo and passengers from the ships, resulting in the establishment of a port along the coast.<sup>15</sup>

Waterfront areas were established to address the increase in the economic needs of the travelers and the transportation of goods. Waterfronts underwent several developmental phases to establish a safe harbor where inhabitants have an area of safe dispatch, as well as direct contact with the natural shoreline.<sup>16</sup> The following section focuses on the urban development phases of waterfront development.

## 2.4 Urban waterfronts definitions

The word “waterfront” means “the urban area in direct contact with water”.<sup>17</sup> waterfront is defined generally as the area of interaction between urban development and the water<sup>18</sup>.

Although the evocable of waterfront is clear, also it has been met using some different words instead of the term waterfront in the literature.<sup>19</sup>

waterfront identifies the water’s edge in cities and towns or urban area of all sizes. The water body may be “a river, lake, ocean, bay, creek or canal” or artificial.<sup>20</sup>

## 2.5 The effects of water as a planning element in urban area

The balance is established between nature and social life for a sustainable development of cities. Urban natural water elements play an important role in the establishment of this balance. Water is the most important planning element which is comfort of human physical and psychological. In addition, it brings existing

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<sup>15</sup> Bernstein, 2000, page 4.

<sup>16</sup> Seattle’s Waterfront Design Collaborative, 2010, page 5.

<sup>17</sup> Moretti, 2008.

<sup>18</sup> Yasin et al., 2010

<sup>19</sup> Hoyle, 2002; Hussein, 2006; Mann, 1973.

<sup>20</sup> Shaziman et al., 2010

environment in a number of features in term of aesthetic and functional (Figure 2).<sup>21</sup> One reason for the importance of natural water source in urban area is aesthetic effects whose creates on human. These effects are visual, audial, tactual and psychological effects. The primarily power of attracted people on waterfronts is visual landscape effects of water on relaxation. Throughout, designs related to water takes over motion and serenity factors. Moving water (Figure 3a) (waterfall, cascade rivers and etc.) adds vibrancy and excitement to a space. Stagnant water (Figure 3b) creates the mirror effect in its space as a visual.<sup>22</sup> water is used commonly as reflection element by means of the optical properties. Wide and quiet water surfaces bring in serenity and deepness to its surrounding.<sup>23</sup> or a space. Beside deepness effect

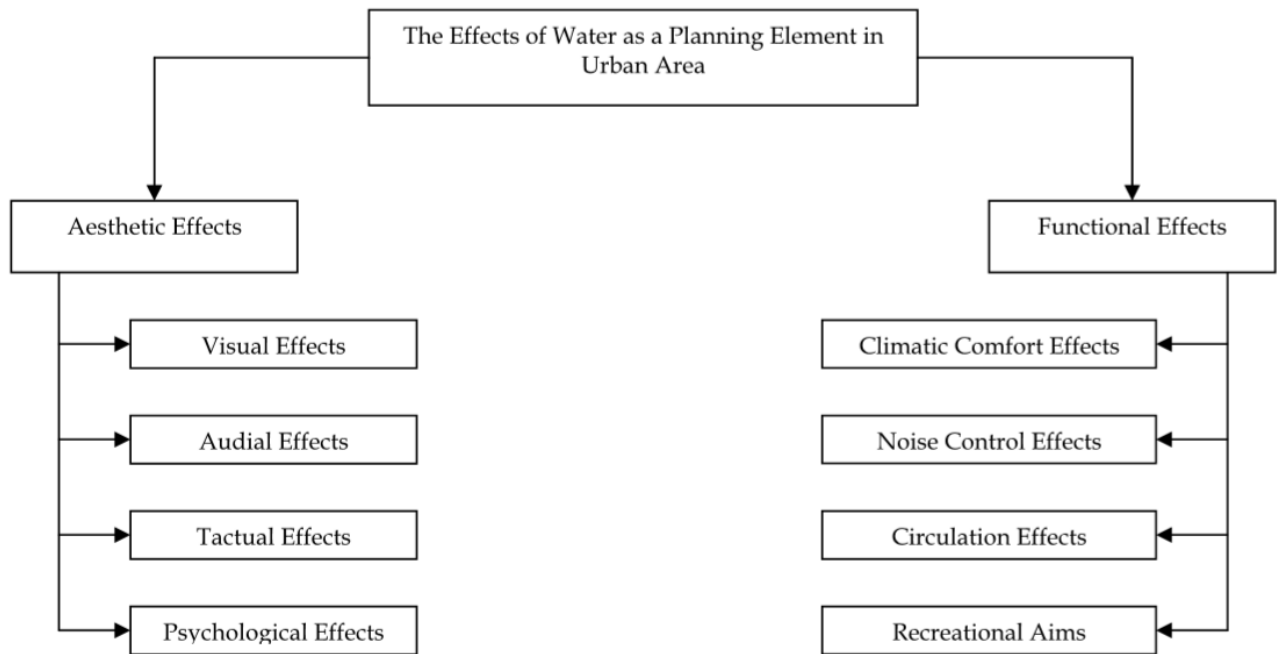


Figure 2: The effects of water as a planning element in urban area, Source: Önen (2007)

<sup>21</sup> Önen, 2007

<sup>22</sup> Önen, 2007

<sup>23</sup> Aksulu, 2001



Figure 3(a) The mirror effect of water, (b) The vibrancy effect of moving water, Source: Önen, 2007).

of water gives more widening feeling of in living area. Also, the various light games are formed on this surface.<sup>24</sup>

The sound of water as an audial, a symbol is in a state which exhibits continuity of life whereas it gives vibrancy and joy.<sup>25</sup>

Stagnant water as an audial creates a serenity sense while moving water adds vibrancy to a space and also creates music effect.<sup>26</sup> For the tactual effects of water in planning varies from rain dropping to our face, getting wet with splashing water of waterfall to being completely submerged in pool, lake or the sea. Diving in to the water is a kind of escape from the world. Touch with water is a symbol that reach the religious serenity for many belief systems.<sup>27</sup>

It is possible that an important effect of the aesthetic effects are psychological ones. In fact, these effects are the emotional result which is perceived with senses. In addition, there is also psychological reactions towards water which comes from people's sprits. Human being trends psychologically to water as an element which provides the continuity of life. Sound and freshness of water relax people.<sup>28</sup> Water in urban areas is aesthetic effects as well as functional effects. These are climatic

<sup>24</sup> Hattapoğlu, 2004.

<sup>25</sup> Hattapoğlu, 2004

<sup>26</sup> Önen, 2007

<sup>27</sup> Hattapoğlu, 2004

<sup>28</sup> Önen, 2007



comfort, noise control, circulation effects and recreational aims. Water surfaces cool air by means of increasing the amount of moisture in an environment. Especially with continental climate, that is a great importance. Also, water is used to freshen up the out-door's air. Wide water surfaces in regional-scale regulate air's temperature surrounding areas.<sup>29</sup> Water element is an important in urban areas where is in this region, because of its visual and climatic effects.<sup>30</sup> In addition, water areas in urban spaces are composed of a barrier to artificial sounds with its creating the natural sounds.<sup>31</sup> Water is in the organization of space as a limiting and concealer element. Because person has to walk around in suitable direction.<sup>32</sup> It is possible to see mostly this effect at the riverfronts.

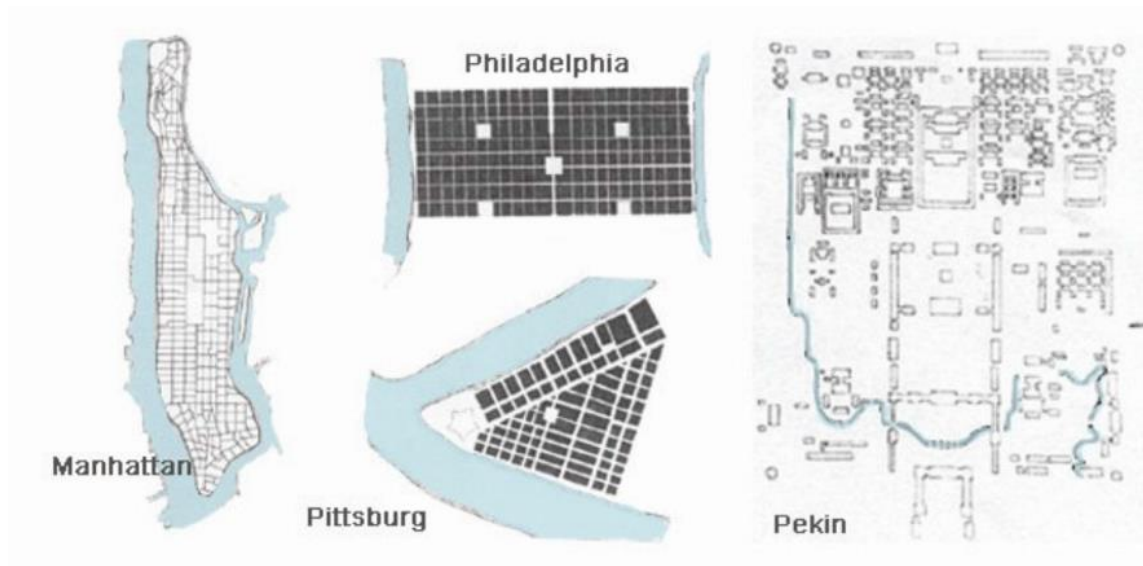


Figure 4urban schema of Manhattan, Philadelphia, Pittsburg and Pekin, Source: Hattapoğlu, 2004.

Rivers took on a spine task which is established cities and in the formation of streets, parks and other urban spaces have become a major factor. For example, (Figure 4) in Manhattan, Pittsburg, Philadelphia and Pekin.<sup>33</sup> Recreational use of water element is too varied. Natural and artificial water surfaces and its surrounding can be serving many recreational uses (Figure 4), such as swimming, fishing, boat tour, entertainment, walking etc.

<sup>29</sup> Önen, 2007

<sup>30</sup> Gençtürk 2006

<sup>31</sup> Önen, 2007

<sup>32</sup> Gençtürk 2006

<sup>33</sup> Hattapoğlu, 2004

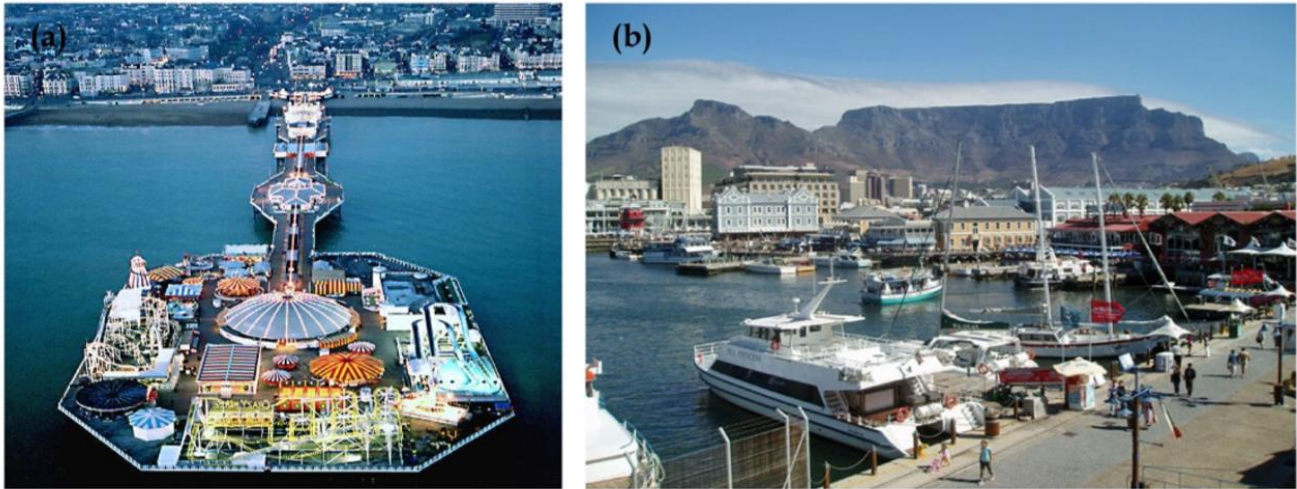


Figure 5 Recreational uses (a), Source: (Umut Pekin Timur,2010, page 5), Brighton Pier, (b) The Victoria and Alfred Waterfront, Source: Andini, 2011.

## 2.6 Urban waterfronts categories

Urban waterfronts have been distinguished five categories to location with water. Explained below the first two line symbolize coastal cities and the latter three line symbolize inland ones.<sup>34</sup>

- a. Urban area located on peninsula,
- b. Urban area located on a bay,
- c. Urban area located on banks of a river,
- d. Urban area located on banks of intersecting rivers,
- e. Urban area located on a large body of water.

regardless of that separation, the shoreline shape is a major influence on how the location of the city in reference to the water impacts the city-water links.<sup>35</sup> Cities which are located on peninsulas, headlands or small islands benefit from longer waterfronts at a short distance from the city Centre. The same could be said of cities located on the banks of intersecting rivers, estuaries and deltas. They have

<sup>34</sup> Al Ansari, 2009

<sup>35</sup> Wrenn et al. (1983),

many long waterfronts, which increases the chance of public spaces located on the waterfront and also of these being connected to other hinterland public spaces.<sup>36</sup>

## 2.7 Urban waterfronts features

Three factors are more important in forming the cities. The first of these is the natural structure of the city, the second of these is physical structure of the city, and the other one is social structure of the city.<sup>37</sup> These three factors constitute system of the city in interaction with each other. In the natural structure of the city, the water element of presence or absence influences the process and the image of the city. Water resources such as sea, river or lake are added value in different ways. Certain features of waterfront is represented to below:<sup>38</sup>

- 1- It is become an urbanized area, an important land,
- 2- Water and land are the two essential elements of waterfront, so this area an aquatic and terrestrial feature,
- 3- The “water” may be a river, lake or sea,
- 4- It has uncertain spatial boundaries and dimensions which change from place to place,
- 5- The waterfront area may be a historical port area or urban area for other usages close to water,
- 6- An essential structure of mixed land uses characterizes this essential area of the city,
- 7- It supplies opportunity for interaction between human settlement and nature and water,
- 8- As an edge environment, it is a dynamic place which changes biological, chemical and geological character,
- 10- It is a special area because of being productive and biologically diverse ecosystems,
- 11- It is a natural defense area for flooding, erosion with plant cover,

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<sup>36</sup> Al Ansari 2009

<sup>37</sup> Akköse, 2007

<sup>38</sup> Dong, 2004; Yassin et al., 2010; Seattle Department of Planning and Design, 2012.

12- The waterfront area is a pollution moderator.

## 2.8 Waterfront development

Waterfront development is defined by development directly adjoining water for any purpose. Furthermore, water components can include river deltas, coastal plains, wetlands, beaches and dunes, lagoons and other water features.<sup>39</sup> The primary purpose of a waterfront development is for the waterfront to serve as an area for the transportation of goods through water.<sup>40</sup>

Waterfront development started when local residents, sailors and traders settled along the water's edge, and started to develop industrial waterfront areas. Consequently, industrial buildings and warehouses were developed along the waterfronts to supply trading services in the main economic cities.

The development of waterfronts underwent several phases that can be divided into three main themes, namely the origin of waterfronts; waterfront and urban development; and waterfront and urban regeneration. These main themes led to the coining of the term urban regeneration.

## 2.9 Types of Waterfront Development

A city must first and foremost determine what it intends its waterfront to be. These issues must be sorted out before a city can plan for the redevelopment of its waterfront. In a trend of transforming the waterfronts to vibrant zones of leisure, commerce and housing by waterfront development, there are a number of conventional types:<sup>41</sup>

### 1-Major Waterfront Transformations

Major waterfront transformations are unique that meet the needs and aspirations of cities that are unlike in geography, history and character. They share many factors such as housing, shopping, offices and recreation. There are complex negotiations,

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<sup>39</sup> *Tekalign, 2013, page 11; Yassin et al, 2009, page 1*

<sup>40</sup> *Yassin et al, 2009, page 4.*

<sup>41</sup> *Breen, A., and Rigby, D. 1996.*

dedicated leadership and huge sums of public and private money are involved to accomplish the transformations.

2- The Commercial Waterfront There are a variety of project typifies the dynamism of the commercial waterfront to encourage public enjoyment of the waterfront. These projects include “festival marketplace” which is widespread and longstanding tradition of eating, shopping and socializing along water bodies, likewise is a public focal point, drawing people to attend many events.

3- The Cultural, Educational and Environmental Waterfront The cultural, educational and environmental waterfront emphasizes the vital connections between people and water and can have a real effect on the way they think about this basic resource which man and natural are inseparable parts of the unified whole Waterfronts have been providing beautiful setting for religious architecture, memorials, public art and grand cultural institutions and educational sites for generations.

#### 4- The Historic Waterfront

Instead of condemning old waterfront structures to non-use, decay and ultimate abandonment, some cities are working toward the preservation and adaptive reuse of historic buildings that maintains a tangible sense of the past and favoring a restorative approach that makes for a richer community and captures the allure that comes from being in touch with the past in modern daily life.

5- The Recreational Waterfront Spending a leisure time on the water, whether for fishing, swimming or quiet contemplation is the recent theme of the urban waterfront development around the globe. Also, creating public spaces such as parks, marinas, walkways and promenades with shade pavilions, distinctive paving and lighted fountains constitute the biggest change along today’s urban waterfront, add a pleasant atmosphere and provide relaxation and enjoyment with being on the waterfront.

6- The Residential Waterfront People throughout history have been living along the water for reasons both practical and poetic which housing styles varied according to the culture. Water, rivers, lakes, coasts and canals are public resources; the space along the water’s edge is welcoming balanced to visitors as well as to residential population. This means that walkways and facilities are visible, attractive and accessible and comfortable for the residents.

## 2.10 Waterfront and urban development

Waterfront development and urban development have several similarities, not only due to the physical structure of the city or the growth of the cities, but through the different periods. It is more a link of the economic, social and environment components, which has been shown to be important components of urban regeneration.

(a) Settlement of the port: As explained in the above-mentioned origin of waterfronts, there was a need and demand for an area where explorers can offload cargo and replenish their supplies, leading to the first port settlement along the coast.

(b) Establishment of ports: During this period the ports transformed into important economic areas with industries, services, businesses and strong harbor activities. As a result, the settlement became a port authority, which included docks made of stone, and harbor trade that stimulated urban development, leading to the development of roads and transport facilities that provided goods and services to the area.

Over time the harbor front or waterfront became more and more economically driven. It expanded and this created a need for specialists and special port activities. An increase in uses for waterfronts came with the arrival of the steamships and warehouses, blocking the water's edge from the rest of the city.<sup>42</sup> Furthermore, the need arose for easier transportation in the form of railroads and areas that can service the harbor fronts.<sup>43</sup>

(c) Detachment from the city Waterfronts eventually started to detach from the surrounding urban environment.<sup>44</sup> This detachment mostly happened due to three reasons:

- (a) development of new ports;
- (b) environmental reasons such as pollution;
- (c) and the development of the railroad.

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<sup>42</sup> Wrenn, 1983, page 561.

<sup>43</sup> Wrenn, 1983, page 10.

<sup>44</sup> Wrenn, 1983, page 10-11.

(d) The decline of waterfront: The detachment and decline of the waterfront normally takes place almost at the same time. Decline occurred at the same time the waterfront was detaching from the city core. Consequently, a need existed to accommodate new, larger and more modern ships and new locations for ports were chosen. Finally, the role of the old port has now changed from an economic hub to an abandoned area of no use.

As previously mentioned, some integrated qualities are needed for a waterfront. Sairinen and Kumpulainen's table<sup>45</sup> aims to address the social impact of a waterfront. The most significant focus of the social impact assessment is to ensure that the main goals of the waterfront regeneration project are met, such as the different social and environmental benefits the waterfront should offer the community (the physical appearance of the area, recreational benefits, the history of the area, employment creation for the local residents and environmental protection).<sup>46</sup>

The different social qualities of waterfront regeneration are divided into four categories, namely resources and identity; social status; access and activities; and the waterfront experience.<sup>47</sup>

Waterfront experience: A feeling of the presence of water or contact with the water, sea, lake or river should add to the waterfront experience. Furthermore, the presence of a restorative experience is important. The sensory experience should be positive, be it visual, physical, tastes and sounds.<sup>48</sup>

## 2.11 Waterfront regeneration

Waterfront regeneration recently became a high priority<sup>49</sup> to provide the public with access to the shoreline and to protect the waterfront's biodiversity. This creates positive influences within waterfront areas. Furthermore, waterfront regeneration became a high priority given the fact that waterfronts have lost their function as an economic hub.

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<sup>45</sup> Sairinen and Kumpulainen's, 2006, page 125.

<sup>46</sup> as revealed by Sairinen and Kumpulainen, 2006, page 124.

<sup>47</sup> Sairinen & Kumpulainen, 2006, page 125.

<sup>48</sup> Sairinen & Kumpulainen, 2006

<sup>49</sup> Sairinen & Kumpulainen, 2005, page 121.

The term waterfront regeneration can be defined as the rediscovery of old city harbors.<sup>50</sup> For instance, it can include buildings and areas that are not directly adjacent to the water, but are otherwise linked or tied visually, historically or ecologically to parts of the city or town.

Waterfront regeneration currently embodies the historic alteration of land and water along the edges of thousands of cities, large and small, throughout the world.<sup>51</sup> It is clear that waterfront regeneration became more important.

The definition developed into something more comprehensive as waterfront regeneration gained a more significant place. Therefore, one must look at how waterfronts developed and evolved over time and the role it plays in coastal development.

## 2.11 Waterfront regeneration according to the waterfront and urban development

Some obstacles have to be overcome to implement urban regeneration, such as the pollution caused by industrial activities, the quality of the infrastructure and all the abandoned warehouses and storehouses. In order to achieve this, the city and the waterfront have to be rejoined and it is deemed to be feasible through urban regeneration. It is especially vital for the potential economic, environmental and social benefits it holds for the area. These benefits include public use, as well as recreational, residential, and commercial uses.

## 2.12 Role players in waterfront regeneration.

Huang et al emphasize the importance for any waterfront regeneration project to decide which investors and parties to include in the project and what their responsibilities are. With the wrong parties, the project will not succeed<sup>52</sup>. Huang et al. developed the following figure (Figure 5) that illustrates the different responsibilities of role players.<sup>53</sup>

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<sup>50</sup> *Wiegmans & Louw, 2011, page 575*

<sup>51</sup> *Sairinen & Kumpulainen, 2005, page 121.*

<sup>52</sup> *Huang et al, 2011,page 385..*

<sup>53</sup> *Huang et al., 2011, page 385.*



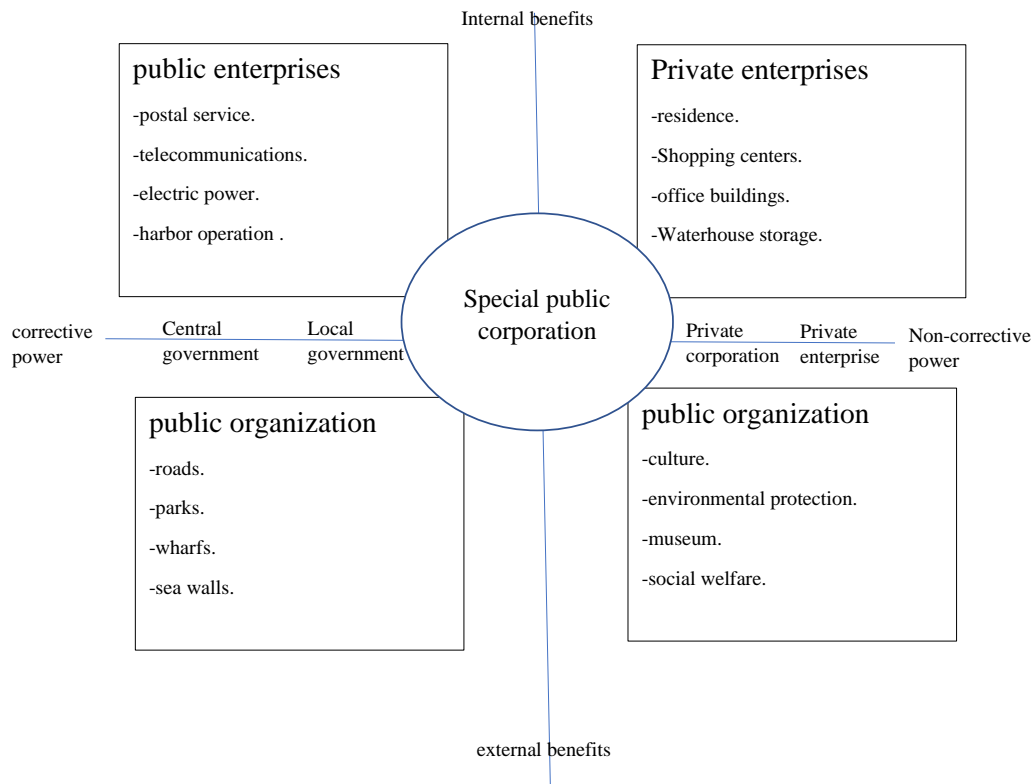


Figure 6 Role players in waterfront regeneration, Source: Huang et al., 2011, page 385

The horizontal axis represents coercive power and non-coercive power. Starting from the beginning of the project, the closer it is to the left, the higher the coercive power will be. The vertical axis demonstrates that the further development moves away from the special public corporation, the lower the coercive power will be.<sup>54</sup>

The figure also provides other role players, only at different levels: the central government; local government; special public corporation; private corporations; and the private enterprise, whereas the special public corporation with dotted lines represent the needs of different development items. They are given some degree of coercive power and autonomy. On the other hand, the role players on the left are public organizations that possess a higher level of coercive power. Finally, the private bodies on the right have the highest level of autonomy.<sup>55</sup>

<sup>54</sup>Huang et al., 2011, page 385

<sup>55</sup> Huang et al., 2011, page 385.

The vertical axis represents internal benefits and external benefits to all the role players and the closer it is to the top, the more prominent the internal benefits. These role players' main goal is profit. Notably, the closer it is to the bottom, the more significant the external benefits are. The main goal of these role players is not to make a profit.

