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Sustainable Open Public Spaces: Place Making Strategy for the Breakwater “Al Kaser”, Abu Dhabi

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Abstract. The Abu Dhabi Vision 2030 revolves around sustainable development and seeks to raise the standard of living across the Emirate. Parks are one of the important tools to generate Abu Dhabi vision, where it acts as the collection point of all varieties of people. Aware of the important demand of proper Parks, Abu Dhabi Municipality, is seeking to adopt park's facelift to remedy to some weaknesses appearing in a majority of Abu Dhabi parks to raise the quality and the liveability of these open urban spaces. This paper will study a potential sustainable public open space in the country, the case of Abu Dhabi Breakwater (Al Kaser). This space holds a great historical value and has an exceptional location where individuals can enjoy the skyline of the city over the water edge, taking in the picturesque views and cultural fascinations. The aim of this paper is to propose a new framework for developing a vibrant public open space including new and unconventional cultural activities in the area of Abu Dhabi. By presenting a literature review supported by case studies, place making strategies and a site analysis of Al Kaser, the paper reaches a sustainable retrofit conceptual Master Plan proposal of the breakwater. Taking into consideration the social, economic and environmental factors of the proposed design is the key to a sustainable outcome.

1. Introduction

Al Kaser is an urban attraction that spun from historical purposes, it served previously as a breakwater to block waves, therefore, protect the Corniche of Abu Dhabi. Formed out of rocks and solid foundations Al Kaser consisted of a single pedestrian walkway where fishermen would make use of the coastline protection. Today, Al Kaser is an attraction primarily for the youth and adults where they cruise around the location, take in the picturesque views and cultural attractions. This site has come a long way since being formed in the 1960's to holding events, activities and cultural purposes in the modern world.

Public spaces are all around us acting as an open-air living room, like an outdoor leisure centre which means they should be plentiful, accessible, unique and well designed. Properly designed these spaces can bring communities together, act as meeting places and help develop social ties that as of late have been disappearing in many urban areas.

The Abu Dhabi Vision 2030 revolves around sustainable development and seeks to raise the standard of living across the Emirate [1], because there is a big need for public open spaces in Abu Dhabi even with the hot humid weather condition during the summer. Parks and playgrounds are the main public open spaces in Abu Dhabi, however some have difficult accessibility are very inaccessible due to their location next to main roads, these parks become so crowded during the weekend that the designated car



park spaces fill up quickly and others are left to park on the hard shoulder. In a recent survey, two thirds of households said that the emirate lacked proper public spaces [2].

This study is conducted on a premium public space called the Breakwater, shown below in ‘Figure 1’, better known to locals as ‘Al Kaser’ this site is located in the emirate of Abu Dhabi, it is a public open space with great views and is usually quite busy, however, we will be designing a place making strategy by addressing its weakness highlighted in the third paragraph.

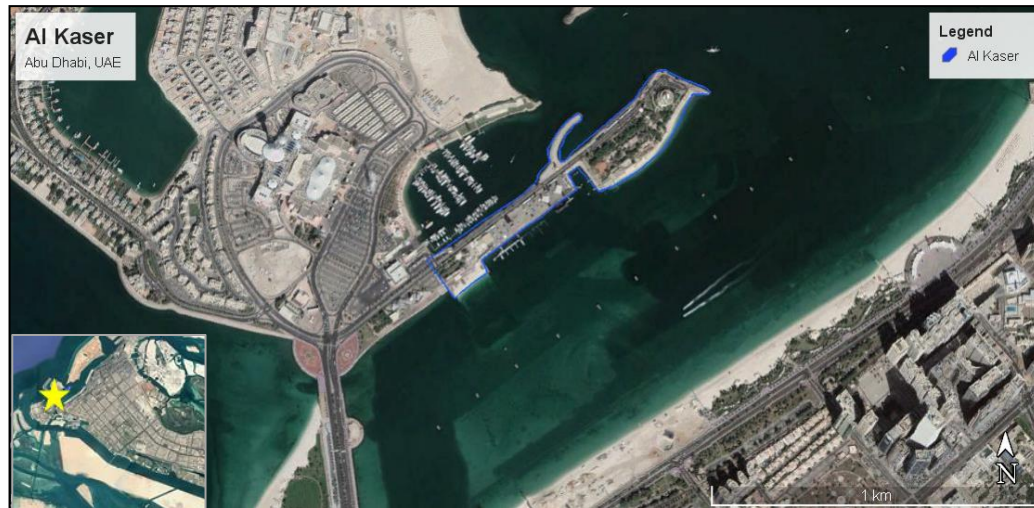


Figure 1. Al Kaser Map & Location, Abu Dhabi, UAE. (Source: Google Map)