Finally, the diagram explains structures of four types of role players in waterfront development, namely public organizations, public enterprises, public welfare organizations and private enterprises. Each role player performs different functions, depending on their features.<sup>56</sup>

## 2.13 The definition of waterfront area

The waterfront area is the confluence area of water and land. It is not only the edge of land but also the edge of water, and the land should cover some areas. It is with the highest density of elements and human activities. They affect each other greatly. In Princeton University online dictionary, it's explained as the area of a city (such as a harbor or dockyard) alongside a body of water.<sup>57</sup>

Most of the waterfront lands are like belts along the coastlines. People want to make use of these areas, so planners begin to think of a way to make it attractive for people. How to connect traffic, establish different functions, and how to communicate with inner cities are the main problems.

## 2.14 Characteristics of Waterfront Zone

The waterfront zone is an area endowed with special characteristics. Table 1 below described the special features and functions of waterfront areas.

Table 1: Characteristics of Waterfront Zone.

Characteristic	Description
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<sup>56</sup> Huang et al., 2011, page 385.

<sup>57</sup> Diyun Hou, 2009.

Ecological	<p>The waterfront zone is a dynamic area with frequently changing biological, chemical and geological attributes.</p> <p>The waterfront zone includes highly productive and biologically diverse ecosystems that offer crucial nursery habitats for many marine species.</p>
Economic	<p>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.</p>
Social	<p>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.</p>

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Source: *Diyun Hou, 2009*

## 2.15 Elements for Successful Waterfront Development

Apparently, the harmonies of waterfront development could be achieved through combinations of people, nature and technology<sup>58</sup>. In addition, <sup>59</sup>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.

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<sup>58</sup> (Mann, 1973)

<sup>59</sup> Bertsch (2008)

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

(4) Stakeholder participation – the involvement of multitudes of interested parties is compulsory: government agencies, developers, community organizations, 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.

## 2.16 The Quality of Life Indicators

Quality of life is a relatively impressionistic and a multidimensional concept which means different things to different people.<sup>60</sup> The optimal level of quality of life is produced by combining the physical and psychological inputs. The quality of life can be translated through social and environmental considerations in the process of urban planning and is affected by the place in which we live.

The concept of quality of life includes subjective or qualitative phenomena at the individual and the community level as well as objective measures of the status of individuals and the community.<sup>61</sup> The interest in quality of life comes from city leaders and different parties including those who are interested in human development, social development, sustainable development and healthy communities. Thus, quality of life is important because a lot of people and organizations are paying attention to it.

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<sup>60</sup> *Coggan, A., and Kelly, G. 2007.*

<sup>61</sup> *Hancock, T. 2000.*



Figure 7: The Quality of Life Indicators, Source: Riham A. Ragheb, 2017

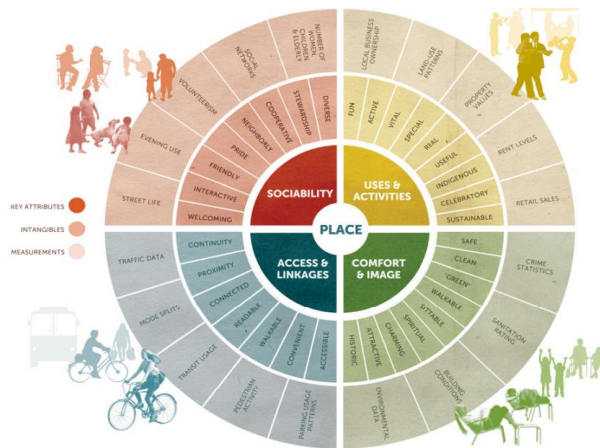


Figure 7 The place making criteria, Source: Project Public Spaces, 2009.

There is a concern to measure the quality of life of cities and understand how we are doing and feeling.<sup>62</sup> In the past few decades, social scientists have attempted to

<sup>62</sup> Hancock, T. 2000.

objectively measure the quality of urban life through a variety of quantifiable social indicators which have been structured around the social/cultural, economic and environmental wellbeing to maintain and improve quality of life in urban spaces. These indicators are: natural and living environment, overall experience of life, governance and basic rights, health, education, economic and physical safety, leisure and social interactions, productive or main activity and material living conditions.<sup>63</sup>

## 2.18 The structure of waterfront landscape

The waterfront landscape can be separated into three parts:

1. Landscape water body. This includes water plants, life-forms and other things in the ecosystem. There are also some artificial landscapes, such as bridges and lighting.
2. Areas close to water. Examples include waterfront squares, footpaths, architecture, landmarks, lighting and some artificial landscapes. There is usually a greenbelt to make the water look beautiful.
3. Human activities. People can do some activities on waterfront areas, such as recreation or having a picnic.

Waterfront landscapes can be separated by artificial and natural landscapes:

1. Natural landscape, such as water and plants.
2. Artificial landscape, such as footpath and waterfront square.
3. Cultural landscape, such as historical heritage and related stories.

## 2.19 water development and tourism

The waterfront is considered the origin context of human culture and economy because of trading and movement of humans and goods. The rise and fall of many cities were related to transportation and trading. Villages located on waterfronts turned into fishing villages and trading ports.

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<sup>63</sup> Eurostat. 2014.

During the Industrial Revolution Era (1760-1840), many industrial districts were established by seas and rivers mainly for the purpose of efficient transportation.<sup>64</sup> Nevertheless, after the industrial revolution, the epic advancement of technology and communication and the rising awareness of negative environmental, health and social impact on communities has led to a dramatic shift of the industrial structures all over the world. Industrial companies, areas, and districts moved their activities to edges of cities and in most case outside cities borders. Consequently, the unused land of old industrial districts and ports became one of the main foci of urban planning practitioners and academics for their favorable usual geographical positions in approaching downtown.<sup>65</sup> Hoyle (1999) claims that the redevelopment of waterfront land became a global urban phenomenon, from advanced countries to developing countries from cosmopolitan cities to small towns, have been affected greatly by the success experience of Baltimore inner harbor renewal since the mid-1960s (i.e. the Baltimore Type) with massive spatial, economic and ecological change to waterfronts all over the world.

Vallega (2001) points out that the waterfront development has passed two distinctive stages. The first stage (1960- 1990) waterfront development focused on saving local GDP and employment rate via commercial and national tourism activities and their consequent physical planning activities. The second stage (since the mid-1990s), the rise of globalization, sustainable development, diversity, cultural heritage, coastal management, city image and city labelling concepts had a major impact on waterfront development activities pegged with soaring international tourism. Since the mid-1990s, the notion of sustainability and globalization, governance and management have been the cross-cutting edge as well as the connector of all development disciplines including urban development, tourism development, and management, environmental management, strategic planning, etc. Hence no development plan could be formulated without the taking into consideration all underpinning corners of sustainability (i.e. economic, social, environmental and urban dimensions).

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<sup>64</sup> Hayuth 1998.

<sup>65</sup> Hoyle, 2000; Chen, 2015

## 2.20 Conclusion

Discussing all the prementioned theories in the literature review and the relation between them have shown a better understanding for waterfronts development and generation. In addition, for it being a very important element of any city with a water catchments including it. The waterfront development in the city that contains a water catchments will be able to bring a highest value in many functions and uses among the city, reinforcing city's development. Waterfront areas combines between many theories and planning practices, we can see urban tourism, sustainability and landscape.

Experiencing the other factors that appears as an influence of waterfront development such as the role players which will combine both private and public sectors to improve the projects principles. Historically, waterfront regeneration is only required when the waterfront area is critical for the growth of the city, notably when there is no use for the area and the city is in the decline period. Thus, a new role has to be rediscovered using waterfront regeneration, not only with regard to economic components, but also through social and environmental components. A lack of one of these components, the waterfront regeneration project will receive negative criticism from the role players that will place the waterfront regeneration project at risk.

The literature study clearly showed that the role of the waterfront has changed from not only being economically driven, but also environmentally and socially driven. Furthermore, waterfronts have a remarkable resemblance to urban regeneration and urban development. Additionally, waterfront regeneration should include role players, which ensure that a waterfront regeneration project will have a positive influence on the city. To understand and relate to the above-mentioned themes, an empirical study was done through case studies through a qualitative research approach.

It is important to use the correct social assessment factors and to ensure that the waterfront regeneration project will have the correct role and contribution to the city. Additionally, the disadvantages should be minimized using the social assessment factors. If the social assessment factors are not correctly implemented, the role players will not be correctly selected. It is essential to select the correct role players after the social assessment factors have been considered. Without the correct role players, the above-mentioned aspect will be difficult to implement, and the



waterfront regeneration and the project's role in the urban development will be criticized.

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## **Chapter 3: case studies (national, regional and local cases)**

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### 3.1 Introduction

The case study approach involves the issue of one or more circumstances within a bounded system.<sup>66</sup> To ensure that the relevant information is selected, the multiple case study design will be explored.<sup>67</sup> In addition, the following case study approaches will be explored: instrumental and multiple case studies. The second part of the Chapter focuses on investigating two international and one South African waterfront projects that contributed to the role of waterfront development. The main focus of this Chapter is to highlight the key lessons and challenges that emerge from

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<sup>66</sup> *Creswell, 2007, page 73.*

<sup>67</sup> *Herriott & Firestone, 1983, page 5.*

each case study and to understand the role of waterfront development in urban regeneration of cities.

(a) Background and development phases: The history of the waterfront development and the process of how urban regeneration took place within the waterfront are explained.

(b) Role players: The role players that contributed to the “success” of “failure” of the waterfront development are identified and explained.

(c) The economic, social and environmental influences: These factors were identified in Chapter four as components that have an influence in the success of waterfront 75 development. The contribution of these components to the waterfront development is explained.

(d) Case study evaluation: After the case studies have been thoroughly investigated, aspects applicable to this study are outlined. At the end of this Chapter findings are used to understand the role of waterfront development in urban regeneration of cities.

### 3.2 Case studies as research method

Case study research involves the study of an issue explored through one or more cases within a bounded system.<sup>68</sup> It is imperative to understand the history of the case study method and what is meant by case study research. The case study method was developed by Stake<sup>69</sup>, he recommends the triangulation of information when searching from the convergence of information that has a direct link to “data situations” in developing a case study.

Furthermore, it is important to understand how a case study is defined: Tracy (2013: 90) defines a case study as follows: “A special participative training method that involves in-depth group of case reports- factual and accurate word pictures (or visualizations using videocassettes) of a situation that portrays people acting, interacting, and reacting. It requires reading, study, analysis, discussion, and free exchange of ideas as well as decision making and the selling of decisions to others.” Kumar<sup>70</sup> states that a case study is about an individual, a group, a community, an

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<sup>68</sup> Creswell, 2007, page 73.

<sup>69</sup> Stake, 1995, page 110-113.

<sup>70</sup> Kumar, 2014, page 155.

instance, an episode or an event that happened, a subgroup of a population, or a town or a city.

### 3.3 Case studies selected

The following case studies were explored by means of the case study approaches and methods:

- Toronto Harbor Front – Canada.
- Bahary waterfront – Egypt.
- Jaffa waterfront – Occupied Palestine.

#### 3.3.1 Case study one: Toronto Harbor Front – Canada

The Toronto Harbor Front is located in the western half of the Toronto Central Urban Waterfront see figure 9. The area measures 37 hectares in extent, and was built in 1920 as a port facility.<sup>71</sup>

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<sup>71</sup> *Sweeney, 2005*

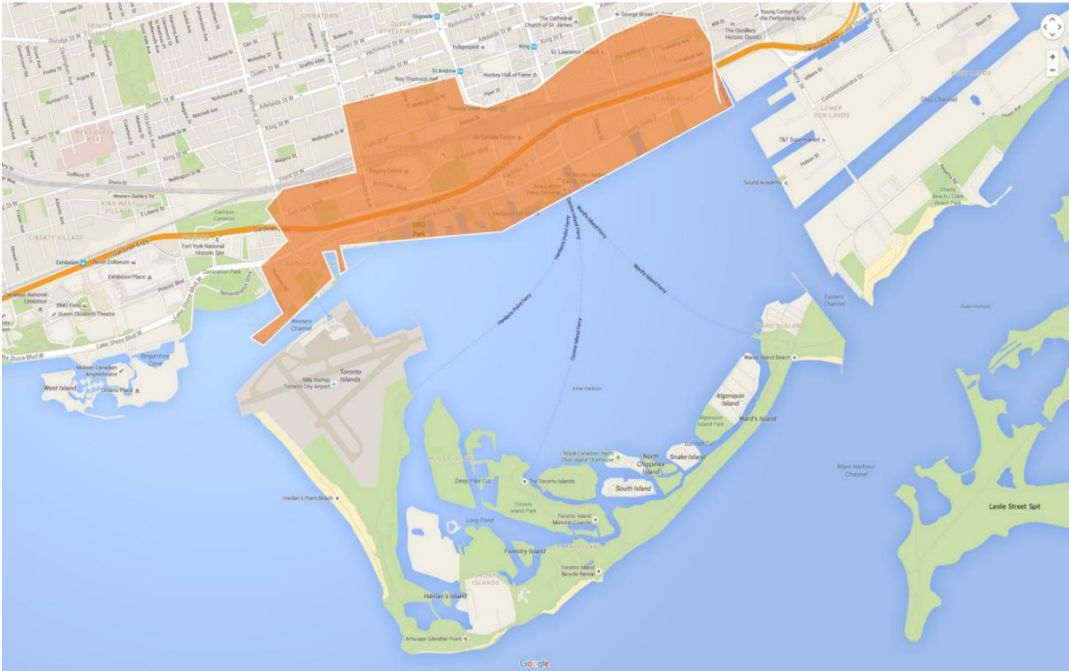


Figure 8 Toronto Harbor Front, Source: google maps,2019

(a) Background and development phases

The Toronto Harbor Front was built in the 1920s the gateway to northern Ontario, and to assist the CBD of Toronto and therefore connecting the Toronto Harbor Front. The Toronto Harbor Front was in phase one. Furthermore, the name “Toronto” originated from the old American-Indian word “meeting place”.<sup>72</sup> In the 1960s, the harbor front was threatened by the development of the railway and the expressway development. Toronto Harbor Front was at phase three as mentioned later during this period, ultimately at the period of detachment. Notably, the development goal was to assist the industrial areas, which were located close to the waterfront.<sup>73</sup>

The Toronto community was almost cut off from enjoying the primary waterfront area for almost two generations.

<sup>72</sup> Yokohari & Amati, 2005, page 54.

<sup>73</sup> Lehrer & Laidley, 2009, page 789.



Figure 9 fToronto Harbor 1870, Source: Flack, 2011.

The community lost contact with the harbor, and to add to the problems, the activities of the port started to move to the eastern end of the harbor front, leading the harbor to further decay. The buildings became run down and abandoned. The Toronto Harbor Front was at phase four. Meanwhile, the government soon realized that there was a problem and in the 1970s the government bought the harbor front. This, land was valuable since it was located within a major city. It was a challenge to recycle the old abandoned buildings and the area.<sup>74</sup> As regeneration took place the Toronto Harbor Front was in phases five, which is the waterfront regeneration period.

The Toronto federal government developed an independent agency, namely the Harbor Front Corporation. The company was established to develop a mixed-use urban waterfront area.

Phase 1: Cut off from the water edge – Before 1970s

Phase 2: Tall buildings – the beginning of 1972

Phase 3: Response with open space – the late 1970s

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<sup>74</sup> Gounden, 2010, page 40.

Phase 4: Harbor Front Development Framework –after the 1970s

Phase 5: Harbor Front Corporation - 1978

(b) Role Players

Several role players were involved in the development. Nevertheless, development could not have taken place without the role players as seen in Chapter Three.

The Toronto Harbor Front began with the Regional and Provincial Government, which soon realized there is a need for the residential areas and the CBD to be linked with the water's edge. As a result, the Toronto Harbor Commission was developed, and later on the Central Waterfront Planning Committee.<sup>75</sup>

As the development took place the public asked for open space. The government developed the Intergovernmental Waterfront Park Committee (IWPC) to develop a 37-hectare waterfront park. Thereafter, several mistakes were made by the federal agency. Consequently, the Harbor Front Corporation was approached in 1978.<sup>76</sup>

(c) The economic, social and environmental influences

The following three factors have changed the role of the Toronto Harbor Front development and are explained in the order in which they changed the role of the Toronto Harbor Front.

- Economic

the Toronto harbor front economy factor was reasonably strong. According to a survey conducted after the harbor was completed, the harbor front center returned \$132 million to the region per annum, which can be used for further improvement to the area.<sup>77</sup>

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<sup>75</sup> Gounden, 2010, page 44, Lehrer & Laidley 2009, page 490-491 & Spafford, 2001, page 1-2.

<sup>76</sup> Gounden, 2010, page 44, Lehrer & Laidley, 2009, page 490- 491 & Spafford, 2001, page 1-2.

<sup>77</sup> Fisher et al., cited by Gounden, 2010, page 44.

The harbor front center also provided 1240 career opportunities, consequently improving the living conditions of the residents of the surrounding area. Besides the 1240 career opportunities, it also provided \$24 million in taxes for the local government, eventually used to strengthen the economy, as well as the standards of the city.<sup>78</sup> The Toronto Harbor Front excelled in the area of economic growth, improving the role of the waterfront within the city, through creating a secondary economic center.

- Environmental

According to the Stockholm Resilience Centre<sup>79</sup>, humans (social) and nature (environmental) are strongly coupled and should be seen as one system that works together. The Toronto Harbor Front's environmental aspect was a central focus and remains as such. For example, the first goal was to create public destinations with a vibrant public and cultural space to provide a variety of experiences and amenities for the visitors.<sup>80</sup>

The Toronto Harbor Front achieved this by using open spaces, such as the Canada Square and Urban Square. However, all these places formed part of the Water's Edge Revitalization Program. The developers also focused on the social aspect and this is explained in more detail in the ensuing section.<sup>81</sup>

- Social

The social aspect of waterfront development or any project is the factor that is most neglected and the most complicated to address. In Toronto, most of the social components are located in the eastern end of the harbor front center. The area has a selection of cultural, education and recreational programs for people of all ages. Whereas, the southern side of the harbor front center, which is the Queen's Quay west area, comprises a variety of parks and open spaces. Providing the community with a social aspect, as well as direct access to the waterfronts edge. These areas form part of the environment aspect as well. Importantly, the Toronto Harbor Front

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<sup>78</sup> Fisher et al., cited by Gounden 2010, page 44.

<sup>79</sup> Stockholm Resilience Centre ,2013, page 3.

<sup>80</sup> Dhanraj et al., 2012, page 11.

<sup>81</sup> Dhanraj et al., 2012:11

project showed the ability to connect the environment and social aspect. Thus not only addressing one problem or changing one role, but two in one step.<sup>82</sup> One of these parks is the Toronto Music Garden that was built in 1999.



Figure 10 Toronto Music Garden, Source: Harbor Front Centre, 2014.

A negative aspect is that the harbor front and the CBD are not fully integrated. The railway is still underdeveloped and the road networks are not yet completed. This leaves unattractive open spaces. The express way is still as a boundary between the water's edge and the community. Although Toronto still has a boundary between the water's edge and the community,<sup>83</sup> it succeeded the best according to Sairinen and Kumpulainen<sup>84</sup> in involving the different social qualities of waterfront regeneration (refer to Table 4).

#### (d) Case study evaluation

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<sup>82</sup> Dhanraj et al., 2012, page 10.

<sup>83</sup> Gounden, 2010, page 41.

<sup>84</sup> Sairinen and Kumpulainen, 2005, page 120-135.



This case study has also shown several tools for the integration of the above-mentioned influences of the economic, environmental and social role of the urban regeneration of cities through waterfront development refer to Table 2.

Table 2: Case study evaluation.

Integrations tools for urban waterfront development			
Tools	Economic	Environmental	Social
Ability to modify	√	√	√
Originality	√	√	√
Balance	√	√	√
Identity	√		√

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Source: An exploration of the role of waterfront development in urban regeneration: Mossel Bay as case study.

- **Ability to modify:** The Toronto Harbor Front development used an essential model of planning. They used a framework rather than a plan, since a framework gives the role players the ability to change the plans for the area as the area changes. For example, the Harbor Front Development Framework that changed through the years from urban park to be a passive green space. Nevertheless, it evolved and ended up to be an active space with cultural, recreational, commercial and residential activities.
- **Originality:** Creativity is needed to give the waterfront something unique that other waterfronts that helps its identity to attract tourists and residents to the area. For instance, the music garden is an attraction that no other waterfront has. This originality will ultimately help with the economic improvements of the area as well.
- **Balance:** Balance focuses on the ability to see that there should be a balance between the need and demand for service provision and the design of the area. A design should include financial factors, because the area must have something for everybody. However, it should not be a liability for the area.

For instance, the Baltimore aquarium’s design and service is not a liability, since it generates revenue.

- Identity: The identity of the area is important since all components create a “feeling”. The Toronto waterfront does not “feel” like an area on its own, it feels as though it is part of the CBD

### 3.3.2 Case study two: Bahary waterfront – Egypt.

Bahary waterfront in Bahary, Kasr Ras El Tin, is classified as a main street in the street network of Alexandria. The Mediterranean Sea presents its waterfront to the north. The study area will focus on the coast which represents The Anfoushy Public beach and the costal hinterland that represents Kasr Ras el Tin Street which leads to Ras El-Tin Palace, which is allocated for the reception of official delegations of the state. It also holds the function as a main gate to the Turkish quarter, which unfortunately began to gradually disappear due to the neglecting of this area’s building. Any waterfront development process goes through different phases. This study focuses on the pre-development phase.

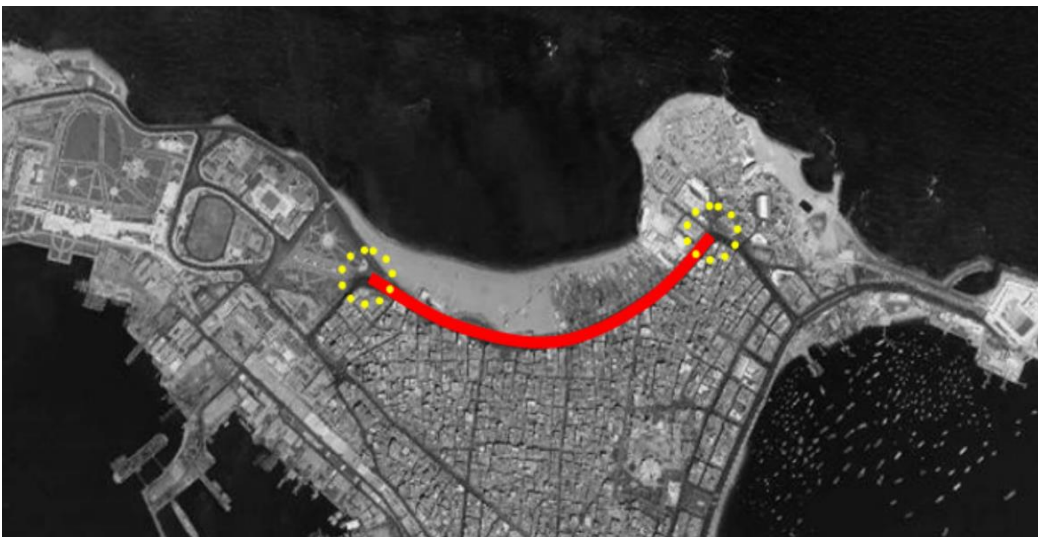


Figure 11 Map showing the study area, Source: Sustainable Waterfront Development—A Case Study of Bahary in Alexandria, Egypt.



Figure 12 Pictures of the famous sites, Source: Sustainable Waterfront Development—A Case Study of Bahary in Alexandria, Egypt.

## 1- Analysis of Bahary Waterfront<sup>85</sup>

Bahary has a waterfront scenic path, with prominent views of the Anfoushy Bay and Ras El Tin Palace. It is also with a historic background as it is the main entrance to the old Turkish Town of Alexandria, which includes a unique urban pattern of houses and streets. The analysis of study area is based on some principles collected during the theoretical part which focuses on the principles of waterfront development.

### A- Access and Linkages

The waterfront stretches 900 m along the sea and with variable width, from 25m to 37m, joins the El Gish Road in the east to the very narrow streets of the old city in the west, and it is the only main street which serves the connection of its surrounding area land uses to the rest of Alexandria. At the southern street perimeter, there are more than 30 T-intersections with small and poor local streets, mostly with dead ends as well as some secondary streets like Sidi El-Hagary Street, Safr Basha Street, and Sidi Yacout Street. Also, there is a promenade along the sea but it does not encourage the public access and it was lined by palm trees to provide shade and there is a safety railing and lighting units along the walkway. The waterfront can be accessed by different means of transportation: public bus, private car, horse cart, bicycles and boats. The city tram, of which the network serves the old city, runs with other traffic in the middle of its right-of-way. Hiring boats or horse cart are considered as tourist attraction. Furthermore, the waterfront esplanade leads to

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<sup>85</sup> Sustainable Waterfront Development—A Case Study of Bahary in Alexandria, Egypt.

various activities and attractions such as historical buildings, restaurant, the Anfoushy cultural center and the boats workshops that had run for decades.

The presence of variable activities and street level uses on the pedestrian paths are important to achieve walkability and vitality in the city.

In addition, multiple accesses to the waterfront provide a good accessibility to the different landmarks in this area: Palace Ras El Tin, The Anfoushy fish market and the boat workshops are connected by the Kasr Ras El Tin Street and el Morsy Abo El Abbas Mosque is permeable by Sidi Yakout Street. Walkable waterfront with activities is necessary to connect various destinations in order to attract people to the waterfront and achieve a desirable waterfront.



Figure 13 Map showing the site accessed by the different paths of the study area, Source: Sustainable Waterfront Development—A Case Study of Bahary in Alexandria, Egypt.

## B- Uses and Activities

The waterfront has a variety of land uses along its perimeter. To the north (waterfront), there are a lot of consecutive land uses; such as the Anfoushy Cultural Center, boat workshops, local club, children education centre and a huge sand public beach that serves as an attractive recreation area. The other street side has mixed land uses with residential area. The residential area contains ground floor cafes and

restaurants with some street seating. Retail consists of many simple commercial shops and other service-related storefronts that add to the unique traditional style of the area and to reach unique designs to the Bahary Waterfront only. The most effective way to create a livable city and make an attractive urban form is by increasing activities. There are a lot of activities such as social and sports club, cinema and services like hospital and mosque. In addition, the waterfront thrives day and night throughout the year by integrated seasonal activities during different feasts that make users feel welcome and safe.

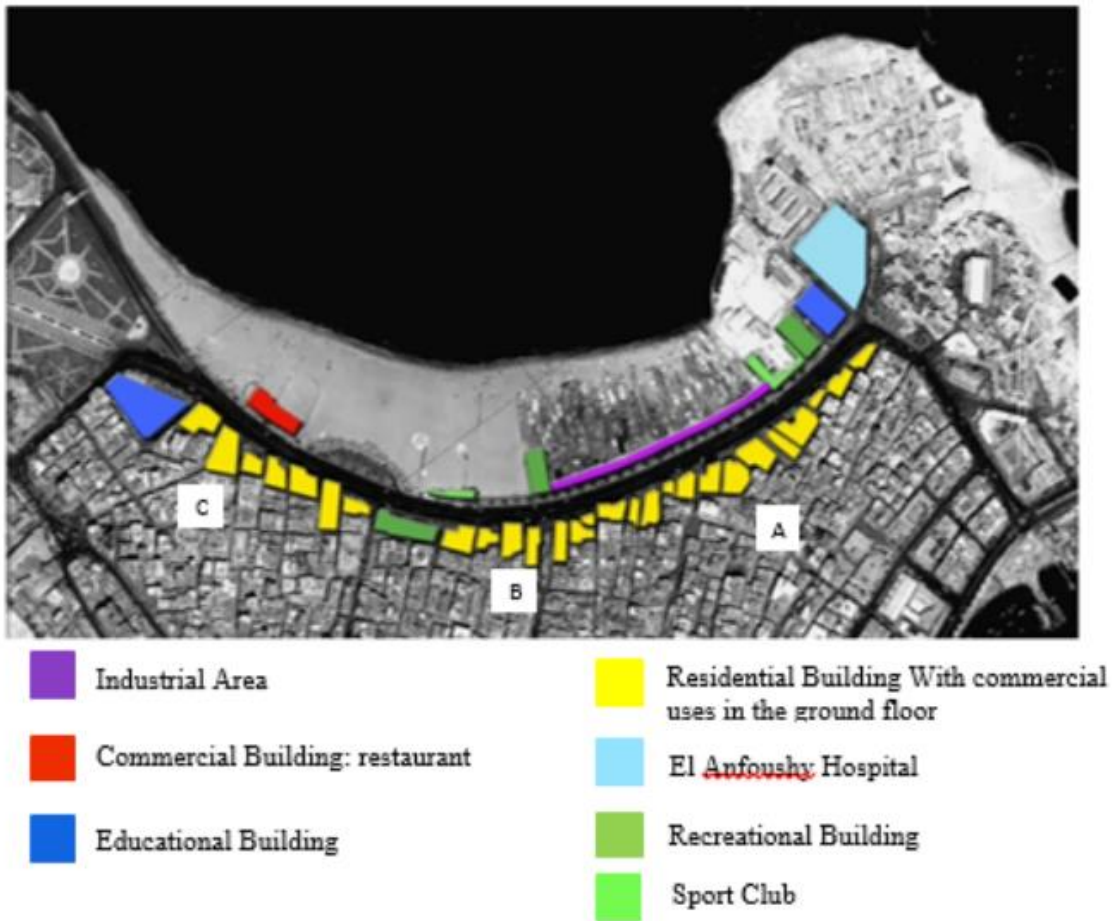


Figure 14 Map showing the land use of the study areas, source: Sustainable Waterfront Development—A Case Study of Bahary in Alexandria, Egypt.

### 3.3.3 Case study three: Jaffa waterfront – Occupied Palestine

After it existed as an independent settlement for thousands of years, in 1950 Jaffa was annexed to Tel Aviv and since then became a borough in the city of Tel-Aviv-

Jaffa. Located in the south-west of the city, Jaffa occupies about 12 percent of Tel-Aviv's total area, and about 12 percent of its population. The Jaffa district is subdivided into four quarters containing 12 neighborhoods, of which ten are zoned for housing and two are under-populated: Old Jaffa is designated for artists, commercial and tourism use; Givat Herzl is zoned for trade, industry and commerce.<sup>86</sup>

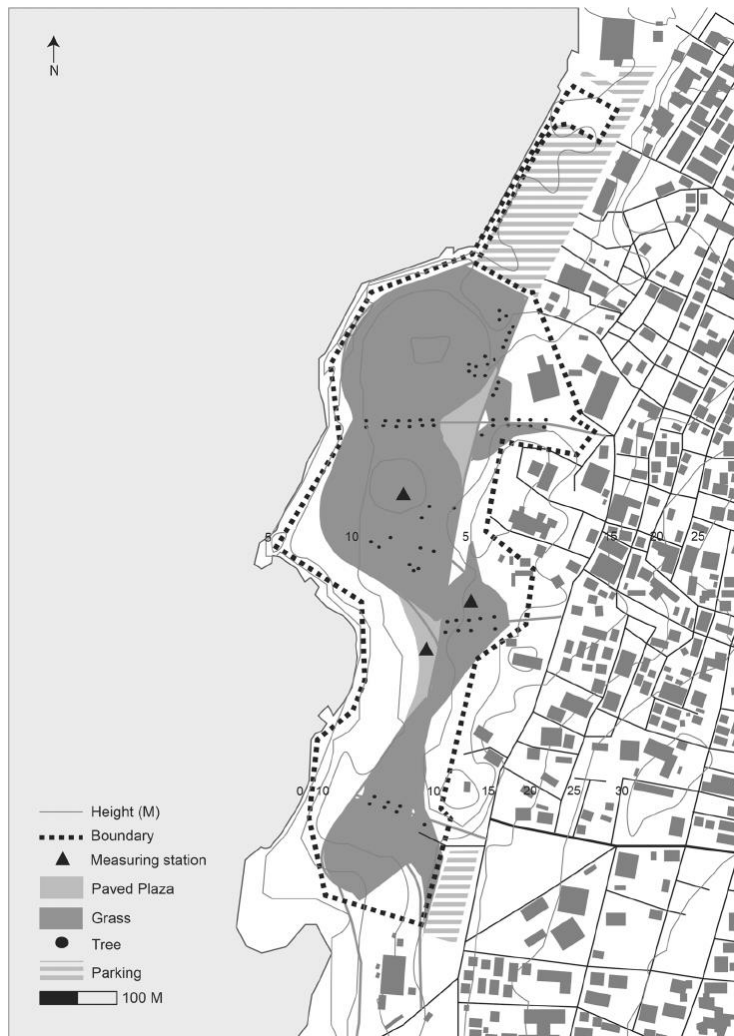


Figure 15 Haifa port, Source: research gate.

### (a) Background and development phases

The Jaffa port is nestled at the foot of old Jaffa, on the south-western coastal strip of Tel Aviv-Jaffa. Historically, the port is an important landmark that connected Jaffa

<sup>86</sup> *Tel-Aviv municipality, 2016*

and the area to the world and positioned it as a significant Mediterranean focal point. The port has been actively used for thousands of years.

While the port has been active for thousands of years, its current built form is mostly a result of construction that took place in the Ottoman (1517-1917) and British (1917-1947) periods. In the 19th century, the Ottoman rule decided to increase Jaffa's economic activity by renovating the port. The port became a busy hub, in parallel to Jaffa's urban growth (Figure 17). In 1864, the port's lighthouse was initiated. In 1871, Christian Templars began to export the famous Jaffa Oranges through the port and in 1876, the Ottomans built a custom building at the edge of the docks. In 1892, the railroad from Jerusalem to Jaffa was inaugurated.



Figure 16 The Port during the Ottoman Empire, Source: Eitan Eden.

However, it was during the British Mandate (1917-1947) that the port was substantially developed and modernized: the British dried land and built warehouses, seawalls, docks, a new custom building and a new lighthouse (Figure 18). They also renewed the railroad, deepened the marina and introduced new mechanization technologies. In the 1930s, the port served as an important site of Jewish immigration.



Figure 17 The Port during the Ottoman Empire, Source: Eitan Eden.

The port in Jaffa have been developing thorough history and during this development it passed by these phases.<sup>87</sup>

Phase 1: Ottoman empire role – 1516-1917

Phase 2: British mandate – 1917-1947

Phase 3: port transferred to the Israeli port authority - 1948

Phase 4: closing the airport for only commercial activities - 1965

Phase 5: Further construction and renovation of docks - 1980s

Phase 6: Civic campaign to stop privatization - 1993-2000s

(b) The economic, social and environmental influences (port phase)<sup>88</sup>

The redevelopment of the port was led by the port's new CEO and his staff, who came up with the development strategy through a consultation process that will be

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<sup>87</sup> Nufar Avni, 2017, page 65

<sup>88</sup> Nufar Avni, 2017, page 69



described in the next chapter. Overall, it was decided that the redeveloped port would integrate a host of uses in three 70 main areas, including:

- a) maritime: fishing, sailing, maritime education and sports,
- b) culture: music, arts, cinema, theatre and events and
- c) leisure: culinary offers and events, tours, entertainment and tourism.

The physical redevelopment of the port included the upgrade and replacement of old infrastructure such as sewerage, pavements and lighting, renovation of the piers and boating areas, and the construction of new elements such as a small public square. The most significant change was the rehabilitation and preservation of Warehouses 1 and 2, storage structures that were built by the British in the 1930s and still occupy most of the port's built area to this day (see Figure 6). The lion's share of the budget was directed towards the renovation of Warehouse 1, which was designated as the port's flagship (Figure 9).

When it was inaugurated in 2010, the revamped Warehouse 1 hosted restaurants, a few shops, and a food market. Warehouse 2 was modestly renovated and was populated with a small theatre, a few workshops, a gallery, a restaurant and some storage space for the fishermen (Figure 8). Warehouse 3 has not been renovated to date and Warehouses 4 and 5 were demolished due to safety concerns.



Figure 18 Warehouse 1. A) The southern entrance to the building (top). B) The northern façade. Source: Nufar Avni

A negative aspect is that the harbor front and the CBD are not fully integrated. The railway is still underdeveloped and the road networks are not yet completed. This leaves unattractive open spaces. The express way is still as a boundary between the water's edge and the community. Although Toronto still has a boundary between the water's edge and the community, (Gounden, 2010: 41) it succeeded the best according to Sairinen and Kumpulainen (2005: 120-135) in involving the different social qualities of waterfront regeneration.

### (c) From Port to Waterfront<sup>89</sup>

the Jaffa Port Redevelopment In the last two decades, the ancient Jaffa port has transformed from a neglected site on the urban coast to a hub of urban development

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<sup>89</sup> Nufar Avni, 2017, page 73

(Ben-Yehoyada, forthcoming). Joining a global trend of waterfront redevelopments—where ‘obsolete’ deindustrialized harbours are repurposed for public use—the Jaffa port has been reimagined by the city as a space of spectacle, ‘culture’ and entertainment. Its redevelopment was supposed to bring back the glorious days of the past and remake the port a thriving center of labour and maritime activity, with a modern twist of leisure and recreation. This chapter examines the success of this vision from a social justice perspective, highlighting the many different, and sometime conflicting, interpretation of the planning process and its outcomes. By telling the story of the Jaffa port, I wish to emphasize the critical role of the port in the construction of the city’s identity, status and urban development. This chapter is built on 24 interviews with various stakeholders: community activists, planners, architects, fishermen, and others. The available policy documents and media coverage were also analyzed. The coding and analysis of the interviews and documents resulted in the identification of the five sub-themes that are discussed in this chapter: the “Working Port”, “Trust”, the “Fish Market”, “Whose port: Public Participation and Inclusion”, and “Jewish-Arab Relations”. I chose these five themes for their prominent role in demonstrating different aspects of justice and in portraying the contradictions and conflicts that have emerged throughout the redevelopment. Indeed, some themes overlap. For example, the section on “Jewish-Arab relations” also refers to issues of trust, however, these were unique to the categories of Jewish/Arab and so they were discussed within that framework. I recognize, however, that there are many ways to tell the story of the port. I end with a discussion that ties these themes to the overarching topic of planning and justice.



Figure 19: A diagram of the port, Source: Arnon, Levi and Maor, 2008.

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## Chapter 4: Site Selection

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### 4.1 Introduction

Waterfront development as already has been discussed is the development that faces the water surface, that this development could be urban or commercial or environmental, or industrial. With gathering every single information and the importance of the site selection process in planning. Each kind of development of the waterfront will be efficiently selected.

Many factors will influence the best selection of a waterfront, such as population as a main factor, use, function, shape and many other factors.

Evaluation of alternative sites for a new waterfront with a specific use based on aeronautical, cost, environmental and other parameters. The process involves significant community and resource agency coordination. Final approval of a site is often an urban/economic and political decision.

Selection of a suitable site for a waterfront development should begin with an assessment of any existing similar projects and their location. It is nearly always

easier to modify an existing waterfront than to create a new one on land that has previously had a different land use designation. The assessment is made in the light of the prospective passenger market, its growth rate and any limitation of the growth resulting from, for example, a demographic shift of population.

#### 4.1.1 Residential Waterfront

As the kind of waterfronts that mainly focuses on the urban residential use, with buildings mainly has the function of houses or apartments and needed services for it.

#### 4.1.2 Tourist Waterfront

The kind of waterfronts where mainly the use and the buildings has a tourism orientation, could be formed as resorts, hotels, waterparks and beaches.

### 4.2 Site Selection

#### 4.2.1 water surfaces

In Palestine the main water surfaces are the dead sea, red sea, Mediterranean and Tiberias lake. To define which best location of these four surfaces to create a new urban waterfront. Mainly the analysis depended on the land use in each area.

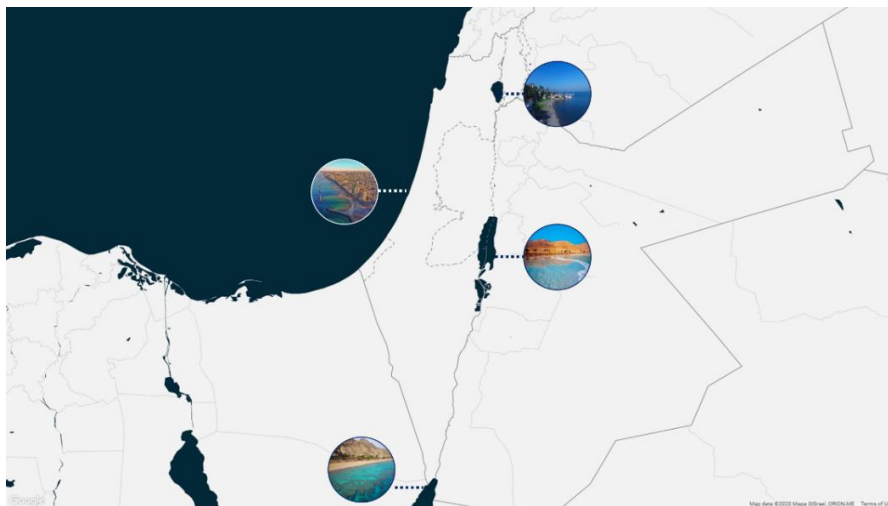




Figure 20 water surfaces in Palestine.

1) Tiberias lake

The map shows the land use in Tiberias and around it, we can find out that mostly its surrounded with forests and farmlands, which are a highly restricted areas from development, and the urban center is determined with a specific border.

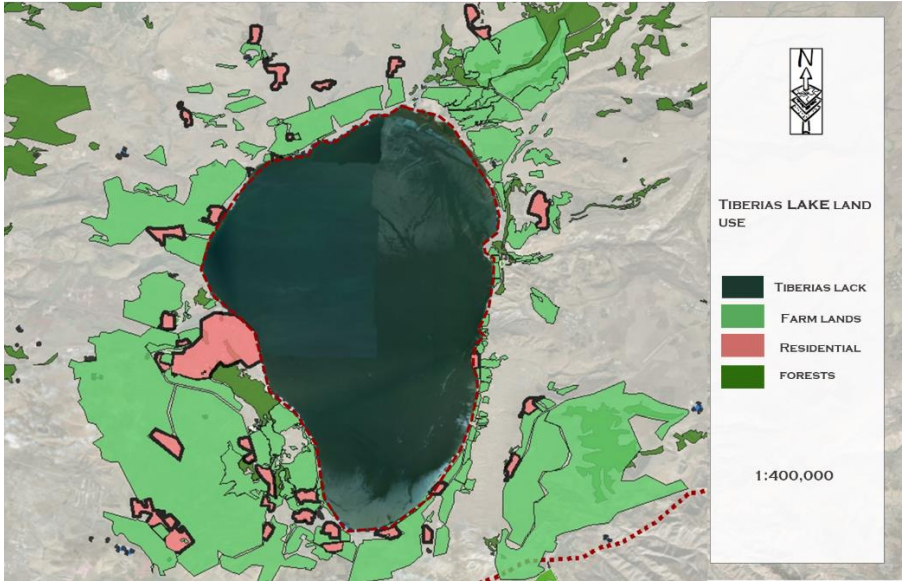


Figure 21 Tiberias lake land use map.

2) Mediterranean coast (Haifa district)

The map shows a potential area in the city of Haifa that could be suitable for a waterfront development, the city is already expanding and the existed projects needs redevelopment, which could be a high potential for the waterfront project.

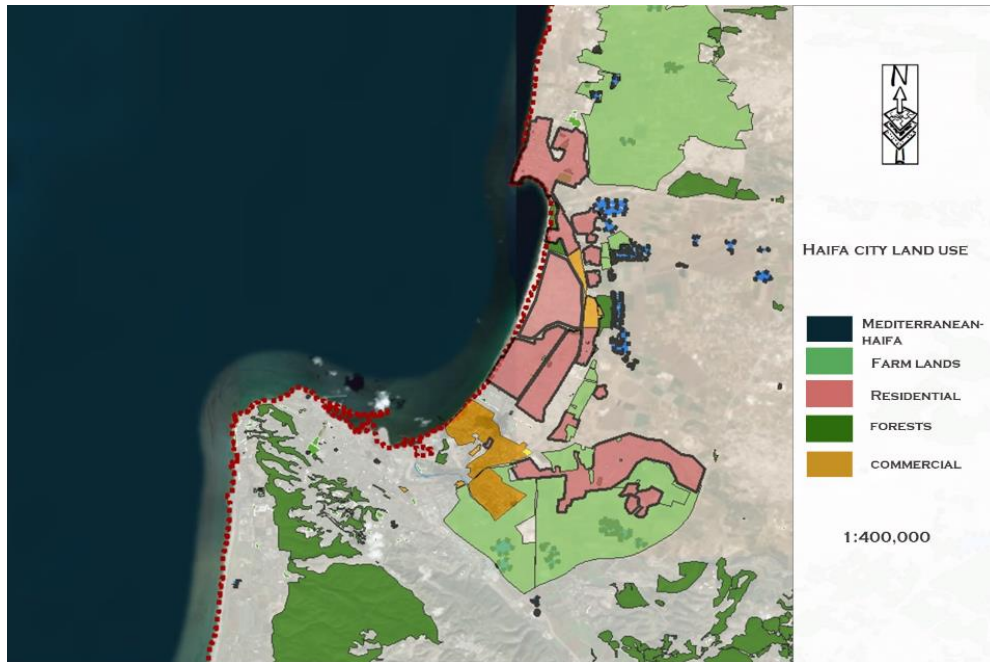


Figure 22 Mediterranean coast (Haifa district) land use map

### 3) Dead sea

Dead sea is the second big water surface in the country, and development in along it is rare, as long as it's a seismic dangerous area in some locations, and mainly used for salt industry. Which increases its potential for such a development.

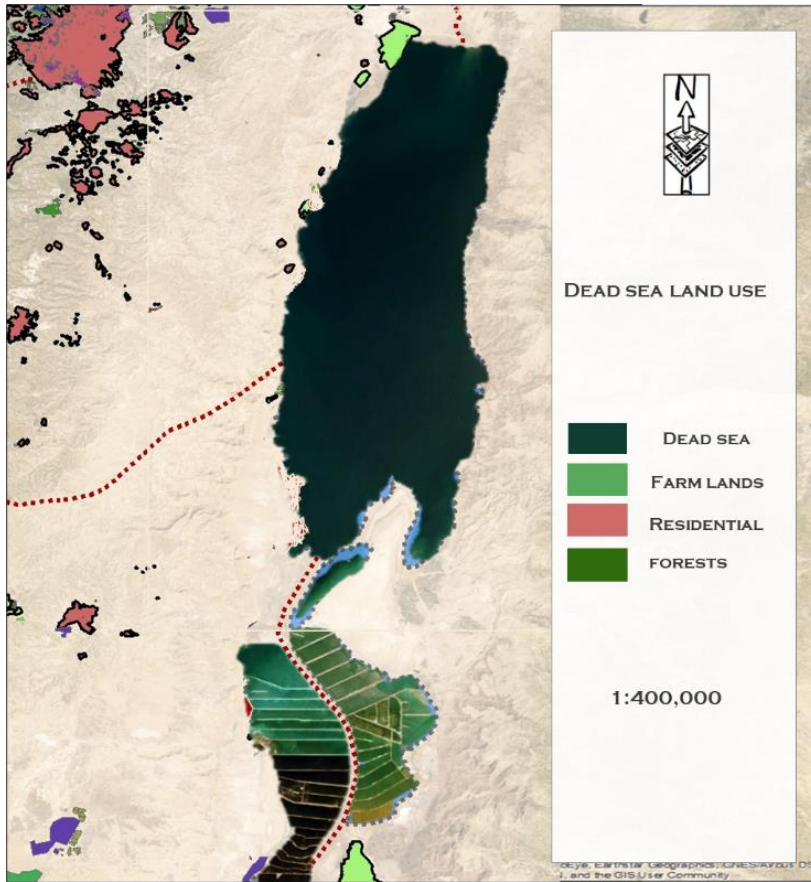


Figure 23 Dead sea land use map.

#### 4) red sea

The red sea lies at the very southern part of Palestine, but it could represent a high effective location for development, and as long as the project is existed as the Mediterranean the waterfront would be need a redevelopment.



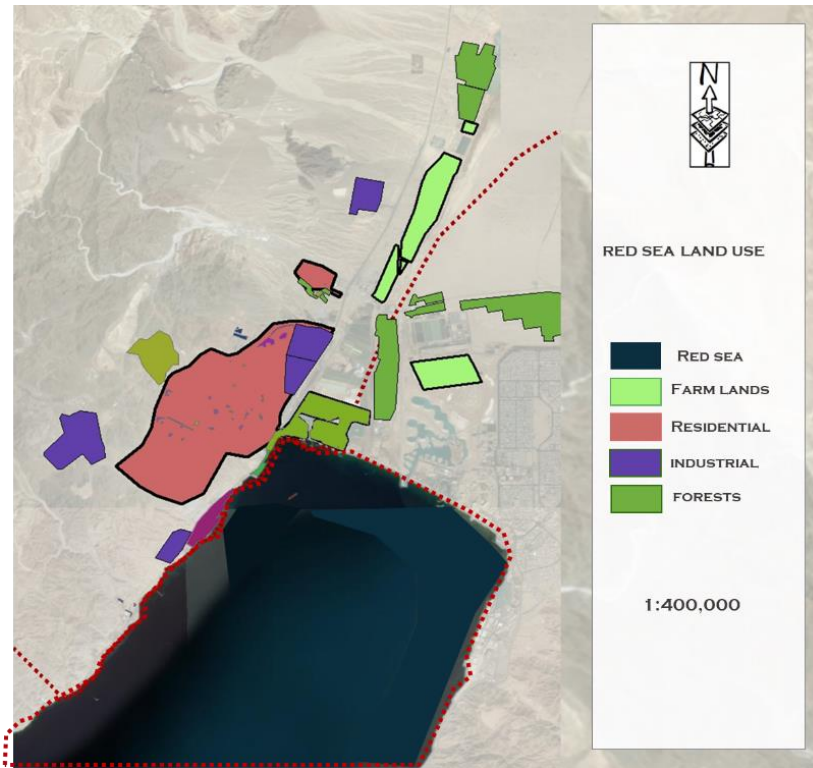


Figure 24 Red sea land use map.

#### 4.2.2 selected location

After the analysis of each location, the project will take place at the dead sea, as long as it needs an urban center and atheistic value faces the sea.

After this step, the land that will be chosen will be identified according to the previous land use map with a specific area defined. The following map shows the sites where the project could be established.

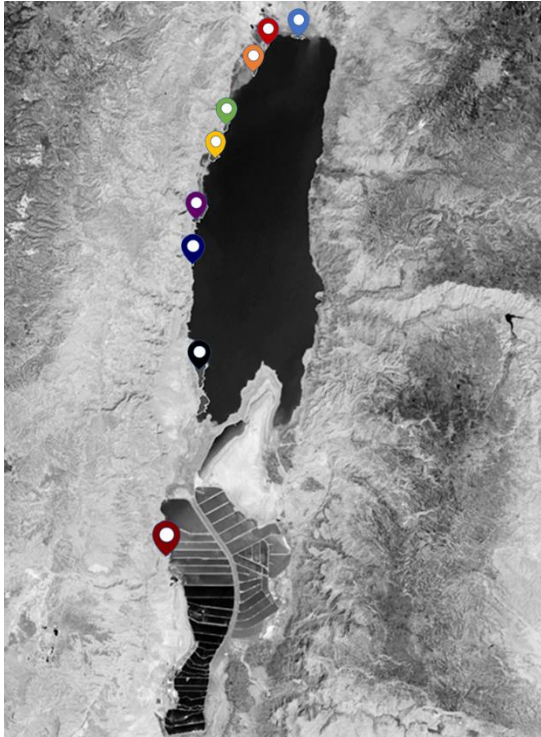
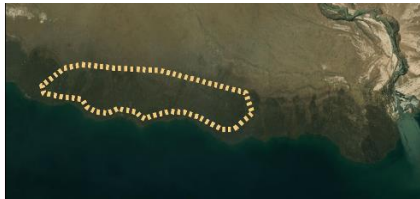


Figure 25: suggested lands at the dead sea.



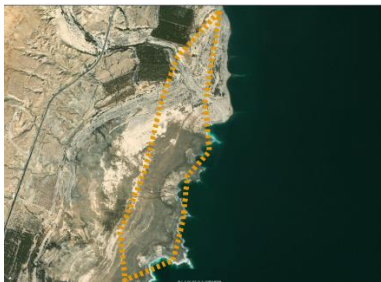
Land 1



Land 2



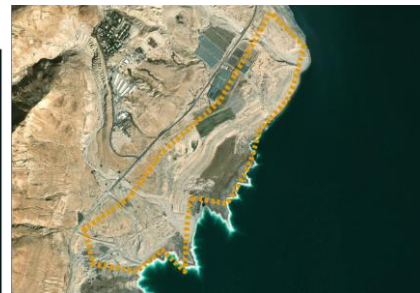
Land 3



Land 4



Land 5



Land 6



Land 7



Land 8



Land 9

After defining the lands, the main and the very important step is to select a site out of those 9 lands. And to select the best location Using the GIS modeling.