2. Historical Overview

Al Kaser is a man-made breakwater barrier, it was established as a strong barrier for breaking high waves that could have led to several problems, particularly the destruction of what was newly built on mainland Abu Dhabi at the time. A number of large rocks, where loaded onto trucks and transported from Ras Al Khaimah to Abu Dhabi. After its completion, local fishermen took a particular interest to the site and used it for leisure, where others used it as a promenade as shown in ‘figure 2’. Over the course of time this site has been developed and now has great purpose for Abu Dhabi tourism [3].



Figure 2. Al Kaser in 1960, Abu Dhabi, UAE

3. Site Problems

The existing typology scheme of Al Kaser faces many issues such as the lack of activities, limited pedestrian paths and site accessibility, inefficient land use, lack of urban furniture, obstructions blocking the best views of the site and restricted dining options and many aspects that are not used to their best potential as shown below in ‘figure 3’.

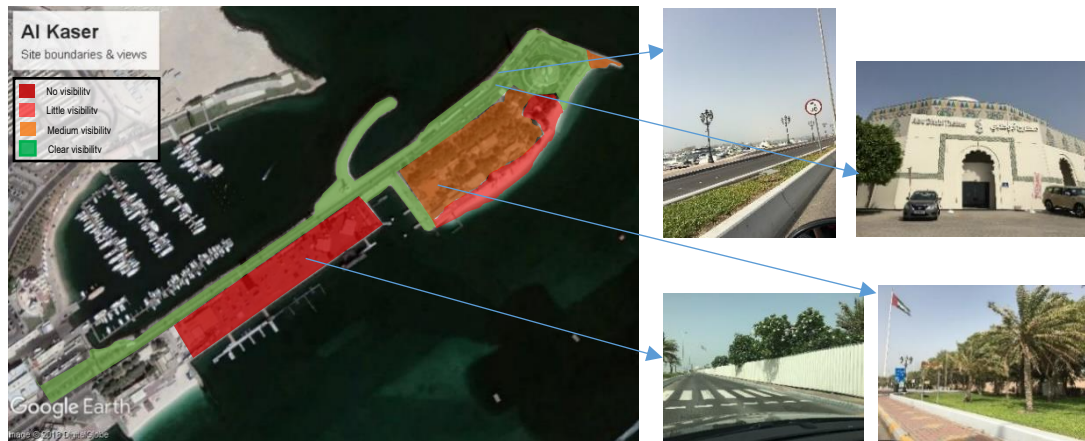


Figure 3. Al Kaser View Restrictions. (Source: Google Map & Author)

The following table 'table 1' summarizes the main issues that are facing Al Kaser and the upgrade that was proposed in this research.

Table 1. Al Kaser problems and proposed solutions. (Source: Author)

Problem	Proposed Solution
Reinforced straight path, one circulation method	Smother pathway to enhance visibility, and interaction to provide a dynamic and engaging experience.
One access road for cars/ limited pedestrian path	No car access to promote walkability and dividing the pathway to pedestrian, biking and jogging track. Allowing only Eco-cars/ golf carts on site. Providing an appropriate parking area before accessing Al Kaser.
Blocked views from buildings/ fences	Removing walls and fences to allow visual and physical access through buildings without restrictions.
Private Yacht Club on site	Introduce a Public Yacht Club without fence enclosure that includes water activities and a Public beach.
Negative Interface of Cafes	Cafes open to view from different sides allowing interaction with the surrounding and the users.
Limited seating areas	Additional shaded seating areas and rethinking the urban furniture in site.
Visual Connectivity Constraints	Remove any fences/walls around existing buildings and maximize pedestrian exposure from surrounding areas.
Accessibility	Proposing new pathways to improve access to the public space and reach site from different directions.
Spatial Organization	Exploring spaces around site to increase interaction.
Restricted Views	Extending observation points and removing blocking walls and fences.