### 4.2.3 land suitability mapping

#### 4.2.3.1 Land use suitability analysis

Land use suitability analysis is a process of identifying the most appropriate location and distribution of future land uses. Various layers of spatially referenced, superimposed information about selected characteristics of a region can be analyzed collectively. This provides a cumulative assessment of a location's qualities that is useful in making decisions about its future use, this type of analysis can identify conflicts between certain characteristics associated with individual areas of land and balances those conflicts according to user-defined criteria.

#### 4.2.3.2 How implements the method

This process begins with determining the goals, objectives, sub objectives and the criteria, then adding the needed layers for three land use categories which are (industrial, agriculture and residential) on GIS and then the suitable land for each category, through suitability map of each one, and then weighted overlay the three maps and find the final suitability map for the three categories, to determine where the conflict between them happen.



Figure 26 land suitability method

4.2.3.3 criteria were set to be able to select the best land by the GIS modeling.

- Locations far from the sinkholes along the dead sea area
- Far from Salt location areas where salt is compacted underground layers based on seismic refraction surveys.
- Far from the active faults locations along the dead sea.
- Not at the flood area domain according to the climate situations.
- The economic situation for the area that could be having physical development at.
- Far from Salt location areas where salt is compacted underground layers based on seismic refraction surveys.
- Not in the flood area domain according to the climate situations.
- The economic situation for the area that could be having physical development at.
- Suitable soil type for construction and infrastructure.
- At a suitable seismic zone to avoid risks.
- Away from high agricultural value and farmlands.
- Studying geological values for the area, and chose best geological properties for construction.

- Studying geological values for the area, and chose best geological properties for construction.
- Suitable Slope and topography.

#### 4.2.3.4 layers were selected to be examined

- Sinkholes: are pits in the ground that form in areas where water gathers without external drainage, according to the U.S. Geological Survey. As water drains below ground, it can dissolve subterranean caverns, particularly in areas where the bedrock is made of water-soluble evaporate rocks such as salt or gypsum or of carbonate rocks such as limestone or dolomite.
- Salt borders: according to the high concentration of salt in the dead sea, the salt forms a solid border on some beaches.

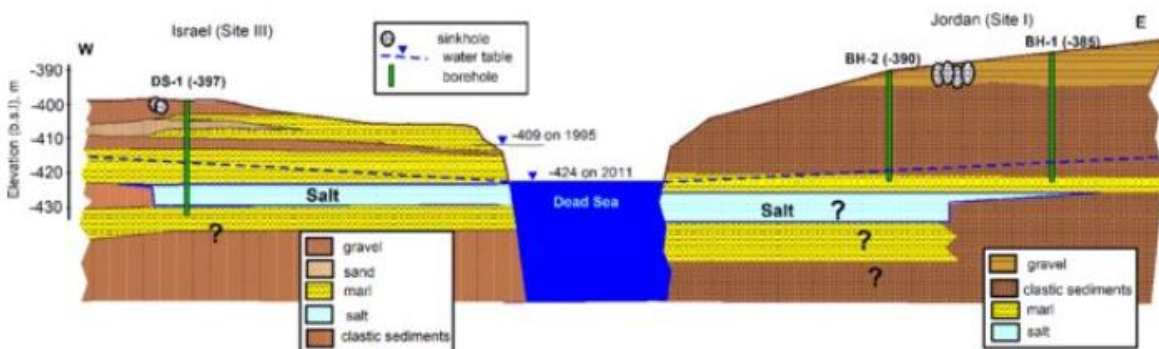


Figure 27: salt borders.

- Faults: The fault system forms a zone of left lateral displacement, signifying the relative motions of the two plates. Both plates are moving in a general north-northeast direction, but the Arabian Plate is moving faster, resulting in the observed left lateral motions along the fault of approximately 107 km. therefore it's very important to be aware to be as far as possible from these faults.

- Floods area: as it is like any other water surface, dead sea in some locations has a potential of floods.
- Economic situation: according to the faults system, some locations would increase the costs of the infrastructure in that zone.
- Soil: types of soil are very important to determine as long as some locations could be hardly used for development.
- Seismic zone: the zone in the dead sea is Zone3, which is a dangerous seismic zone.
- Agricultural value: so, the location won't be constructed on a high agricultural value.
- Geology: geology layer is important to select the suitable site for development.
- Recorded dead sea earthquakes: the dead sea in the recent years has been recording different geological movements, mostly concentrated in the areas where the plates aren't stable, therefore it's essential to locate them.
- Topography: to select the land with the least slope ratio.

4.2.3.5 each criterion has its own weight to be measured with according to its importance in the selection process, represented in the following table.

<b>Criteria</b>	<b>Layers</b>	<b>Score</b>		<b>Weight</b>
Locations far from the sinkholes along the dead sea area	sinkholes	<b>Classification</b>	<b>Score (1-5)</b>	15
		0-500	1	
		500-1000	2	
		1000-1500	3	
		1500-2000	4	
		> 2000	5	
Far from Salt location areas where salt is compacted underground layers based on seismic refraction surveys Figure1	Salt borders	<b>Classification</b>	<b>Score (1-5)</b>	12
		0-1000	1	
		1000-2000	2	
		2000-3000	3	
		3000-4000	4	
		> 4000	5	
Far from the active faults locations along the dead sea	Faults	<b>Classification</b>	<b>Score (1-5)</b>	15
		0-500	1	
		500-1000	2	
		1000-1500	3	
		1500-2000	4	
		> 2000	5	

Not at the flood area domain according to the climate situations	Floods area	<b>Classification</b>	<b>Score (1-5)</b>	5
		0-500	1	
		500-1000	2	
		1000-1500	3	
		1500-2000	4	
		> 2000	5	
The economic situation for the area that could be having physical development at	Economic situation	<b>Classification</b>	<b>Score (1-5)</b>	12
		High value	2	
		Low value	4	
Suitable soil type for construction and infrastructure	Soil	<b>Classification</b>	<b>Score (1-5)</b>	5
		Regosols	2	
		Bare rocks	4	
At a suitable seismic zone to avoid risks	seismic zone	<b>Classification</b>	<b>Score (1-5)</b>	10
		Zone3	1	
		Zone2B	3	
		Zone2A	5	



Away from high agricultural value and farmlands	Agricultural value	<b>Classification</b>	<b>Score (1-5)</b>	5
		High value	1	
		Moderate value	3	
		Low value	5	
Studying geological values for the area, and chose best geological properties for construction	Geology	<b>Classification</b>	<b>Score (1-5)</b>	8
		Turonian	4	
		Cenomanian	3	
		Senonian	3	
		Oligocene-Miocene-Pliocene	2	
		> Quaternary	5	
Suitable distance away from Recorded dead sea earthquakes	Recorded dead sea earthquakes	<b>Classification</b>	<b>Score (1-5)</b>	8
		0-1000	1	
		1000-2000	2	
		2000-3000	3	
		3000-4000	4	
		> 4000	5	
Suitable Slope and topography	Contour lines	<b>Classification</b>	<b>Score (1-5)</b>	5
		0-50	5	
		50-100	4	

		100-150	3
		150-200	2
		> 250	1

Table 3: the criteria and the layers used.

#### 4.2.3.6 Mapping the layers.

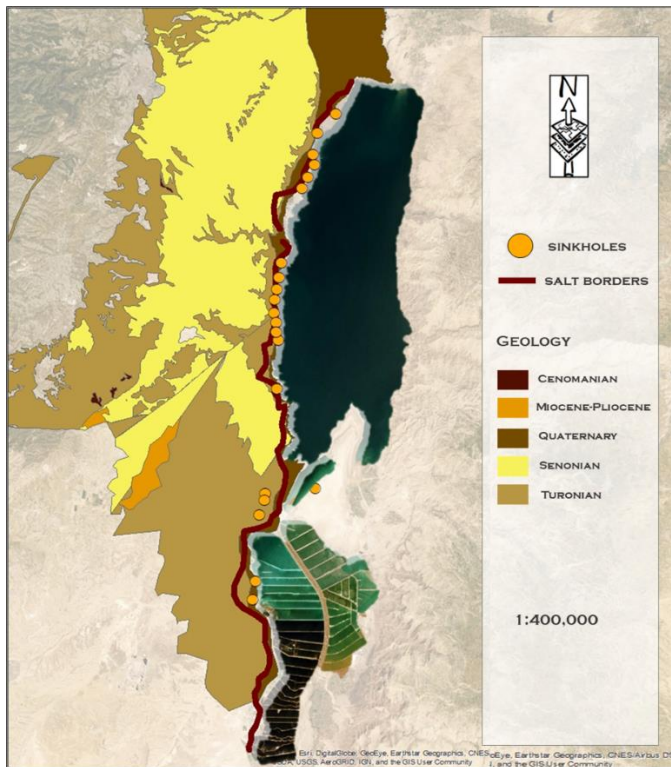


Figure 28 mapping layers

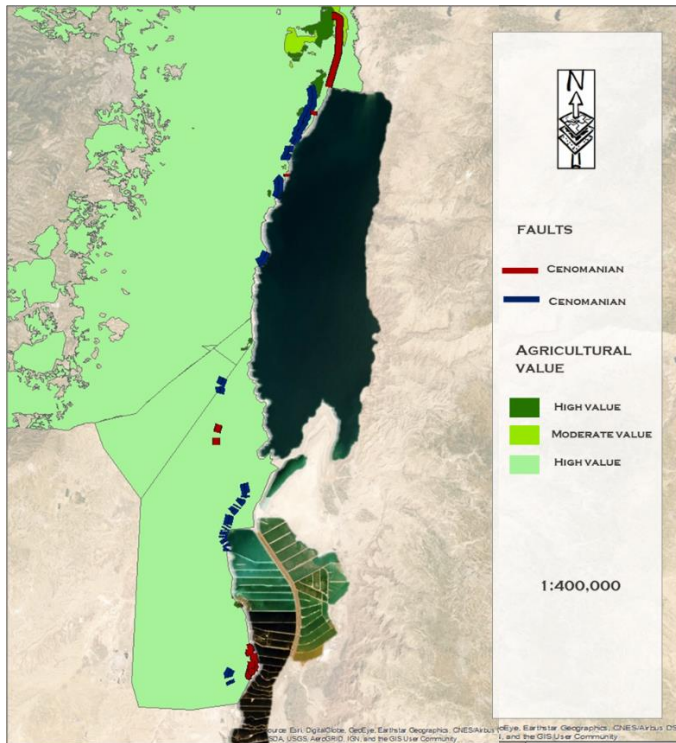


Figure 29 mapping layers

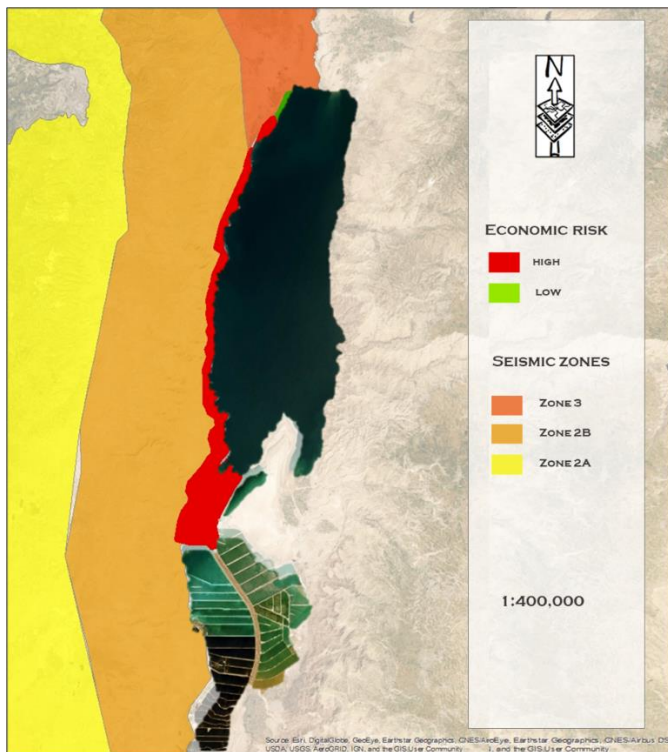


Figure 30 mapping layers

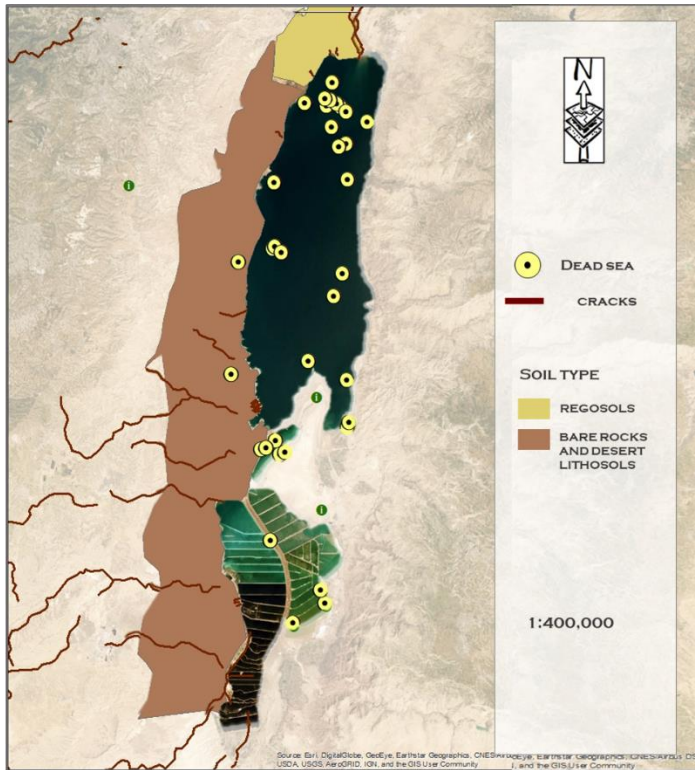


Figure 31 mapping layers

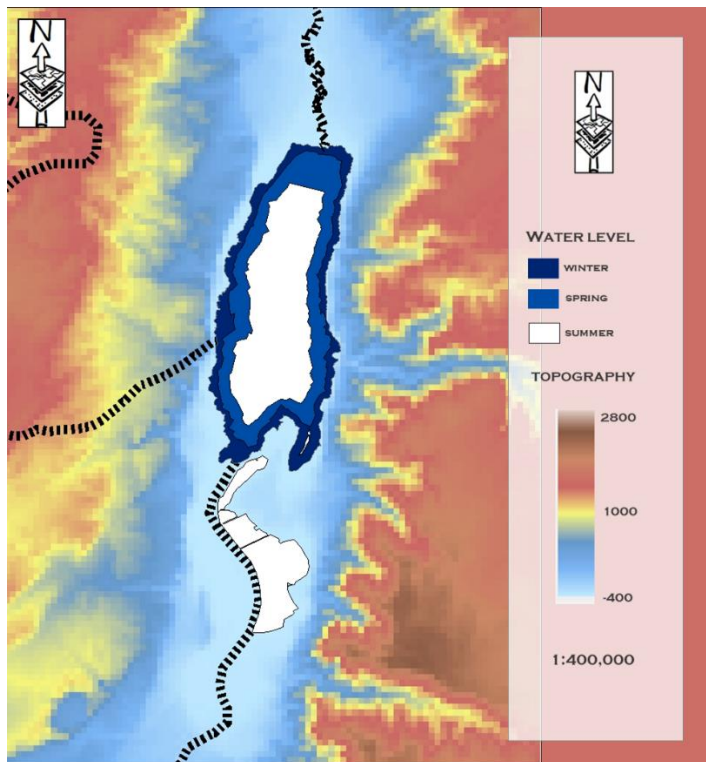


Figure 32 mapping layers

### 4.2.3.7 GIS modeling

Gathering all these layers and analyze them using the GIS software.

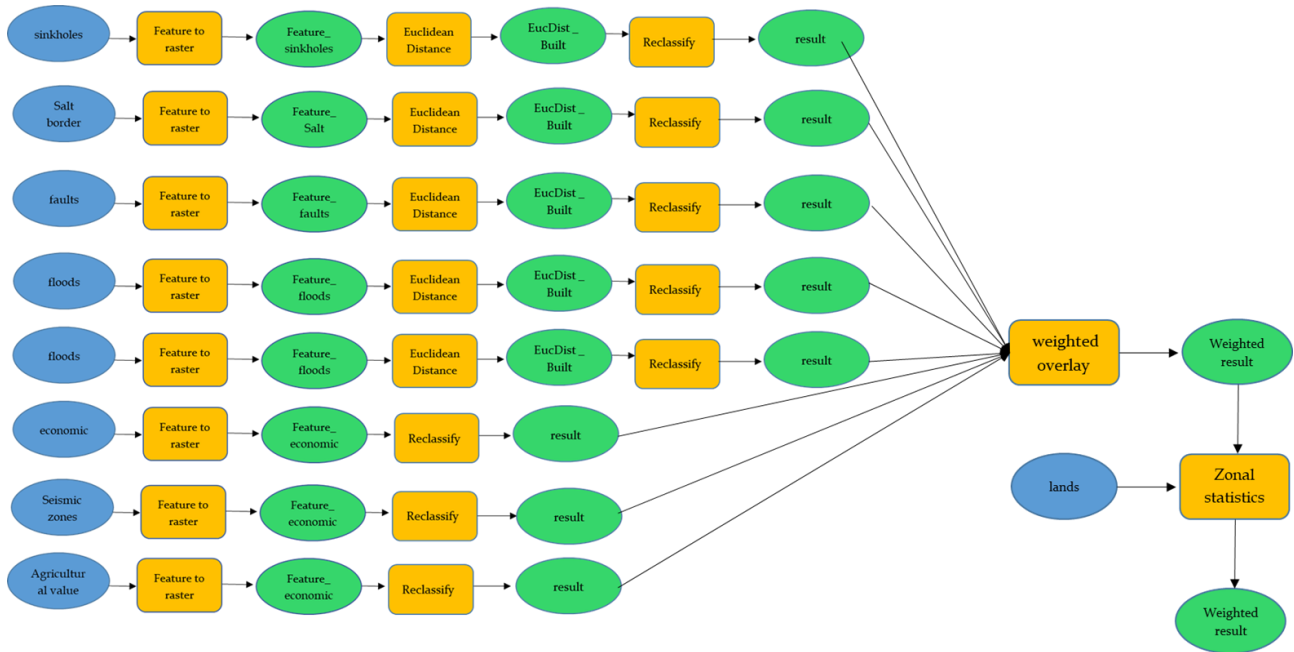


Figure 33: GIS model

Each tool is used with the same weights as mentioned in the table, by classifying each layer into distances or types, which is the most suitable will get the height score, for example the sinkholes layer, Euclidean distance tool was used to classify the distances into 5 classifications, as far as you are from the sinkholes its better.

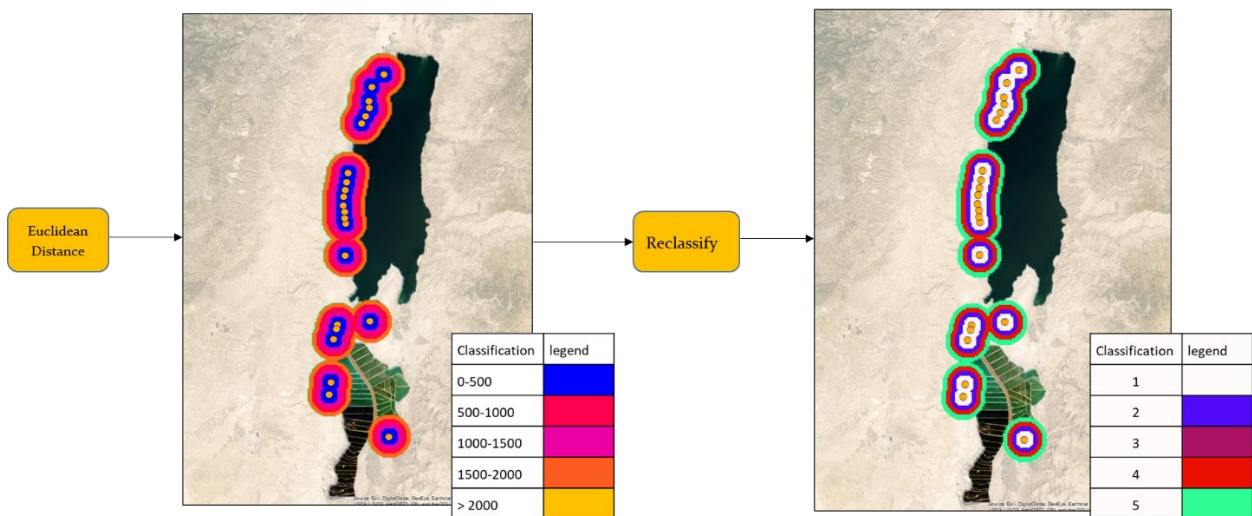


Figure 34 GIS tools

Finally, and after classifying each layer, weighted overlay calculates the final result and reflects it spatially on the map, the following figure shows the result, and the scores where the highest are more potentially suitable. it shows different raster cells each cell has a value of the five scores were calculated in the model forming areas with the five scores.

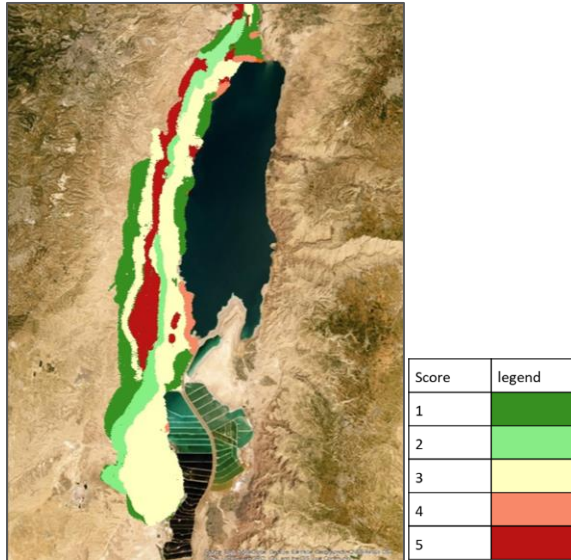


Figure 35 weighted overlay spatial map.

Next step is to overlap this map with the 9 lands were chosen, overlapping both layers, we will get the final result which is lands being classified by high efficiency potentials.

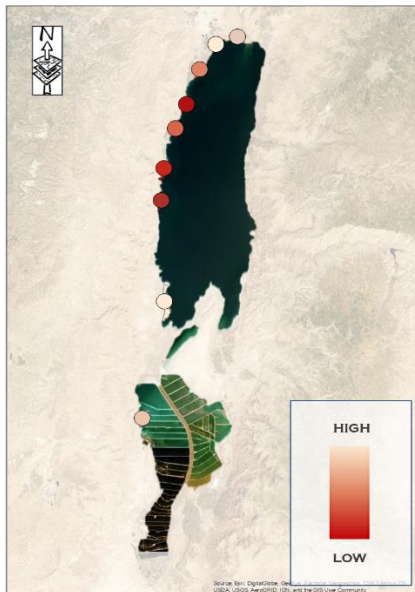


Figure 36 final result

By this process we can find that the second land is the land to be the best for development.

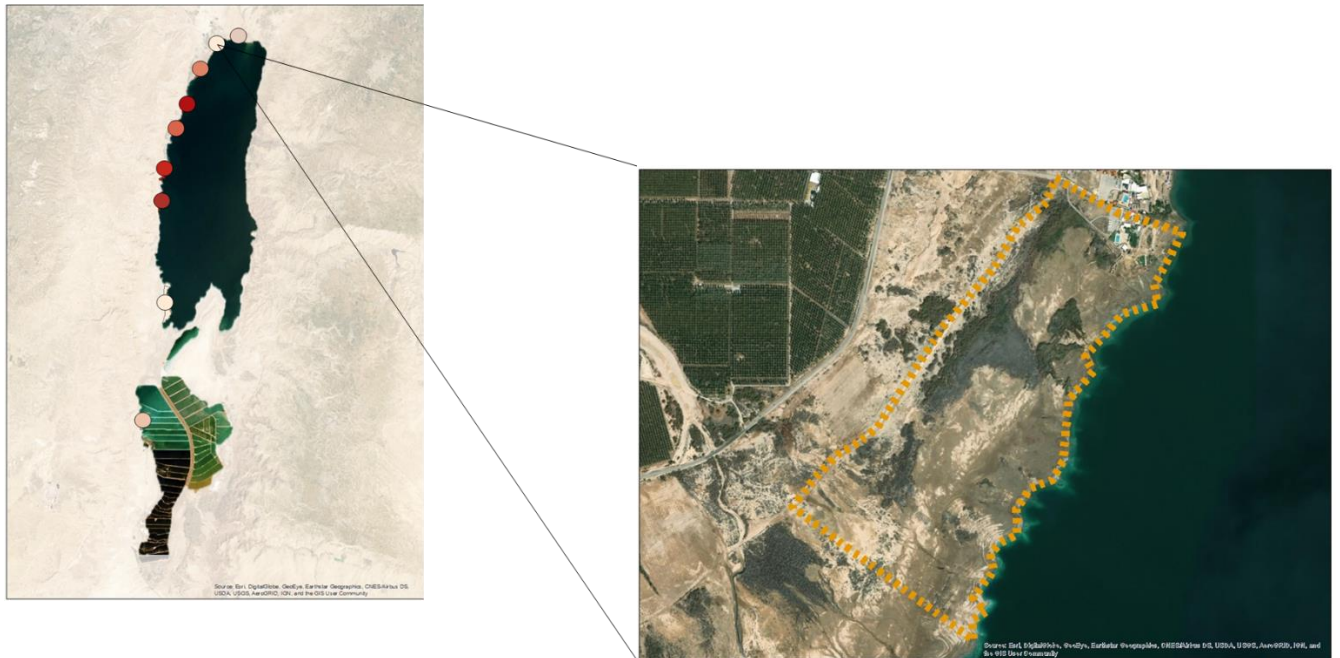


Figure 37 chosen land.

#### 4.2.4 selected land analysis

After figuring the land and after the technical process of analysis, the best land for the waterfront development has been chosen, and the next step is to analyze the proprieties of this land.

##### 1) Soil type.

Soil type is a main indicator to define the suitability of the land and a main factor in the analysis process. The following map shows the soil type which is Regosols, and it's a kind of soil that contents of gravel and sand, and it's a good soil type for construction.



Figure 38 soil type map.

## 2) Seismicity

As mentioned before in the site selection and analysis, the zone of the land is Zone3 and it's a dangerous zone, in this case a specific construction type and infrastructure that could be resilience enough for the project has to be considered.

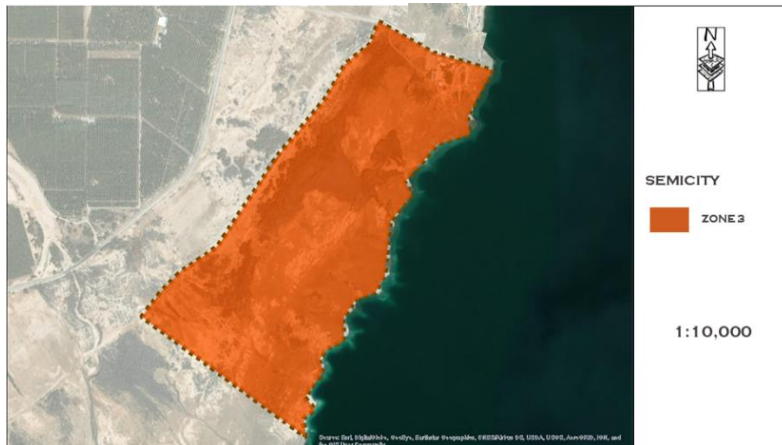


Figure 39 seismicity analysis.

## 3) agricultural value

The value of the agricultural lands is a restricted area from development, and in the land the value is low, which is a good indicator for development.





Figure 40 agricultural value.

#### 4) Geology

The geology in Palestine differs from zone to a zone, and to figure the suitability for a specific type of geology it was essential to understand the history of it, and the type of geology in the site is Quaternary, and according to the resources for this type, we figure that its fine for development.

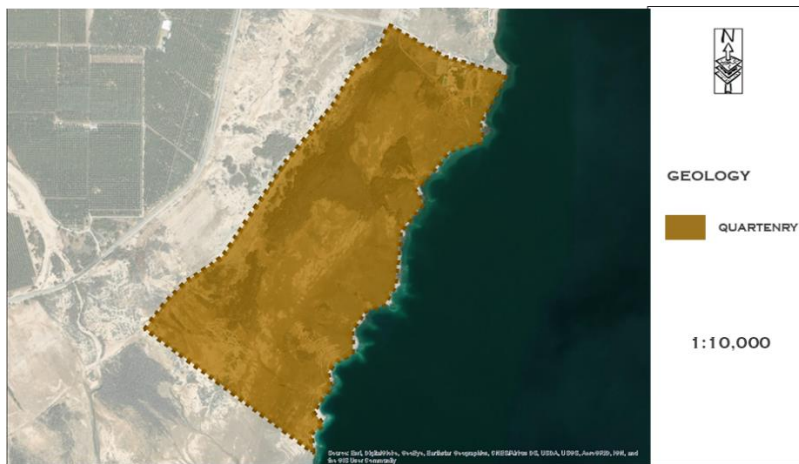


Figure 41 Geology analysis map.

## 5) Topography

The topography in the dead sea area is the opposite of it in any coast, because its actually lower than the sea surface. But in general, for the site, the land is almost flat with a low slope. As long as there is only two contour lines passes by the land.

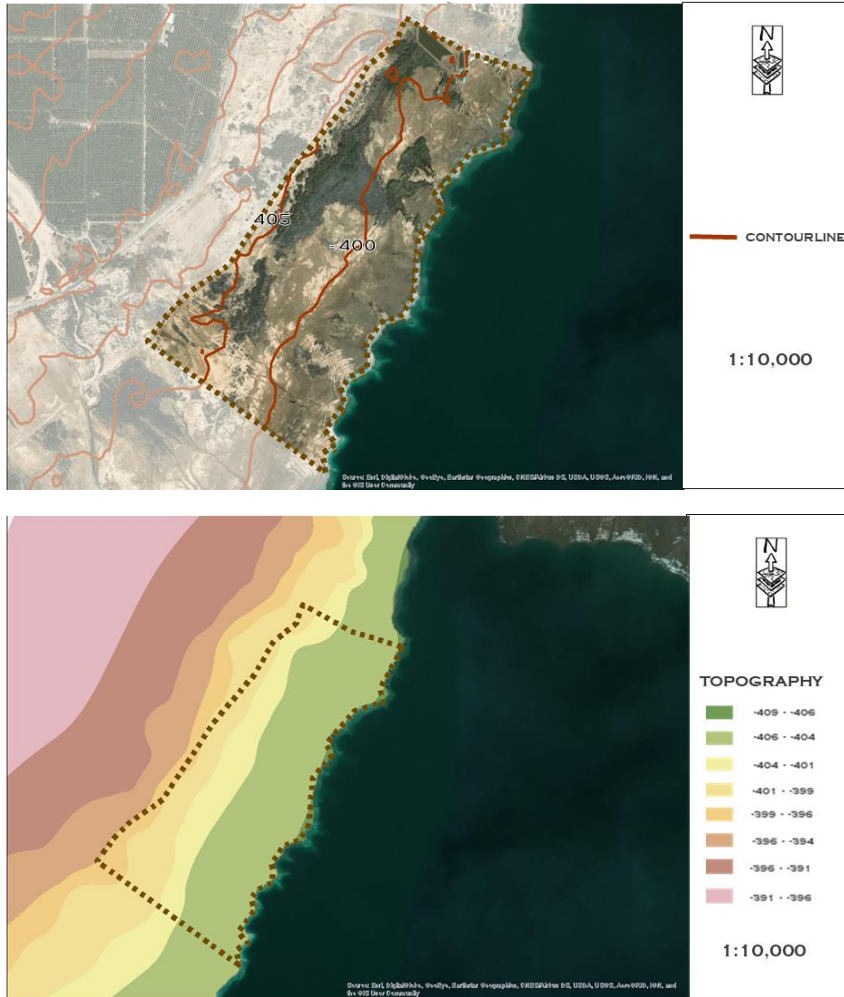


Figure 42 topography and contour maps.

## 6) Shade and shadow, and aspect analysis

The shade and shadow in the land is affected by the topography and the location of the site, and it was determined using GIS.

The aspect identifies the downslope direction of the maximum rate of change in value from each cell to its neighbors.

Aspect can be thought of as the slope direction. The values of the output raster will be the compass direction of the aspect

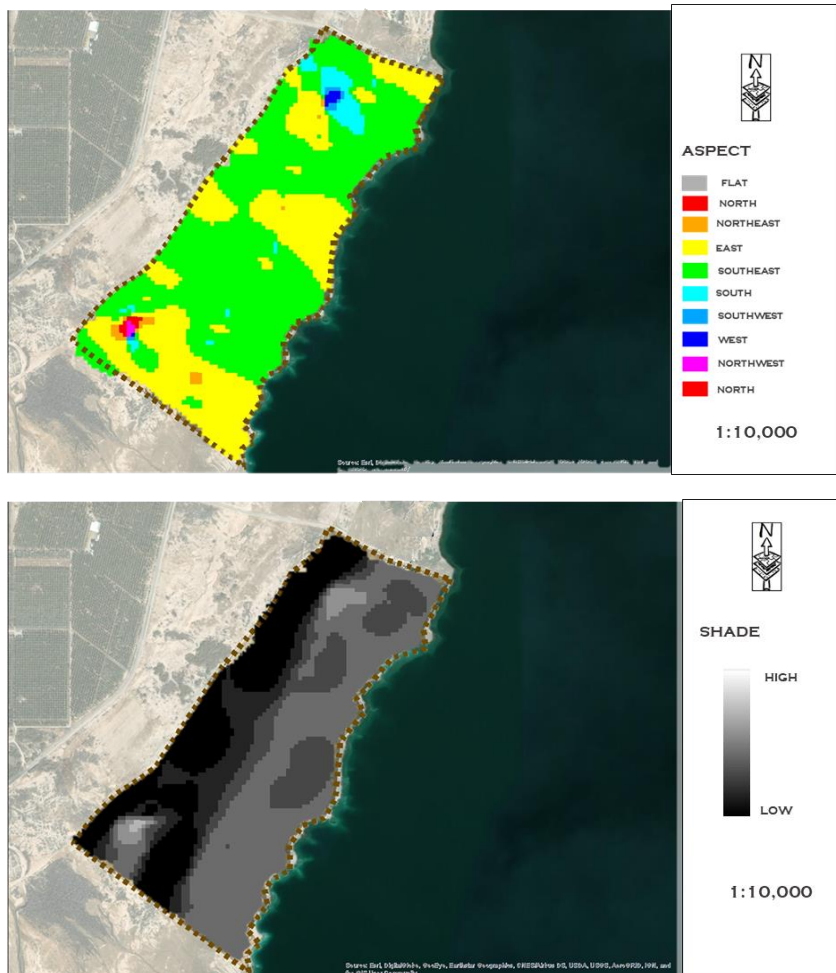


Figure 43 topography and contour maps.

#### 4.2.5 weather analysis.

Weather and its analysis is very important in any project analysis, it defines the main function and the orientation of the project, especially in the projects that has to be constructed and designed. And the weather in the land was identified as the following.

1) solar radiation is radiant energy emitted by the sun from a nuclear fusion reaction that creates electromagnetic energy.

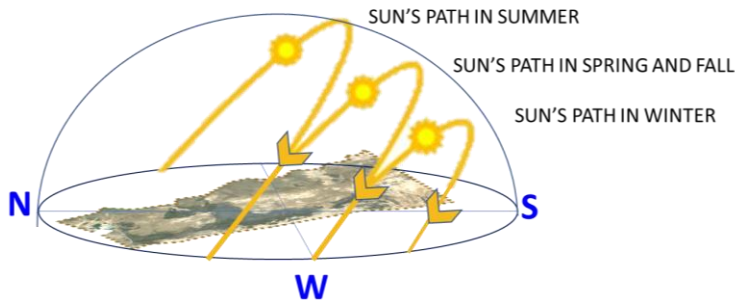
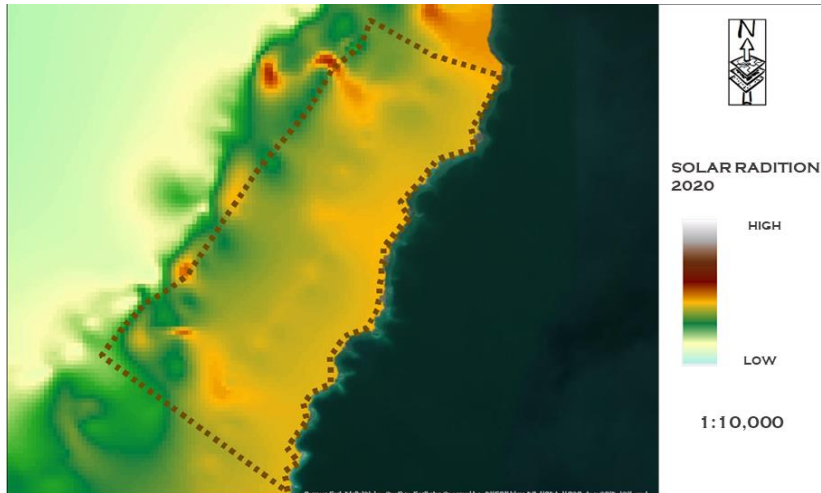


Figure 44 solar radiation map, and the sun path.

2) temperature.

Will be showed in two systems the first one, is by the annual temperature per day and night.

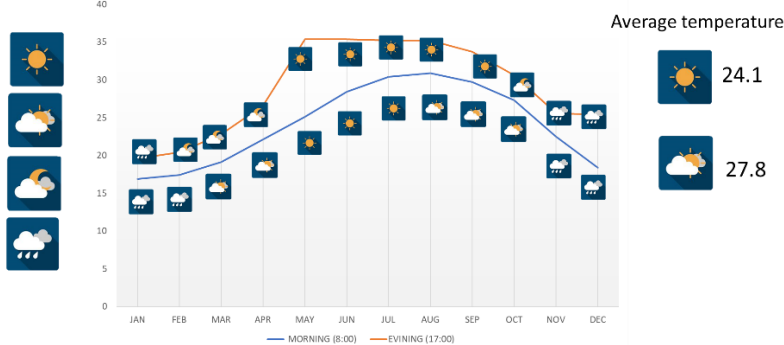


Figure 45 temperature morning/night.

The second system is to measure it by the annual maximum and minimum temperature degree.



Figure 46 temperature Max/Min degree.

### 3) wind analysis

Mainly the wind at the site is northern wind with a moderate speed, dry and hot.

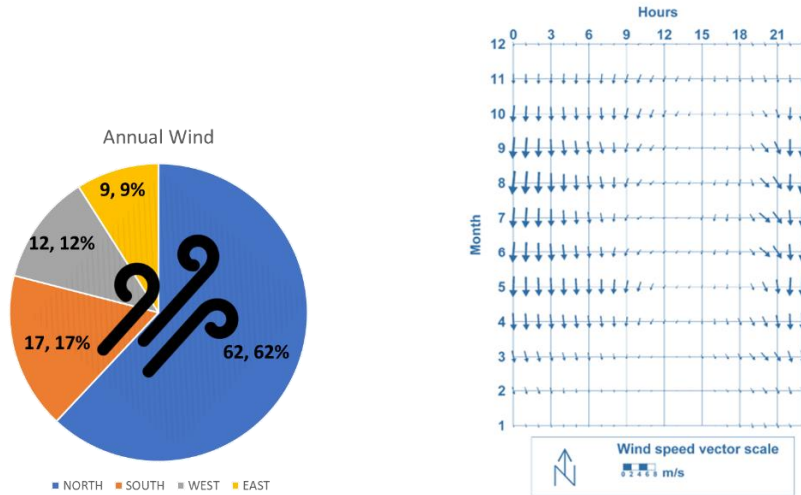


Figure 47 Wind analysis

### 4) weather analysis sketch

The following sketch shows a summarized analysis for the weather indicators at the site.

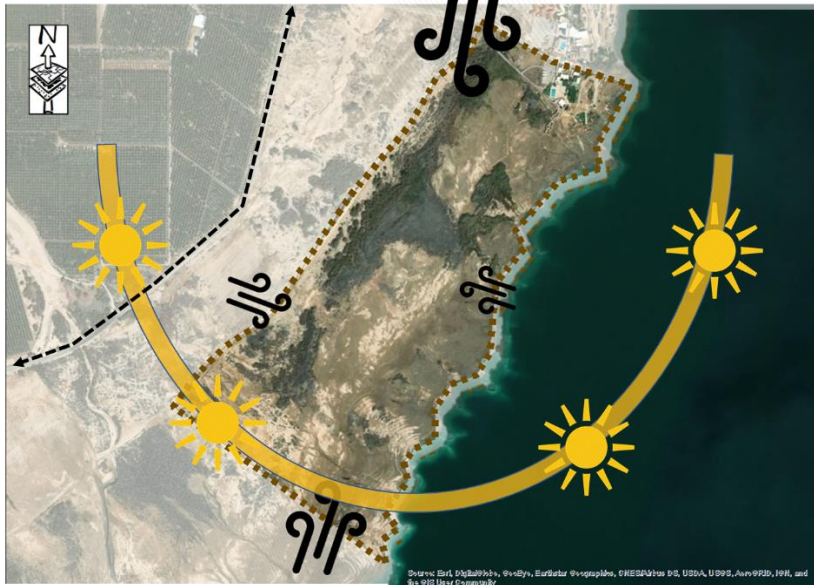


Figure 45: weather sketch.

#### 4.2.6 Site accessibility

The site accessibility has been determined in two scales, the first scale is the local one, that shows the site and the roads surrounds it.

Which shows in the following map that the site is parallel to the regional road 90, and it's a very important regional road in Palestine.



Figure 48: local accessibility.

Sub regional accessibility shows the connection between the site and the surrounded urban center which shows the following map.

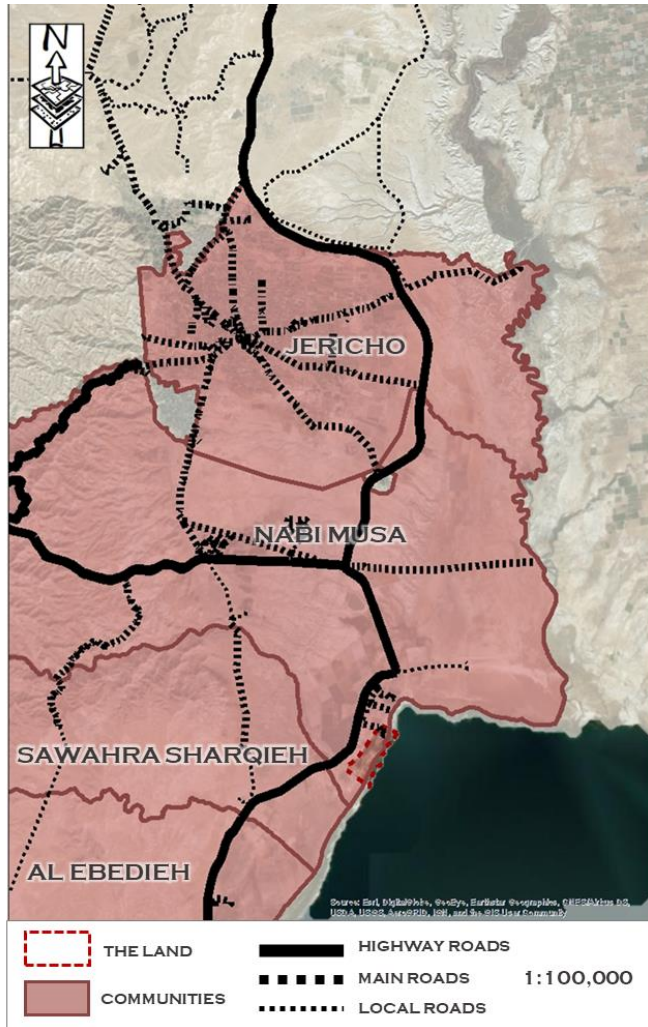


Figure 49 sub-regional accessibility.

The regional accessibility will be discussed into two dimensions.

1) the road networks along Palestine, and the leading streets to the project, in the following figures we can see the regional road 90 with the min regional roads in Palestine, and how it leads to the dead sea and connects its northern and southern parts, and the site.

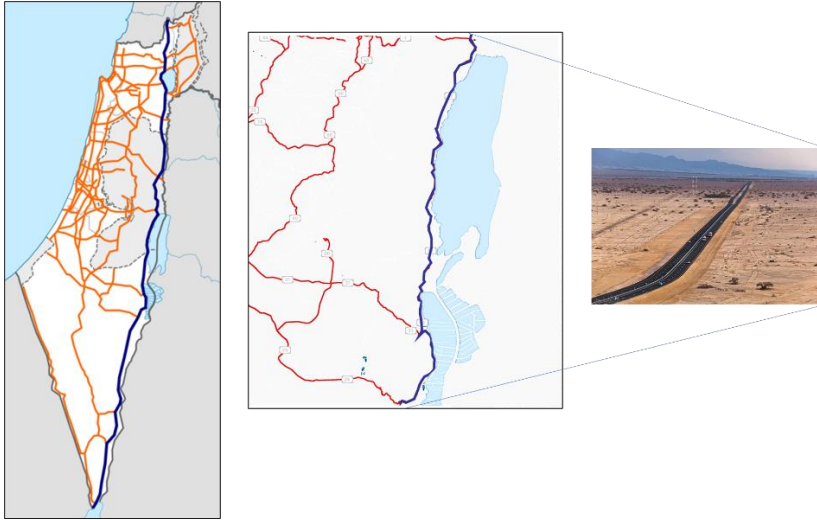


Figure 50 regional road 90.

2) the accesses points to Palestine in general, and the west bank in particular.

Studying this indicator will increasingly lead to a functional analysis for the accessibility to the site, and forms a vision for the connection points between Palestine and the world.

The following map shows the Cross points to and from the West Bank to the neighbor countries such as Jordan and Egypt. With this information we can find out how the site would be redheaded by foreign visitors as long as it's a tourism\residential project

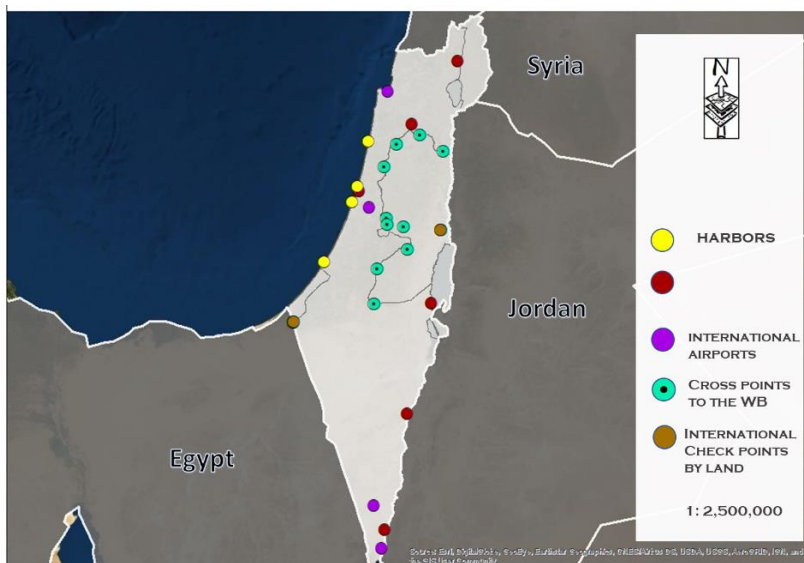


Figure 51 access points with the world and accessibility.



And for the access points between historical Palestine and the west bank are also been analyzed with the main roads leading to the site.

The map shows the main routes that connects the WB cities and their connections with the route 90 along Jericho province and dead sea. According to that we can ensure that the connectivity for the roads that can leads to the site is good

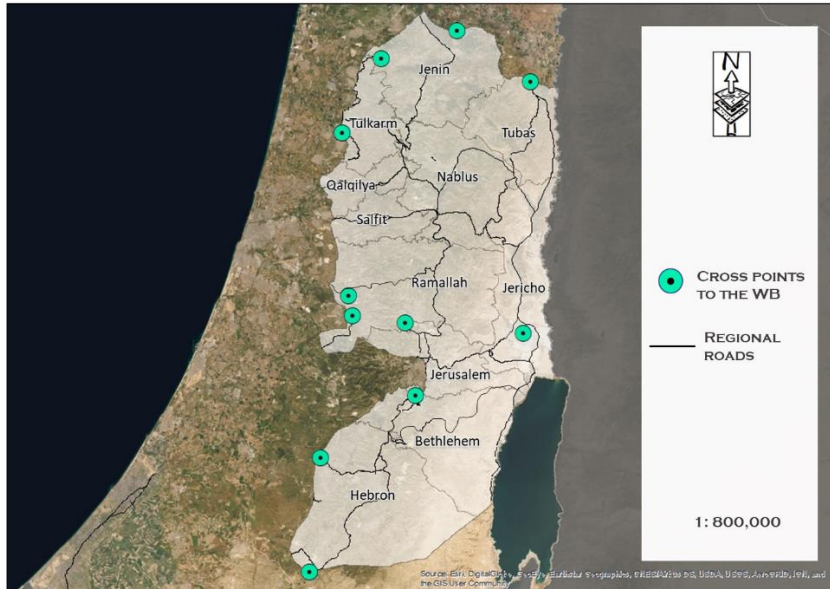


Figure 52 access points with the west bank and accessibility.

#### 4.2.7 Tourism analysis

As long as the project will be tourism\ residential oriented, it was necessary to analyze the tourism situation in Palestine. Mainly by the tourism indicators and statistics and the tourism sites around the project to increase its value.

##### 4.2.7.1 nature and heritage

The following map shows the natural factors around the project and their affect to the project. And increases its tourism value.

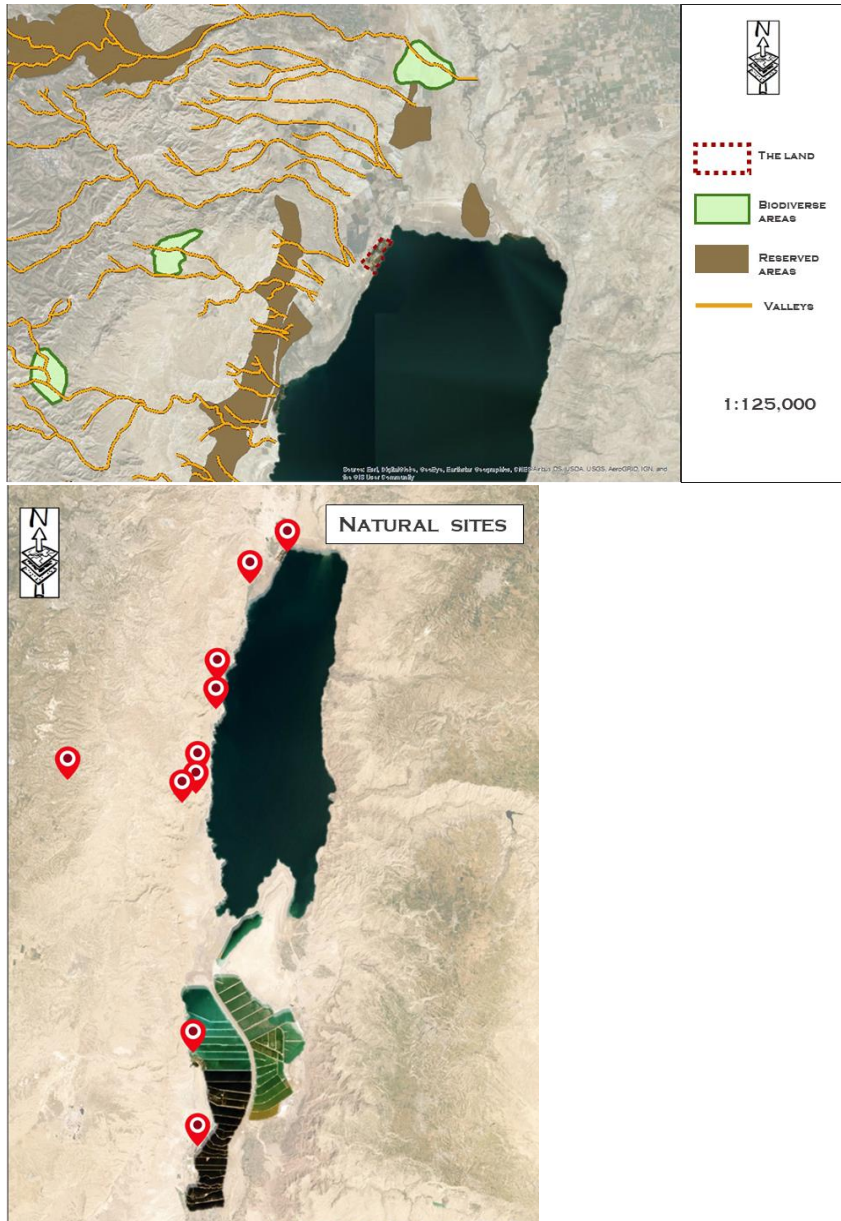


Figure 53 natural analysis. Heritage locations at the dead sea

#### 4.2.7.2 Tourism in Palestine, locally

In this perspective the local tourism indicators will be analyzed to figure the tourism situation in Palestine.