4. Proposal

In this paper we propose a conceptual Master plan strategy for a public open space to bridge the gap in the urban fabric of the city between urbanism and nature while promoting integration and socialization across different lines of cultures [4]. The proposal intends to promote the space as a meeting point which will connect Abu Dhabi's diverse community into a natural hub away from their daily life style. This space will also provide comfortable and productive space for people to engage in various activities.

4.1 Sustainable Design Concept

The design concept behind this research proposal is inspired by the natural features of the site. The fluidity of the water over The Breakwater has been the main inspiration to create a smooth and seamless pattern that achieves a dynamic circulation spine around the themed areas. A series of smooth curves will converge inward and extends outwards synergizing the pier within the sea trying to enhance the connectivity to nature.

The concept of fluidity enhances the integration between public and private areas as it allows users to walk through and around buildings and spaces on site on smoother walkways without boundaries that block their views and limits their accessibility [5].

The proposed urban space also introduces new activities on site to follow the concept of fluidity [6]. The variety of activity on site allows the space to become more dynamic and attractive to the users. The activities are shown in ‘figure 4’ below.

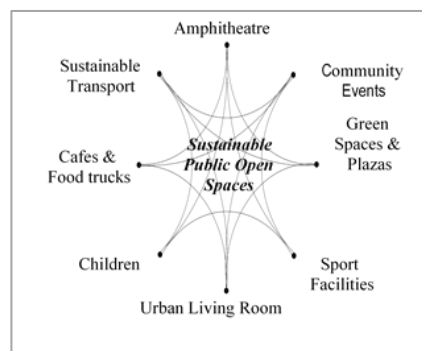


Figure 4. Al Kaser Fluidity of Activities within the Public Open Spaces. (Source: Author)

4.2. Accessibility, Circulation & Zoning

The current plan of Al Kaser includes one main access point and a linear path for circulation around the urban space ‘figure 5’. This linear path is mainly used for car access with limited space for pedestrian walkways on both sides of this path. There is no space for other activities, such as biking and exercising, as the current pedestrian walk way serves those functions as well. Having this linear path limits the visual and physical connection of the urban space, therefore; proposing a more dynamic primary path that passes through the urban space with secondary paths extending from it and adding more access points would solve this issue ‘figure 6’.

The addition of curved circulation along with curved elements enhances fluidity of the space giving a more exciting experience for the users. The curved elements extending from the site will serve as observation points for the views of Abu Dhabi’s skyline.

The existing urban space is divided into six main zones: Culture, Parks, Sports, Community, Parking and Café’s shown in ‘figure 7’. The new proposed zoning rearranges these zones for a more successful urban space and includes two new zones: Observation Points and Plazas ‘figure 8’.



Figure 5. Al Kaser Fluidity of Activities within the Public Open Spaces (Source: Author)



Figure 6. Al Kaser Proposed Accessibility & Circulation with new elements (Source: Author)

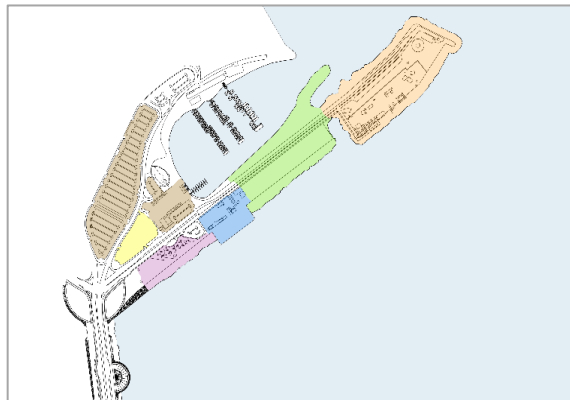


Figure 7. Al Kaser Existing Zoning
(Source: Author)



Figure 8. Al Kaser Proposed Zoning
(Source: Author)