And the following indicators will be determined.

1) Indicators for local trips in Palestine, the following chart shows the percentage of trips and how they've been organized, and there is a 27.3% of the Palestinians organize and go to trips that exceeds one day annually. Which is a good number and will increase with the increase of the tourism projects that encourages this kind of projects.

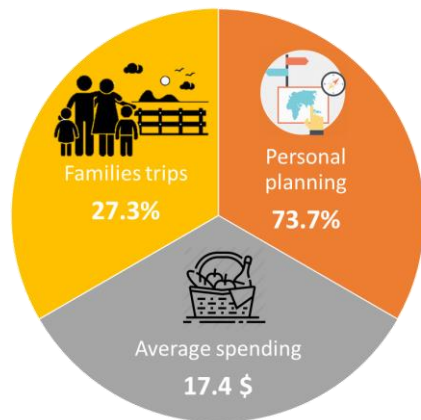


Figure 54 local trips chart.

2) average money spending during a trip by a Palestinian family, which is a very important indicator as long as to find out the suitable prices depending on the wedges of the Palestinians.

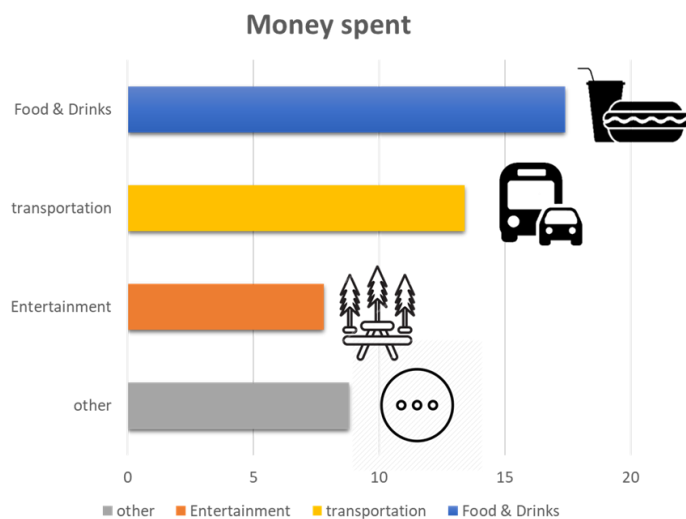


Figure 55 money spent indicators.

#### 4.2.7.3 Tourism in Palestine, regionally

Connecting Palestine with the countries around it and improve the Palestinian connectivity and ensure the tourism in it, mainly by discussing the following indicators.

1) percentage distribution of visitors by length of stay, and its important analysis for the project.

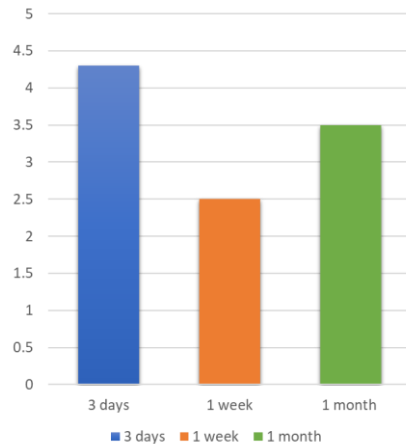


Figure 56 distribution of visitors by length of stay.

2) Average Expenditure of Inbound Visitors by main purpose of recreation and Leisure in 2018 at the dead sea: **1095.6** person in the annually, and this number will highly increase when there is a place for stay and a big project that provides tourist and atheistic values.

#### 4.2.7.4 hotels in Palestine analysis

As long as the project will certainly accommodate a lodging services, it was essential to analyze it in Palestine, the following indicators were examined.

1) Main Indicator of the Inbound Visitors.

- Average Expenditure: 553.6
- Average Length of Stay of Inbound Visitors: 3.8

- Average Length of Stay for the Guests in Hotels: 2.7

## 2) Average Number of Workers in Hotels by Type of Work, Sex and Region During the Third Quarter, 2017

Region	Total			Operation			Administration			No. of Hotels *
	Total	Females	Males	Total	Females	Males	Total	Females	Males	
West Bank	3,293	796	2,497	2,492	530	1,962	801	266	535	142

Table 4: Average Number of Workers in Hotels by Type of Work, Sex.

No. of Hotels	No. of Nights	No. of Guests	No. of Beds	No. of Rooms	bed Occupancy		Room Occupancy	
					%	average	%	average
142	357,263	134,075	17,259	7,863	22.5	3,883.3	25.5	1,486.2

Table 5: Main Indicators for Hotel Activities in 2018

## 3) The effect of tourism activities on the Palestinian economy

Value in USD 1000

Activities	Gross Value Added	No. of Employed Persons	Output	No. of Enterprises	Production input
Restaurants and Beverage serving activities	193,713.5	20,912	356,274.6	7,295	136,880.2
Manufacture and sale of handicrafts and souvenirs	16,390.0	1,313*	24,574.5	479	4,461.6
Creative, arts, other amusement and recreation and entertainment activities	70,300.7*	7,177	99,995.7	2,061	13,072.9
Passenger road transport by scheduled long-distance bus & Renting cars	16,712.6	1,308*	31,894.6	268	8,392.5
Travel agency, tour operator, reservation service and related activities	24,947.0*	1,083	32,004.1*	319	1,193.0
Accommodation and similar establishments activities	83,841.3	3,014	117,078.7	247	24,517.7
Other tourism activities	2,022.2	155*	2,476.8	37	152.7
Total	407,927.3	34,962	664,299.0	10,706	188,670.6

Table 6: Main Indicators tourism activities and economy.

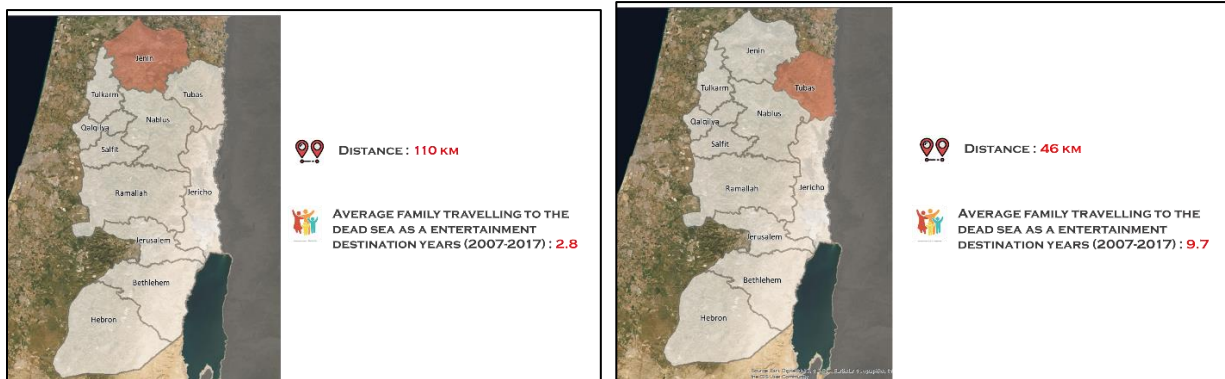
The Palestinian tourism sector has large infrastructure that includes hotels, as it is 250 hotels in the Palestinian territories with a capacity of 10100 hotel rooms, thousands of inns, restaurants, shops selling oriental artifacts and handicrafts.

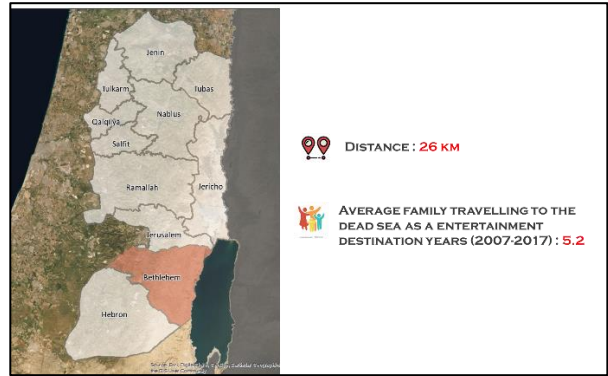
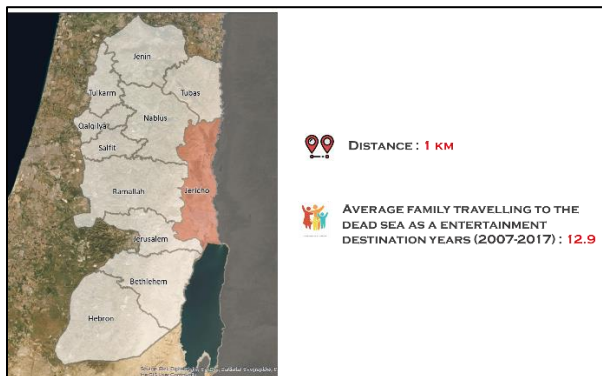
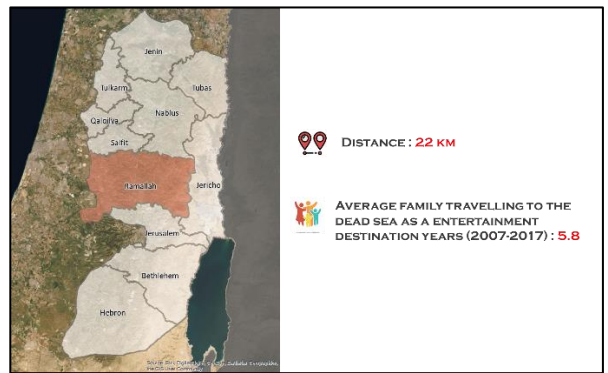
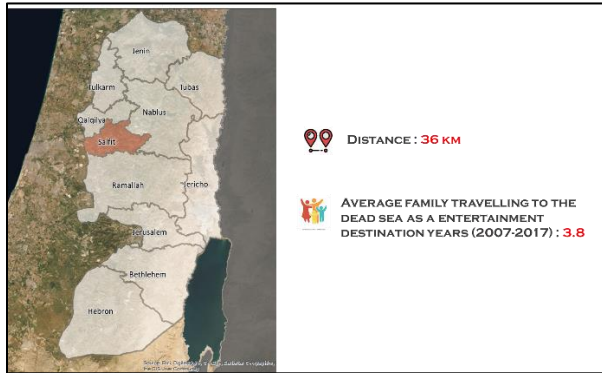
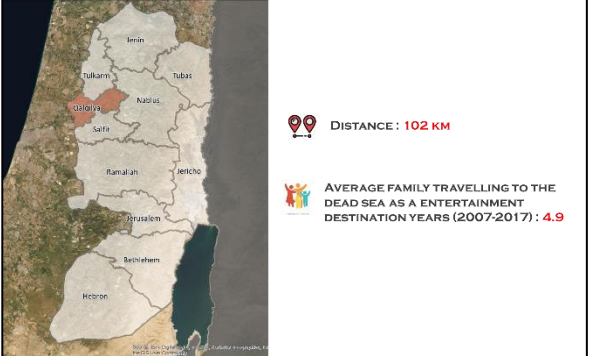
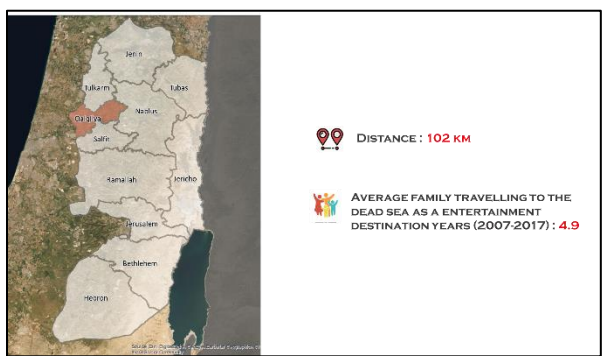
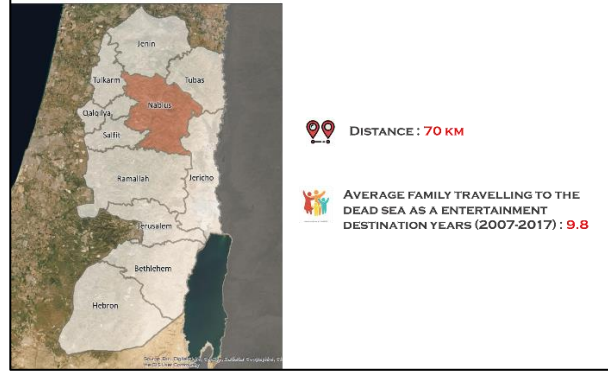
The tourism sector contributes about 15 percent to the local GDP, which amounted to \$ 13.8 billion in 2018, and tourism is an important means of informing tourists about the historical injustice suffered by Palestinians due to the continued Israeli occupation.

The following table shows the indicators of the economic values for the tourism sector and how its very important for the Palestinian economy, therefore its very important to understand how will the project will be increasing this value adding a new urban core

#### 4.2.7.5 The tourism relation between the main cities and the dead sea

To be able to understand and ensure the importance of the project, its necessary to analyze the connection between the site and each Palestinian city and the following maps will show each Palestinian city and the distance for the dead sea, and the percentage of the families from these cities to the dead sea.





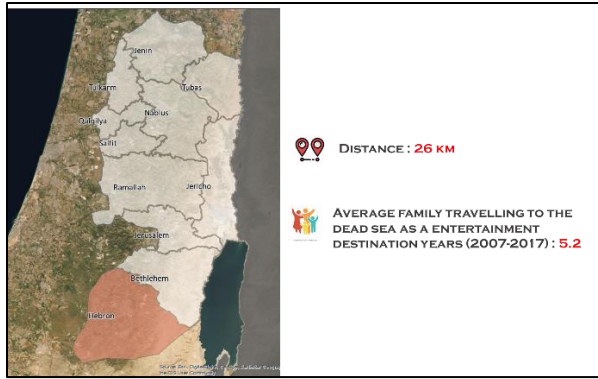


Figure 57 tourism relation between the main cities and the dead sea.

#### 4.2.7.6 Connecting the site with near settlements

Jericho is the closest urban center to the project’s site, where the site could be enforced with the main facilities and services, taking into consideration the tourism value of the city Jericho. Therefore, we had to study Jericho properties as an urban center to support the site

The city of Jericho has already essential services such as health, and educational facilities. Jericho is a main Palestinian tourism center as well, therefore creating a path between it and the site will increase the site’s importance and enhances its value as a new tourism center in Palestine.

The path will be created after a comprehensive analysis for the city.

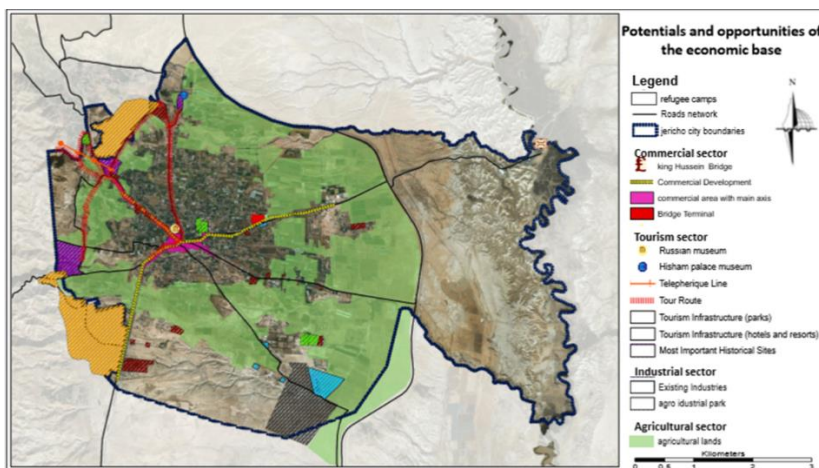


Figure 58 Jericho and the site, source: liwaa mashaqi, 2019



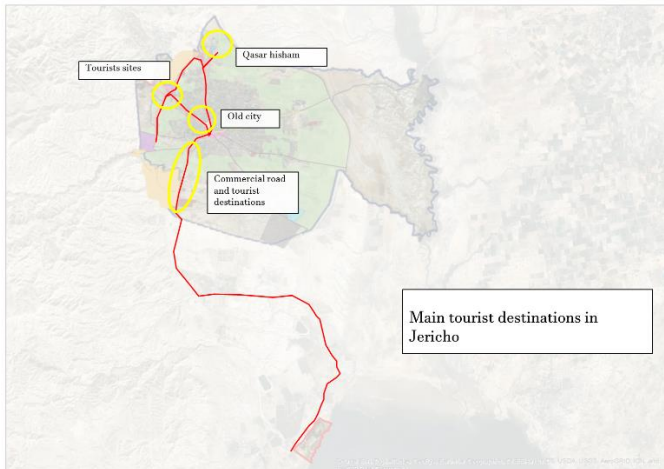
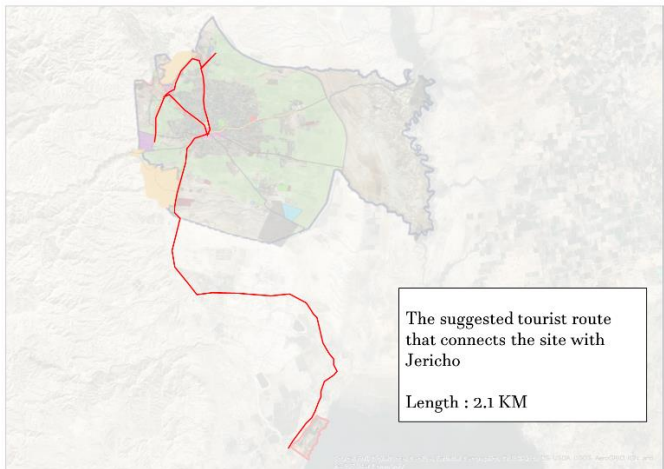
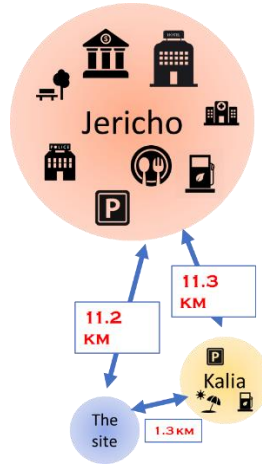
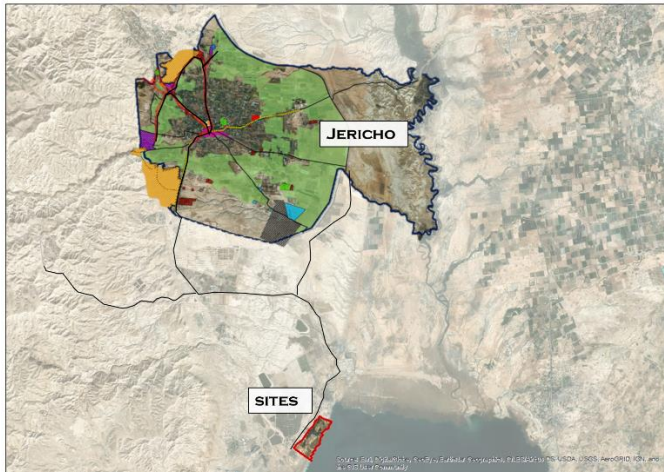


Figure 59 the tourism path between the site and Jericho

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## Chapter 5: Dead Sea Water Front Project planning

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### 5.1 Introduction

The project would provide life-sustaining facilities to accommodate the forecasted growth in air traffic to Palestine and within middle east region.

The client intends to have a new facility at the most effective cost, which shall become a standard for newer class of facilities that would follow this in the nearest future.

The project will be a big scale project creating an urban development center facing the dead sea, as long as there is no any other Palestinian development along any water catchment. The project will be both residential & tourism & recreational function

### 5.2 conceptual design

As for the seashore, it must provide a private beach for each tourist component according to the nature of tourism activities and various practices, as well as the need to provide open beach logic for visitors to the region.

The connection between the elements of different tourist uses should be taken into consideration by means of pedestrian paths and road networks, thus achieving ease of use of the project, as well as achieving the necessary privacy for them.

The coordination of the project site must be taken into consideration in proportion to the climatic nature of the region, the use of local and natural materials, and the best use of public and private spaces.

The project infrastructure works (road networks, freshwater nutrition & electricity & sanitation, etc.) should be appropriate to the nature of the land, area, and global rates.

And in the concept that was created for the dead sea zone, and that mainly contained of hotels zone, villas and chalets, facilities for the residential zones, and the public zone that will contain the main services and facilities.

The connection between the different functions and the zones, and how the project mobility and circulation will serve the function and the idea of the project.



Figure 60 the concept of the project.

The essential criteria for which the design shall satisfy is the creation of facility that's aimed at bringing together waterfront planning, urban and regional planning, and business-site planning, to create a new urban form that is highly competitive, attractive, and sustainable. It is a business planning model aimed to bring clusters of travel-related businesses like tourism, hospitality, shopping.

## 5.2 land use zones.

land use compatibility program protecting coastal projects from encroachment by incompatible land uses. The primary function is to provide technical guidance to customers through advocacy. Requests for assistance continue at an accelerated rate. A large percentage of requests relate to facilitating communication between the waterfront project sponsors and neighboring communities. The program emphasizes bridging communication linkages where gaps exist, and is intended to encourage a cooperative spirit between local governments and airport sponsors to work through.

For the land use zoning that mainly depended on the concept, each zone has been analyzed with the main function it will carry. With the suitable area needed.

### 5.2.1 Educational zone

Contains mainly of the educational facilities which in the project and to be efficiently servant is, the zone will contain of an elementary school, and a geophysics institute serves the area, as long as the dead sea area is a seismic dangerous area.

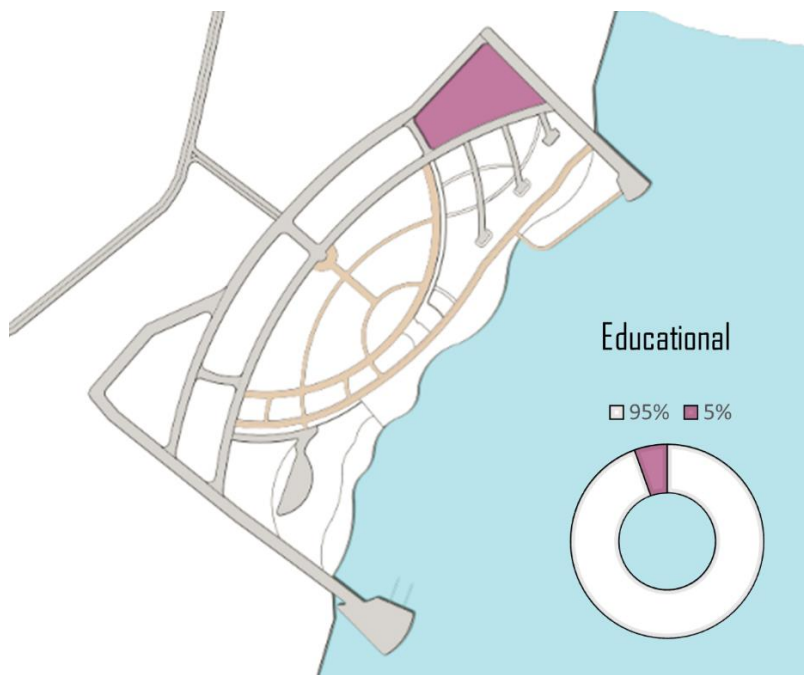


Figure 61 educational use

### 5.2.2 Residential buildings

The zone where the apartments building will be constructed, and because the project is residentially oriented and aims to create an urban center. The zone will have a big capacity with providing all the needed functions, such as the green open areas and entertainment activities.

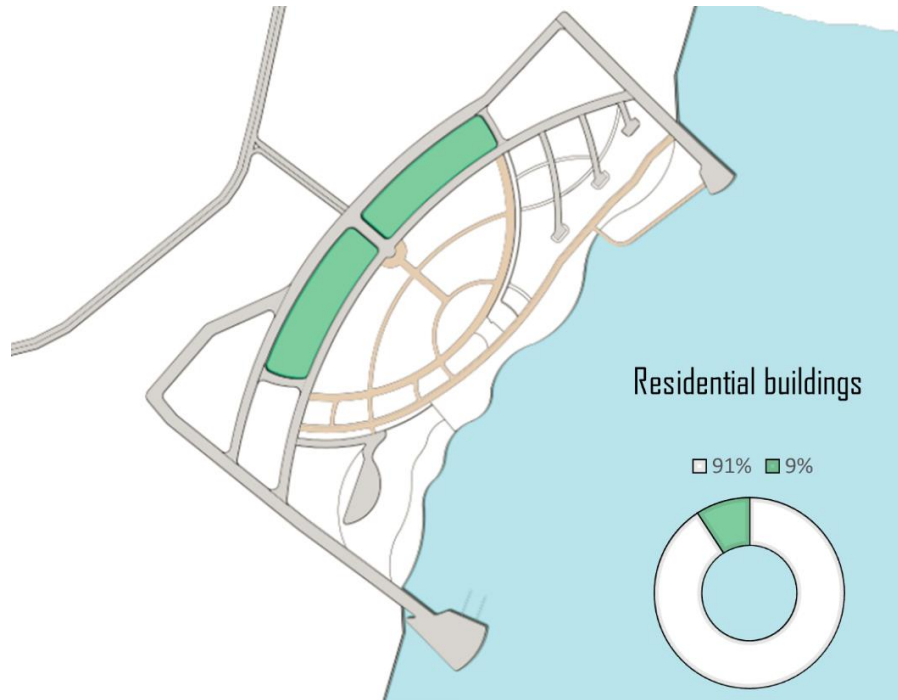


Figure 62 residential buildings use.

### 5.2.3 public commercial center.

The public center is the main and the central core in the project, where it will be having the main functions and central buildings such as the administrivia building, the mall, and the commercial units.

With the open green spaces and kids playgrounds and parks.

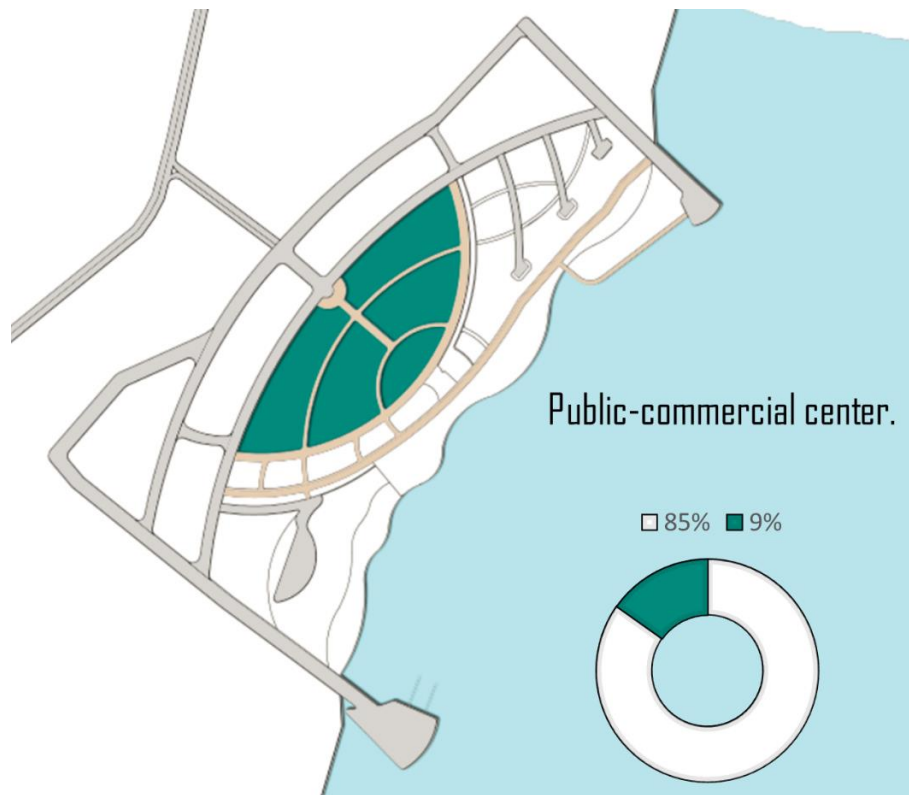


Figure 63 Public commercial center.

#### 5.2.4 Sport activities and gym

To increase and ensure the use of the project as a residential project and a project for entertainment, it needs a sport center as any residential district.

The zone will contain of the sport building and gym, and more than a sport field and a swimming pool.

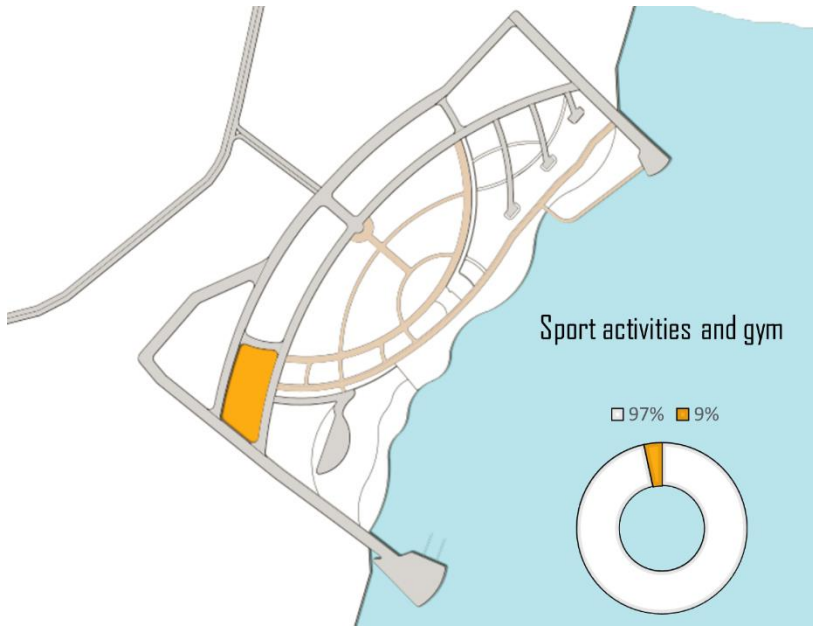


Figure 64 sport center.

### 5.2.5 Hotel area

The hotel area will be facing the beach and will be having its own beach, the hotel will be 12 floors and provided with the green needed areas and pools.

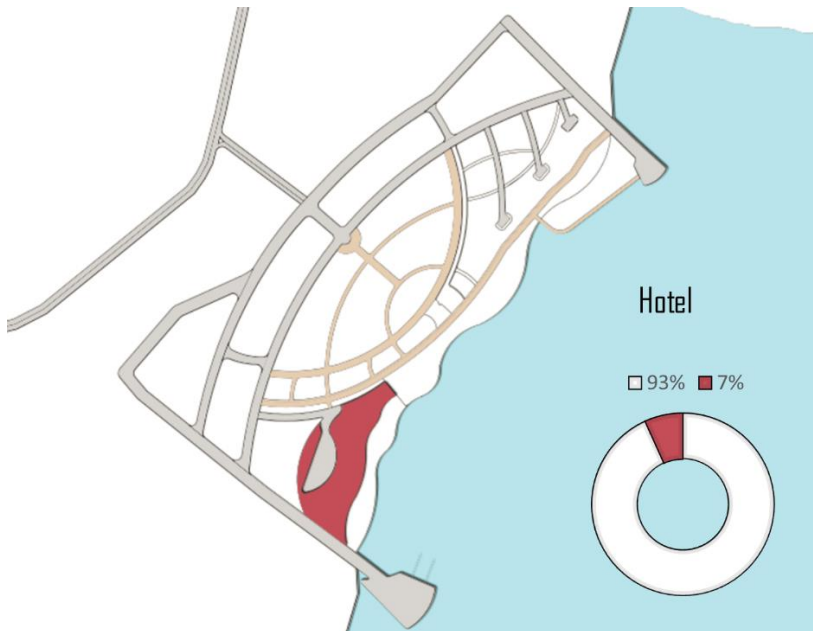


Figure 65 hotel area.

### 5.2.6 water park

The water park is a great entertainment for the project, and will increase its value as a tourist project.

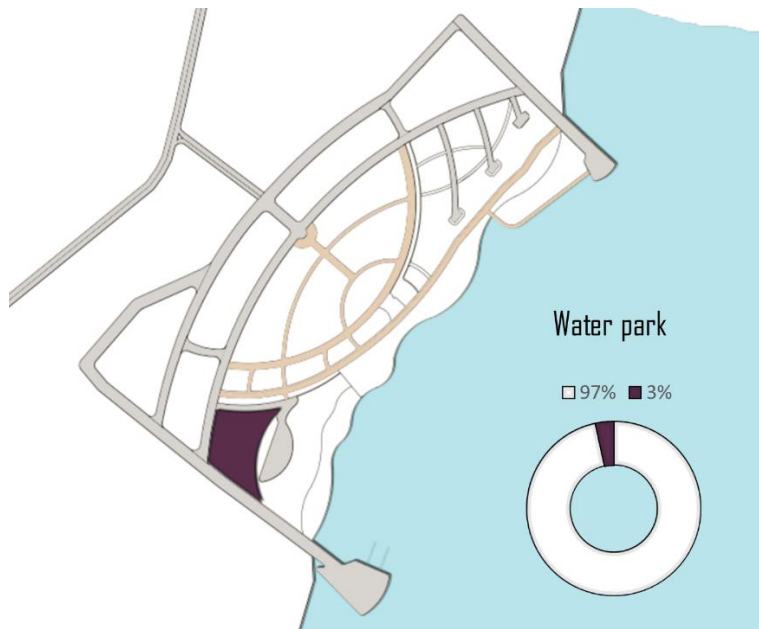


Figure 66 hotel area.

### 5.2.7 Green open areas

Green component is a very important in any urban area, it adds the freshness and protects the environment which was concentrated on in the project.





Figure 67 open green areas.

### 5.2.8 the beach

The width of the beach according to the indicators of such projects urban design should be 20-50m, and the beach in the project is 50m

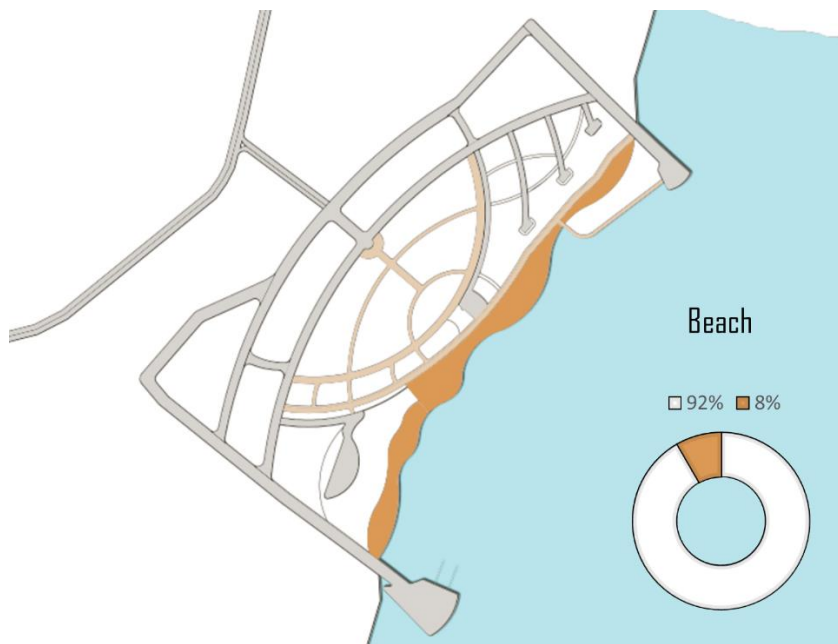


Figure 68 the beach.

### 5.3 land use plan.

The following map shows the final land use plan of the project



Figure 69 land use map.

### 5.2 parcellation

In general areas weren't highly accurate in areas in the project due to the diversity of uses. But it shows the main frame of the site.

The following layout shows the parcellation system.



Figure 70 parcellation system.

### 5.3 Roads an streets network

After forming the project main structure and uses, and now the project is well combined, analyzed and planned, the last step in this process is to connect the project with the road network, and ensure the entrances and the connection with the outer environment.

The entrance of the project will be directed from the road 90, to the main entrance of the project itself.

The following map shows the roads network and the connections with the city



Figure 71 Roads network with the connection of the site and their relation.

And the following map shows the hierarchy of the streets in the project and how es started from a street type to another to ensure its validity.



Figure 72 roads network in the project

It's important to mention that the local roads that goes into the villas one will end of the rectangular shaped cull de sac, and will be designed to contain a parkin lot to serve the area.

The type of the cull de sac is shown in the following picture.

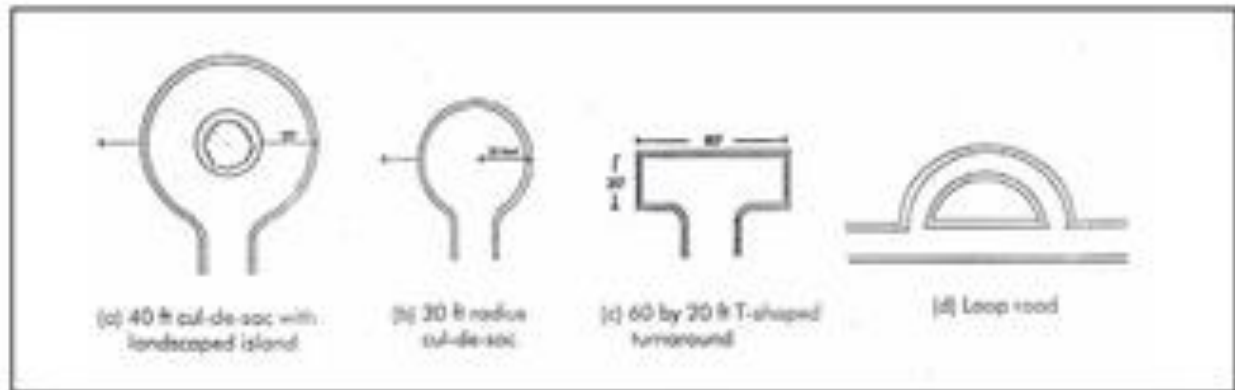


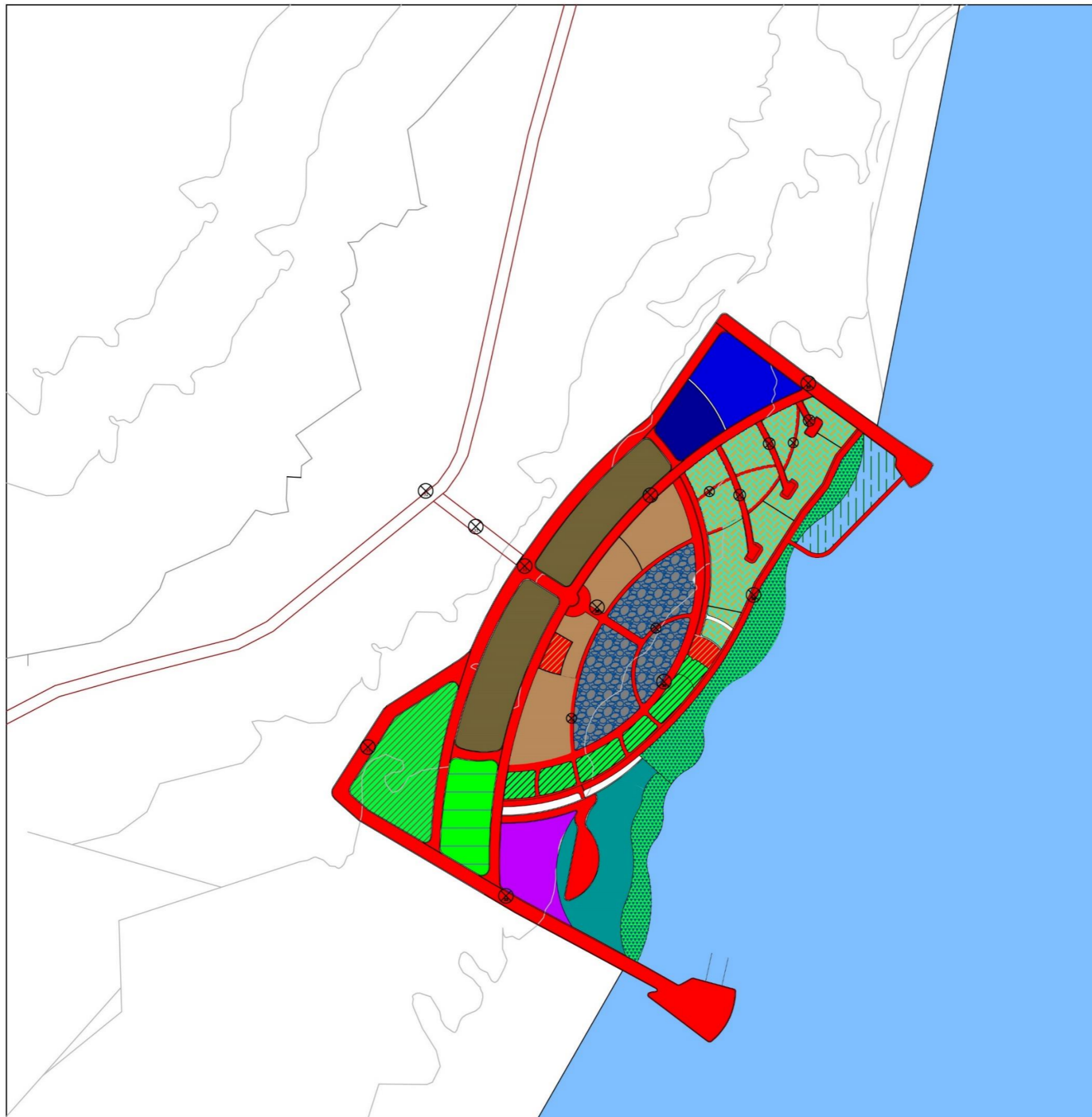
Figure 73 cull de sac types.

## 5.4 Master plan

The final master plan after the zoning and parcellation and the roads planning and design process, its ready to be formed with the final master plan layout.

The masterplan shows each use with its area in donum, and the percentage of every use that its each zone area to the whole master plan area.

It also shows the correct percentage that each use should be. Like the percentage of streets and the percentage of the built up.



STATE OF PALESTINE  دولة فلسطين  
 وزارة الحكم المحلي

THE MASTER PLAN OF  
 DEAD SEA WATERFRONT

MASTER PLAN MAP  
 KEY

MASTER PLAN AREAS TABLE			
	950.00	MASTER PLAN AREA IN DOUNM	
PERCENTAGE	AREA IN DOUNM	CLASSIFICATION	SYMBOL
10.082%	95.877	RESIDENTIAL BUILDINGS	
10.7982%	102.505	GREEN AREA	
3.5368%	33.600	TOURIST AREA	
6.0733%	57.697	HOTEL	
2.0972%	19.924	SCHOOL	
8.0886%	84.213	COMMERCIAL USE	
7.9550%	75.573	PUBLIC BUILDINGS	
10.8427%	103.006	VILLAS RESIDENCE	
0.949%	9.016	PUBLIC PARKING	
3.704%	35.185	COLLEGE	
-	-	WATER SURFACE	
9.7569%	86.213	BEACH	
79.1456%	751.9234	TOTAL WITHOUT STREETS	
20.8563%	198.1368	STREETS	
100.00%	950.00	TOTAL	

LOCATION



SCALE:  
 1:10,000














MASTER PLAN AREAS TABLE			
	950,00	MASTER PLAN AREA IN DOUNM	
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2.0972%	19.924	SCHOOL	
8.0886%	84.213	COMMERCIAL USE	
7.9550%	75.573	PUBLIC BUILDINGS	
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-	-	WATER SURFACE	
9.7569%	86.213	BEACH	
79.1456%	751.9234	TOTAL WITHOUT STREETS	
20.8563%	198.1356	STREETS	
100.00%	950.00	TOTAL	

Figure 74 the final master plan.

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## Chapter 6: The Project Design

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### 6.1 Site plan

The design indicators for the project were the main lines to create the best environment and connect all the factors and functions of the project together, main indicators were used are the following

- (1) It is preferable that the general planning of the main path in the street network within the site be approximately perpendicular to the prevailing wind directions.
- (2) The corridors are in the directions of the prevailing winds and the directions perpendicular to them, with attention to placing trees and green elements on the road network inside the site to protect the building from harmful winds.
- (3) Exploiting attractive landscapes to direct the units to them.
- (4) The effect of the climatic element must be addressed, by directing the building and defining its dimensions
- (5) Preserving the vegetation and the different types of trees and palm trees present at the site.
- (6) The urban formation should mean the spatial separation between the different uses via footpaths and central green areas.
- (7) Integration with the nature of the site.
- (9) Plants for facilities that may cause environmental pollution, such as wastewater treatment plants and garbage collection stations, shall be located in places considered in relation to the wind direction.
- (10) The slope of the beach should be between (2%, 10%) and the slope (5%) is more appropriate.
- (11) The quality of the beach material must be sand or a mixture of sand and rocks.
- (13) An area ranging from (6-9) meters next to the letter of water is designated as a zone for this walk in addition to allocating a distance of (15-50) meters the following so that it is for use whether relaxing or for practicing various activities of the beach.



(14) The bottom slope should be between (5% -10%) and the most appropriate bottom slope is (7%) up to a depth of (5) meters.

(15) The bottom layers should be sand or a mixture of sand and rocks to a depth of at least 2 feet.

(16) Providing protection from wind and water currents to provide safety for tourists.

The final layout of the project, showing each zone designed and planned according to the international indicators



Figure 75 the final site plan.

Site plan



1:10,000

## 6.2 detailed plans

### 6.2.1 Residential buildings zone

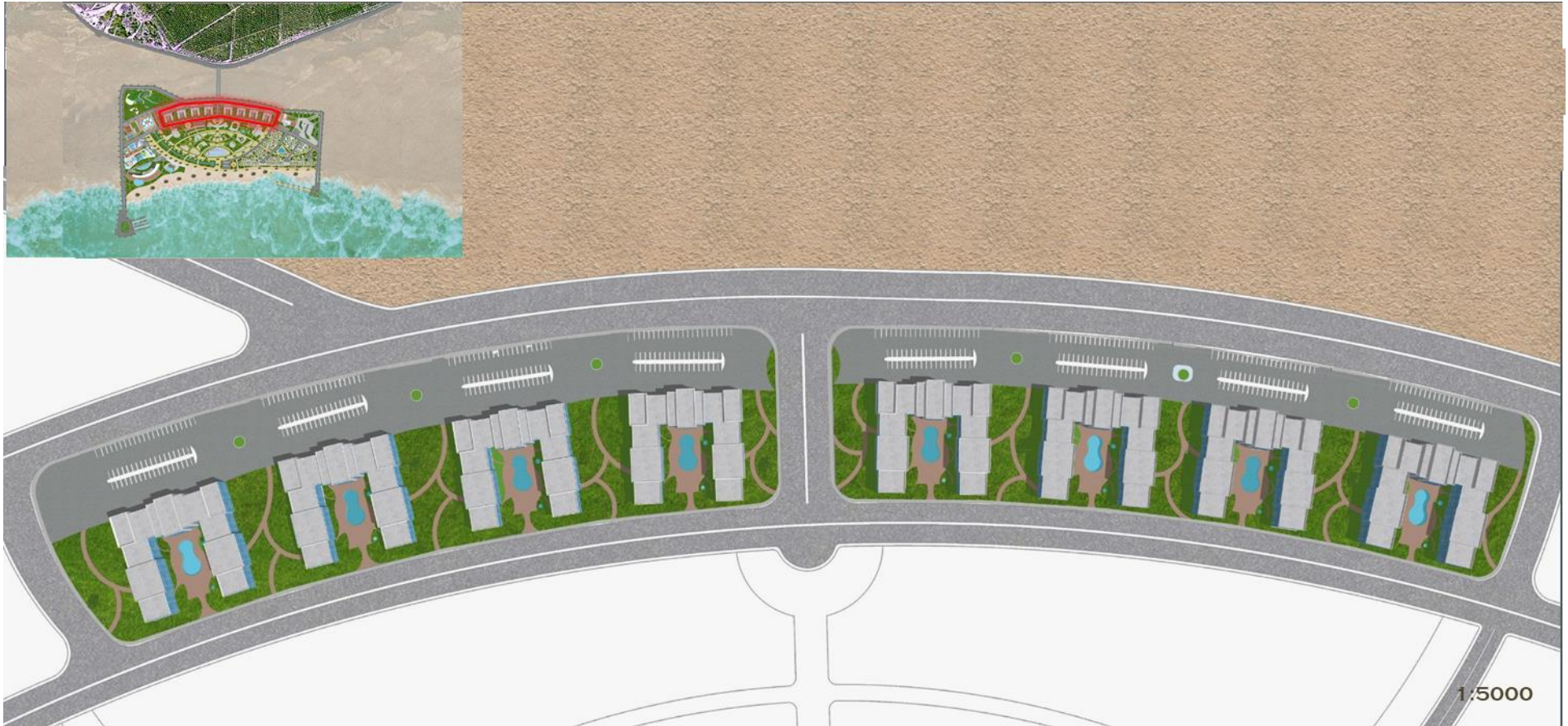


Figure 76 residential building zone.



Figure 77 the design of the building.

The residential buildings zone will contain of 4 buildings in each zone, the building area is large to serve the biggest number of users, but at the same time achieves the correct indicators.





Figure 78 3d shots for the residential buildings area .

The residential building area will be 3000 m<sup>2</sup> for each building, and each floor will be having a capacity of 21 apartments. With a total height of 9 meters which is three floors. The following plan shows the proposed plan for the building.

The parking for each building was perfectly determined and made sure its enough it useful for each building.

In the project in general the 90-degree angle was used in the design as long as it consumes the least space. In addition to the disabled parking lot design was provided in each parking lot.

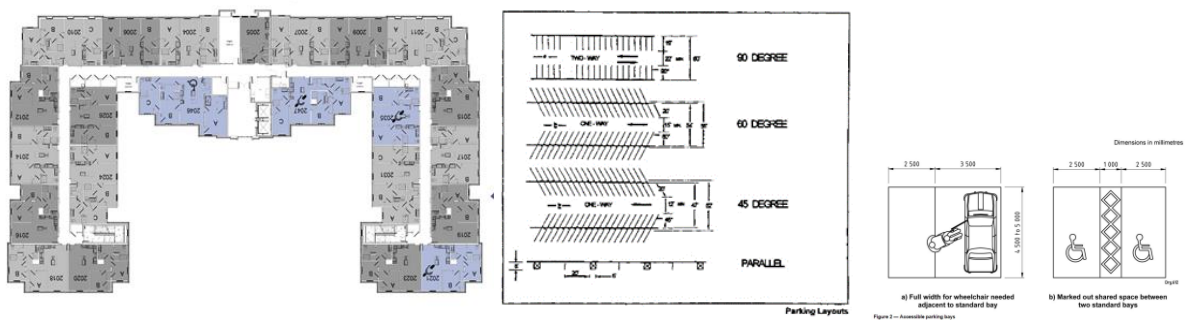


Figure 79 1) the plan example for the apartments number, 2) the design of the parking lots

6.2.2 single houses



Figure 80 single houses zone.

The single houses area, will be containing of 4-5 villas in each block, and a group of 3 in the southern block, with increasing the green value by adding more parks and open spaces, and will be served with enough parking.

Pools and children playground will also be suggested.





Figure 81 3D modelling for the single houses zone.





Figure 82 single houses block





*Figure 83 3D modelling for the single houses block*

Each house area will be 150 m<sup>2</sup> with two floors height and 6 meters for each unit.