5. Master Plan Proposal

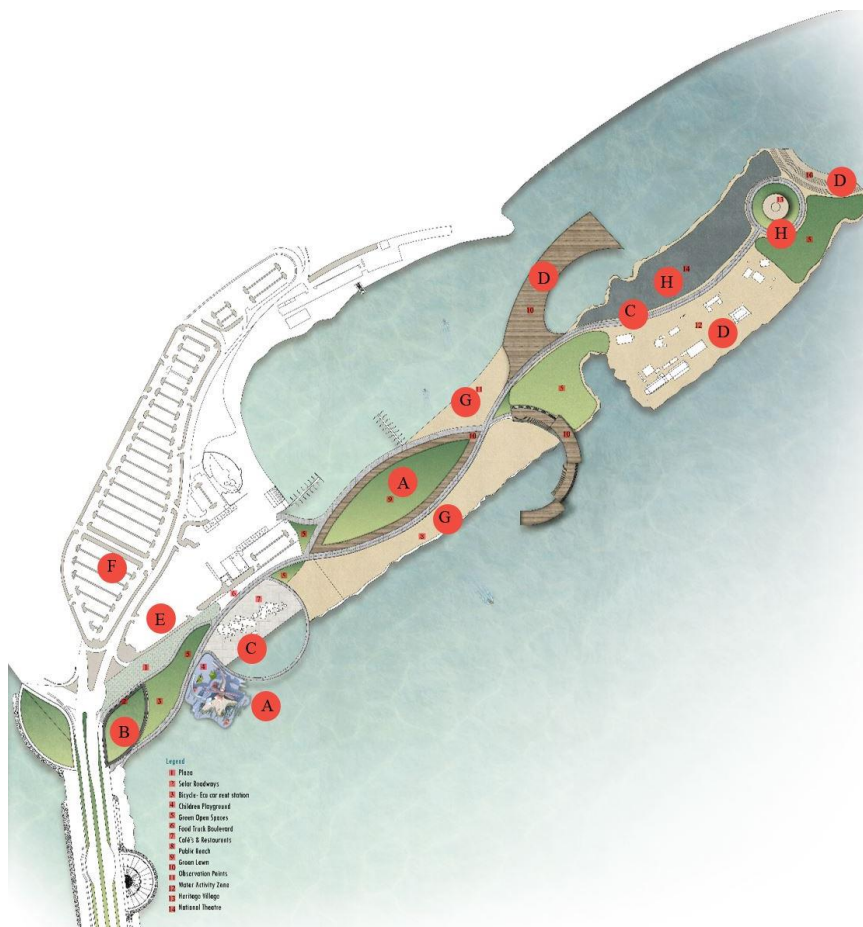


Figure 9. Al Kaser masterplan Proposal. (Source: Author)

5.1 Master Plan Features

The Master Plan introduces various new features to the open space 'figure 9'. Starting with accessibility, the plan introduces three access points to the urban public space which then have pathways divided into pedestrian, bicycle and jogging tracks. Plazas are integrated into the new plan to hold art pieces and sculptures from the UAE's culture and the natural context of the site. As for vegetation, it is important to use indigenous plants for landscaping; meaning that it is native to the UAE or the region. It is also important to organize vegetation in a way that doesn't block views but instead provide shade and beauty to the site.

In addition to vegetation, solar umbrellas and canopies are proposed as shading elements on site. They are arranged in a way that helps preserve the views while providing comfort for users in hot seasons. These devices include fabric and transparent material as well as solar panels that are used to collect energy and power some of the site features.

The space includes shuttle services as a transportation alternative to cars. These shuttle services are in shape of eco-cars or golf carts that can transport users and materials on site. They are powered by solar energy that is collected using the shading devices.

Solar panelled LED lighting can be used in features and displays in Al Kaser to create a great night time atmosphere as that's when the site is usually the busiest. Light patterns and light fixtures will add a liveliness to the area and encourage more people to use the public open space built in a sustainable manner. Street lights must use LED light bulbs as they have significant advantages over other forms of lighting. [7]

In order to make the site sustainable, we must take special precautions even down to the footpaths. Kinetic pavements would transform Al Kaser, which is currently a concrete and brick paved site, kinetic pavements can be made using 95% recycled tires that can flex up to 5mm when walked on. These can also produce electricity of 8 watts that can be stored in batteries to power street lights and other electrical items. These paths are very strong and withstand harsh climatic conditions which would make them perfect for Al Kaser.