6.2.3 educational facilities

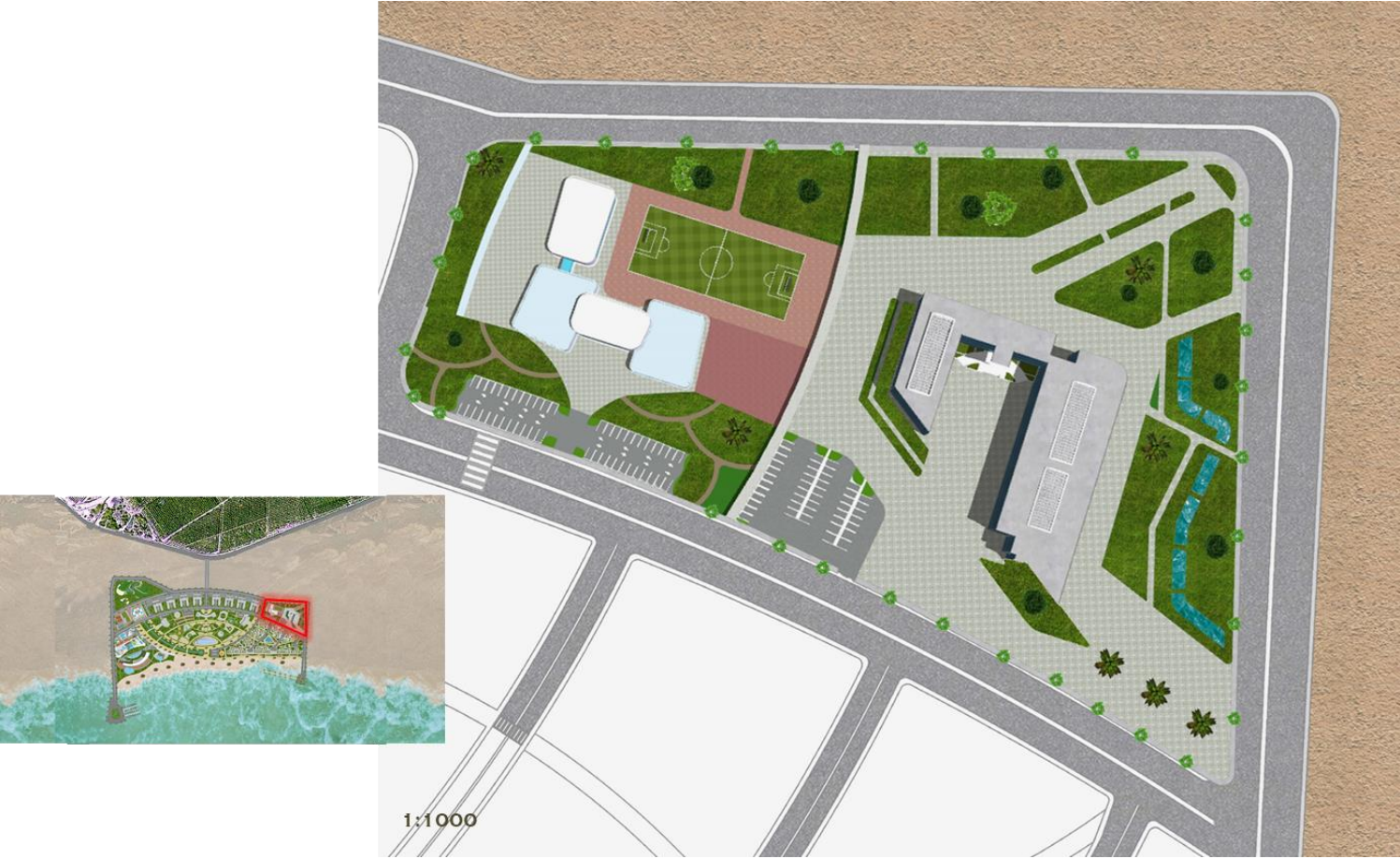


Figure 84 The educational zone.

The educational zone will contain a college for geophysics with an area of 3800 m<sup>2</sup> and 12 m height. And the elementary school of area of 2500 m<sup>2</sup> and 9 meters height.



Figure 85 3D modelling for the educational zone.

## 6.2.4 Public center



Figure 86 3D modelling for the educational zone.

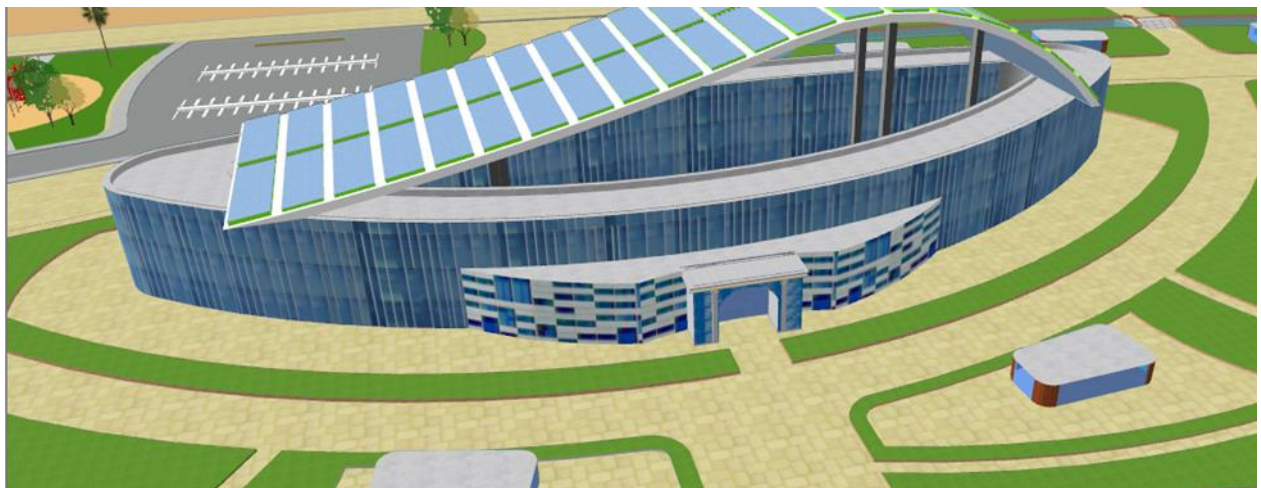
The public zone will contain the open areas and parks, the kid's playgrounds and pedestrian corridors all over the zone, and it will be for pedestrian use only and will be provided with the suitable parking lots.

For the building it will contain the administrative building, offices and social halls with an area of 2800 m<sup>2</sup> and 6m height.



Figure 81: 3D modelling for public center zone.

Another main building will be the mall with a 5000 m<sup>2</sup> building, and 6m height.



For the facilities, there will be a services center with an area of 2000 m<sup>2</sup> and 6m height.



The health center of an area of 1800 m<sup>2</sup> and 6m height.



Individual commercial units for different uses with an area of 700 m<sup>2</sup> and 6m height.



Mini commercial units with an area of 100 m<sup>2</sup> and 3 m height.





6.2.5 Gym and sport area



Figure 87 Gym and sport area zone.

The sport zone will contain of the gym building and an area of 5000 m<sup>2</sup> and a height of 6m.



Figure 88 3D modeling Gym and sport area zone.

Football field and two tennis fields and a swimming pool.



6.2.6 Green adventurous Hill



Figure 89 Green adventurous Hill zone.

## Green Adventurous Hill, (green open space and entertainment)

Main function:

- increases the open green spaces ratio.
- Saves the project's privacy



Figure 90 3D modelling Green adventurous Hill zone.

6.2.7 Hotel area

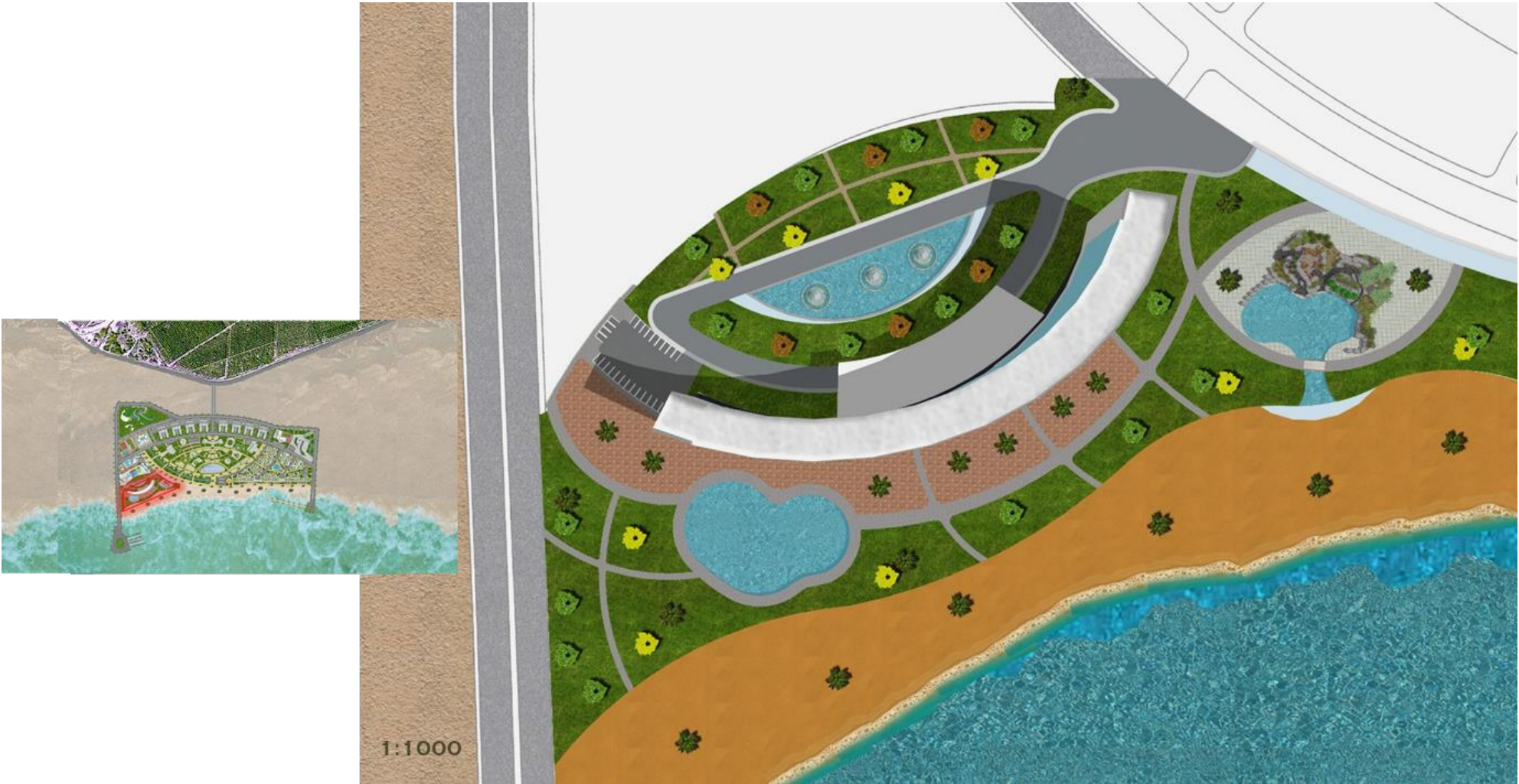


Figure 91 Hotel area zone.

The hotel building will be having an area of 4800 m<sup>2</sup> and a 36 m height, 12 floors

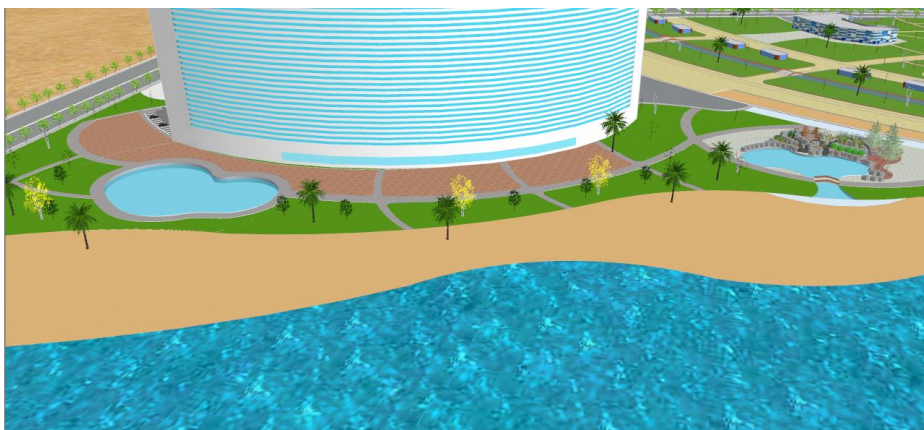


Figure 92 3D modelling Hotel area zone.

6.2.8 Water park



Figure 93: water park zone.

The water park will attract different users, and in the design, it has its own entrance and parking so the hotel privacy would increase.



Figure 94 water park zone.



## 6.2.8 floating chalets

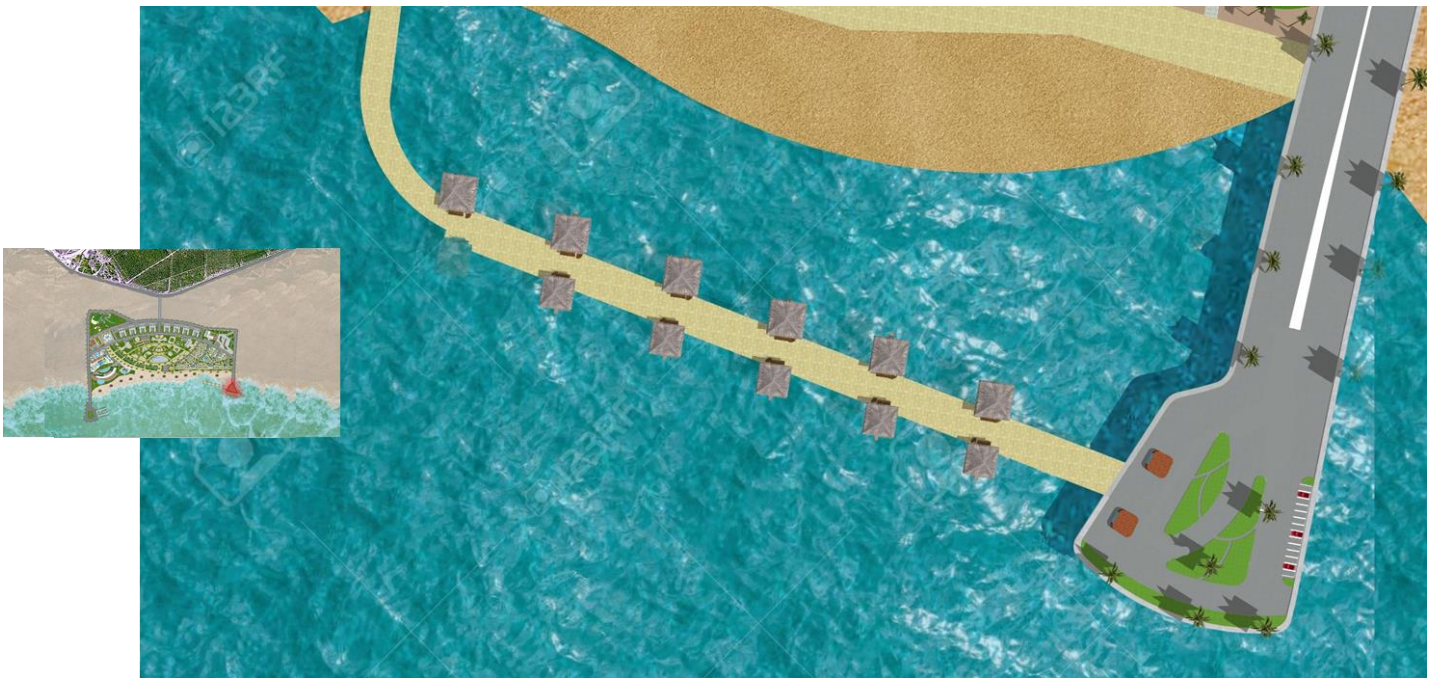


Figure 95 floating chalets.

The floating chalets units, each unit is 60 m<sup>2</sup> and 3m height.





Figure 96 3D modelling floating chalets.

## 6.2.8 boats port



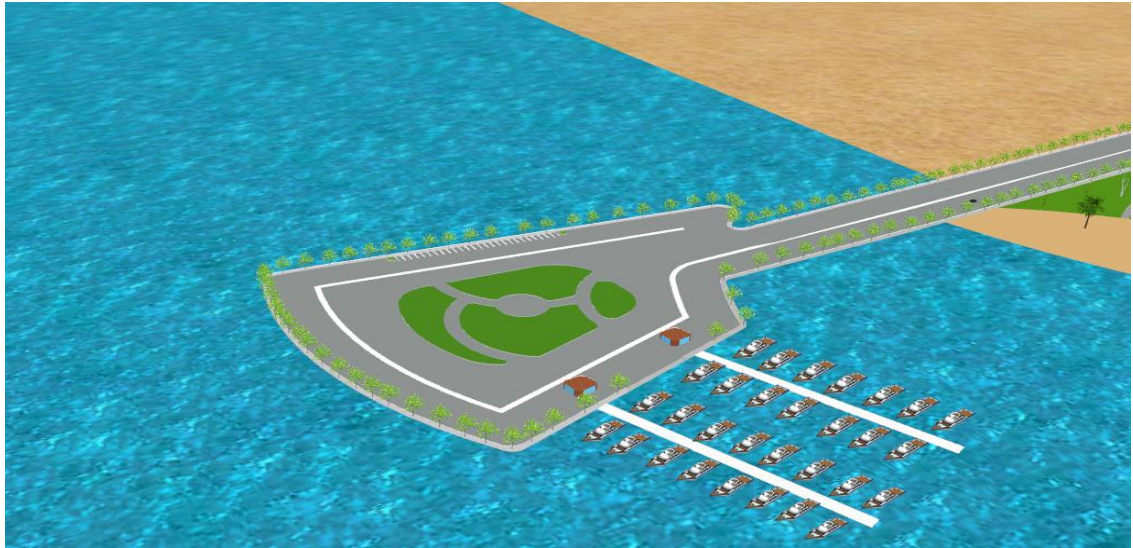


Figure 97 3D modelling boats port.

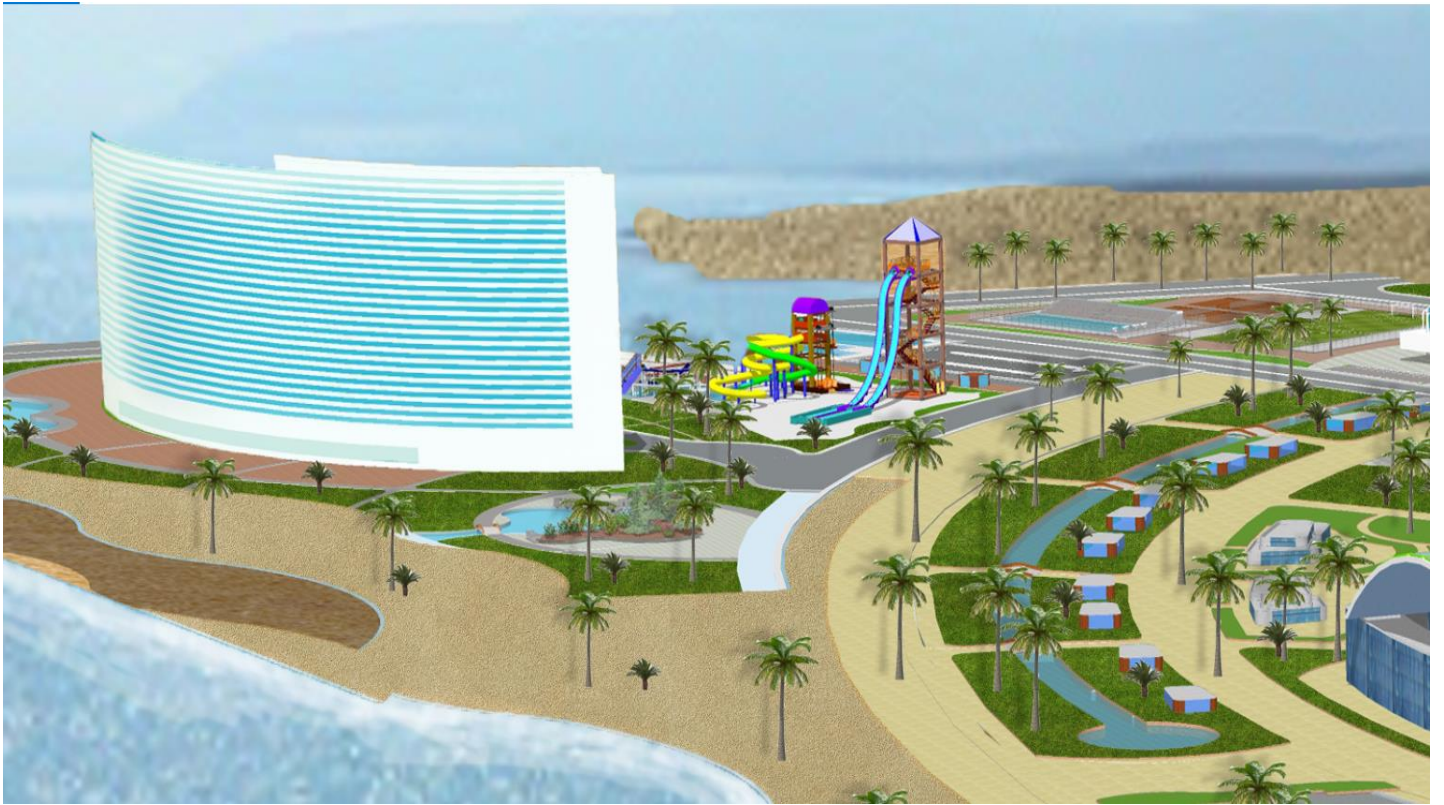
## 6.2.8 3D shots in a day\ night vision

### 1) Day









## 2) Night









## References.

- Abrahams, G. 1985. The archaeological potential of central Cape Town.*
- Aguilera, A. 2003. Service relationship, market area and the intrametropolitan location of business services. The Service Industries Journal, 23(1): 43-58.*
- Alonso, W. 1964. Location and land use: toward a general theory of land rent. Cambridge: Harvard university press.*
- Anon. 2014. Harbour Place amphitheatre.*
- Backhouse, R. E. 1991. British economic performance: the statistical record.*
- Baxter, P. & Jack, S. 2008. Qualitative case study methodology: study design and implementation form novice researchers.*
- Beavon, K. S. O. 1975. Christaller's central place theory: reviewed, revealed, revised. Johannesburg: Department of Geography and Environmental Studies, University of the Witwatersrand.*
- Beavon, K. S. O. 1977. Central place theory: a reinterpretation. New York: Longman.*
- Bernstein, W. J. 2008. A splendid Exchange: how trade shaped the world from prehistory to today.*
- Berry, B. J. L. & Garrison, W. L. 1958. A note on central place theory and the range of a good.*
- Blain, W. R. 1992. Marina technology. Computational mechanics. United Kingdom: Bell and Bain.*
- Blaxter, L. , Hughes, C. & Tight, M. 2010. How to research. 4thed. England: Open University Press*
- Carta, M. 2006 Palermo's Waterfront: a manifesto-project for the new creative city.*
- Cavicchia, G. 2004. The use of information technologies in the urban redevelopment process in the city of Baltimore*
- Centre of Military History United States Army, Washington, D. C. 1992. A Brief history of the U. S. Army in World War II*

- Chapin, F. S. 1965. *Urban land use planning*. 2nd ed. Urbana, IL: University of Illinois Press.
- Christaller, W. 1966. *Central places in Southern Germany*. Englewood Cliffs, NJ: Prentice-Hall
- City of Bradford MDC. 2012. *Holme Wood & Tong: neighbourhood development plan*.
- Deaton, A. 1990. *Saving in developing countries: theory and review*
- Dennis, C. , Marsland, D. & Cockett, T. 2002. *Central place practice: shopping centre attractiveness measures, hinterland boundaries and the UK retail hierarchy*. ..
- Dewar, N. 2012. 'Stemming the tide': *Revitalizing the central business district of Cape Town*.
- Dhanraj, J. , Esakin, T. C. & Pappin, F. 2012. *Sustainability case study: Harbourfront Centre*.
- Dias Museum. 2014. *Bartholomeu Dias Museum Complex*.
- Dicken, P. & Lloyd, P. E. 1990. *Location in space: theoretical perspectives in economic geography*.
- thekwini Municipality. 2010. *Environmental impact assessment for municipal infrastructure projects: a guide for project managers and environmental assessment practitioners*. Ethekewini.
- Everett-Heath, J. 2005. *Oxford concise dictionary of world place names*.
- Falk, N. 1986. *Baltimore and Lowell*.
- Ferreira, S. & Visser, G. 2007. *Creating an African Riviera: Revisiting the impact of the Victoria and Alfred Waterfront development in Cape Town*. .
- Flack, D. 2011. *Toronto in photos from the 1850s to the 1990s*. .
- Forward Analytics. 2011. *Audience research and economic impact study of Baltimore's Ports America Chesapeake Fourth of July Celebration 2010*.
- Hawley, Amos. 1950. *Human Ecology: A Theory of Community Structure*. New York, NY: The Ronald Press.
- Healey, P. 1993. *The communicative work of development plans*.
- Healey, P. & Shaw, T. 1994. *Changing Meanings of 'Environment' in the British Planning System*.

- Herriott, R. E. & Firestone, W. A. 1983. Multisite Qualitative Policy Research: Optimizing Description and Generalizability.*
- Hirschman, A. O. 1958. The strategy of economic development.*
- Sinclair, R. 1967. Von Thiinen and urban sprawl.*
- Smith, D. M. 1971. Industrial location: An Economic geographical analysis. John Wiley: New York.*
- Smolny, W. 2000. Post-War growth, productivity convergence and reconstruction.*
- Urban-Econ: Development Economists. 2012.*
- V& A Waterfront Cape Town. 2013. The V& A History.*
- Vale, B. 2003. Prefabs: The History of the UK Temporary Housing Programme. Routledge.*
- Wang, C. 2002. Waterfront Regeneration. Cardiff University.*
- Wang, Y. 2006. Cheap labor and China's export capacity.*
- Waterfront Partnership of Baltimore Inc. 2015. History of the harbor.*
- Waterfront Partnership of Baltimore. 2013. Baltimore Inner Harbour 2. 0.*
- Weaver, C. & Dennert, M. 1987. Economic development and the public-private partnership: Introduction to the Symposium.*
- Weber, A. 1929. Theory of the location of industries. Translated by C. J. Friedrich. London: University of Chicago Press.*