To mark the road for pedestrians, cyclists and eco cars solar roadway panels can be used; these are intelligent panels that would replace paint that can be toxic and less aesthetically pleasing. These panels can be customized and can even warn pedestrians when eco cars are incoming.

Around the restaurants an important area of vegetation and grass are provided to allow an appropriate natural rainfall drainage system during floods seasons, small paths of gravel can be laid down to direct people to the cafes and restaurants.

5.2 Mater Plan Content

The Master Plan contains the following:

A. Observation Points: An additional feature that enhances the users experience to the views of Abu Dhabi Skyline through an amphitheatre and decks 'figure 10'.

B. Plazas: Community areas where people gather and interact socially as they share interests in art and culture. These spaces are equipped with shaded seated areas and solar stations with bikes and eco-cars figure 11'.

C. Green spaces: Distributed on site, includes parks and kids play areas 'figure 12'.

D. Dining Areas: Includes food trucks and cafes distributed on site 'figure 13'.

E. Community Centre: A space where the community connect and engage in indoors events during the hot seasons. It includes a gallery space, sports facilities and a theatre.

F. Parking Space: Where the car access stops and users can enter the public space either by pedestrian walk way or by renting various sustainable transportation such as eco-cars, golf carts or bicycles.

G. Water Activities: People can enjoy the waterfront by engaging in the water activities on both sides. Users can rent boats and jet skis or enjoy walks and sunbathing on the public beach.

H. Culture District: This district is one of the most important elements to the master plan, as it acts as an Urban Living room that includes the current heritage village and Abu Dhabi National Theatre.

This space holds cultural and recreational activities for people to participate in, as well as markets that include food and items from different cultures.



Figure 10. Amphitheatre that acts as an observation point towards Abu Dhabi Skyline. (Source: Author)

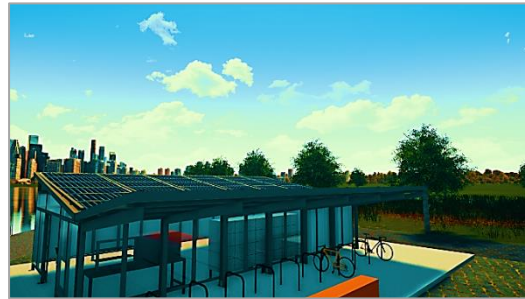


Figure 11. Bicycle and Eco- cars/ golf carts Solar Energy station. (Source: Author)



Figure 12. Green areas with water features. Pictures shows pedestrian pathway along with biking track and shading devices. (Source: Author)



Figure 13. Food Trucks and seating areas viewing the water front and Abu Dhabi Skyline. (Source: Author)

6. Reflexion and Conclusion

The Breakwater is one of the few places in Abu Dhabi that has a great historical value with an exceptional location viewing the skyline of the city over the water edge. Unfortunately, due to the existing typology scheme it has limited the community from visiting this place due to the different factors listed above. This paper reached a proposal that could enhance the existing public space turning it into a more sustainable and interactive public space. The consideration of the social, economic and environmental factors of designing this space is the key to a sustainable outcome providing an interactive space with more activities, comfortable atmosphere and environmentally friendly features as summarized in the 'table 2' below [8].

Table 2. Sustainable aspects proposed for The Breakwater, Al Kaser in Abu Dhabi. (Source: Author)

Social Aspect	Economical Aspect	Environmental Aspect
Adding comfortable shaded seating areas	Encouraging small businesses (such as food trucks and markets)	Using renewable energy (e.g. solar energy) on features on-site
Boosting social and physical activities	Enhance tourist activities and cultural attractions	Limiting car use and depending on eco-cars.

The proposal aims to transform the breakwater into a highly interactive and safer environment for the community providing easy access for pedestrians and parking solutions that work within the existing surroundings. The plan will enhance lighting, shading, pedestrian flow, and access points into site. The new public open space aims to give a chance for visitors to have a special experience of exploration and discovery, offering a journey through a series of themed areas.

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