The Restoration of the Cities' Water Waterfront after the COVID-19 Pandemic, Case of Al Khobar City, Saudi Arabia

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Abstract: The residents of coastal cities have a strong relationship with the waterfront, which people of different ages, types, levels of awareness, and cultural backgrounds use. People of different cultures tend to use these open spaces with various responses. They consider it a lung for them, and practice most of their entertainment and social events with different attitudes. Therefore, municipalities spend a large budget on designing, implementing, and developing these areas. However, sadly, during the COVID-19 pandemic, the local authorities in many cities decided to shut down the city, including the waterfront area. Al Khobar city, Saudi Arabia, was one of the cities had that had a broad lockdown. Consequently, the use of open spaces became dangerous, and municipalities placed many restrictions on using such spaces to control the spread of COVID-19. Residents had no opportunity to use them for exercise, sports, social activities, or even for enjoying the fresh air, negatively influencing their lives at different levels. This research discusses this problem and examines the restoration of the waterfront after the authorities announced a decrease in the status of the hazards of the COVID-19 pandemic. The study will consider returning safely to using the waterfront and allowing it to be accessible to the public, like before the COVID-19 pandemic. Moreover, it will suggest recommendations for the future use of the waterfront in a secure way to prevent the spread of such viruses.

Keywords: COVID-19 pandemic; waterfront; sustainability; landscape architecture; Al Khobar

1. Introduction

The role of urban landscape projects in cities of the Middle East has grown in prominence since the mid-twentieth century, with a gradual shift in emphasis on public function. Contemporary landscape projects, designed as waterfront, public plazas, urban spaces, or public parks, have significantly transferred cities to a new era and given rise to a newly shaped social culture in which the public has a voice [1]. Consequently, for these waterfronts, having fiscal and political support is crucial. Therefore, such projects require a large budget for construction and operation [2]. Globally, after the authorities' declaration of decreasing the level of hazards of the COVID-19 pandemic, it seemed that most people were leaping to the wrong conclusion that they could use such places freely, thinking that the pandemic would not return. That said, they could use the waterfront as previously, usually. Nevertheless, the initial excitement about the reuse of the city's waterways was probably misplaced [1].

In this context, landscape architects have been watching how unfolding events challenge them regarding how they plan and manage their parks and green spaces as pleasant places, as before the pandemic. From this viewpoint, they are exploring what precautions should be taken to ensure that parks and green spaces remain the vibrant social places residents depend on in their neighborhoods. In addition, what must be done to control the future spreading of pandemics amongst waterfront users?

It is significant to say that during the lockdown period, the forced restrictions disturbed residents' daily life and negatively impacted them socially and economically. It influenced the quality of life of residents and the use of spaces [2]. According to some indicators,

coronavirus controls have brought many open spaces to a standstill. This reduced the hazard levels for residents, which is a concern for urban specialists. It should be noted that the influences of the global COVID-19 pandemic are unclear and still not understood. However, this crisis affects the city's urban design at different levels, and will remain impactful for generations. In addition to excessively deteriorating urban residents' quality of life, many have lost their livelihoods, forcing them to the edge and threatening the economy, safety, security, peace, and stability [3,4].

On the other hand, specialists have mentioned that this pandemic is necessary to bring benefits, as seen before. History shows pandemics positively impacting city conditions. For example, the cholera epidemics in the 19th century in many cities sparked the introduction of modern urban sanitation systems. Moreover, urban regulations were modified to measure respiratory diseases in that period [5]. The question is whether we are ready to handle this. Therefore, stopping the worst expected outcomes for the health of the residents from becoming a reality is necessary. This pandemic has already considerably altered urban movements as well. The style and idea of people moving around has changed, and dropped to unprecedented numbers. Transferring different life activities from on-site to be operated from home, such as work, is the new normal for those who can afford it. They must benefit from the era of globalization, in which digitalization has changed the way of life. It has affected cities and caused changes in how communities mobilize and control residents' activities. It should be noted that these changes affected urban activities. To begin with, these changes relate to the prospect of large numbers of activities changing to be extroverted, which threatens urban centers. These changes create confusion and have sparked a debate about the coming era, how to manage the cities' open spaces, and, perhaps more importantly, how they can better respond to current and future crises [6]. As explained, in coastal cities, the waterfront had significant value for its urban condition.

Historically, settlements formed around waterfronts because of their association with overseas trading activities, which impacted the development of commercial and social communities [7]. In addition, such cities have waterfronts, which regularly host many social and commercial activities. Constructing such a waterfront needs a massive budget to produce suitable areas for city residents. Usually, residents prefer to practice most of their recreational and social activities on waterfront spaces [8]. Furthermore, the positive aspect of this waterfront is that it has infrastructure and facilities, which will facilitate the stages of resumption by implementing certain precautions to control the spread of COVID-19 without significant changes [9].

This research hypothesizes that preparing a well-educated team to run the waterfront and produce a plan using innovative technology linking geographic information systems (G.I.S) and intelligent devices at the waterfront will create a successful operation. In addition, it will help prevent future lockdowns due to possible pandemics. Therefore, the primary goal of the investigation is to discuss the safe use of the waterfront after the authorities declared a decrease in the levels of the hazards of the COVID-19 pandemic. This study proposes the use of innovative tools in cooperation with current government systems in producing an intelligent precautionary plan. This plan will be helpful in the face of the effects of future pandemics, and will introduce guidelines to operate such waterfront activities safely. These guidelines will benefit local authorities and designers in creating events in cases of future pandemics. This research discusses the waterfront of Al Khobar city in Saudi Arabia as an applied case study.

The research methodology takes a theoretical approach by reviewing the recommendations of international organizations and local authorities on controlling the transmission of COVID-19. Moreover, it will illustrate Al Khobar city's waterfront's existing facilities and activities. We used the qualitative method by conducting many online discussion panels and focus groups, focused on obtaining the opinions of specialists, designers, users, and municipal representatives.

2. Background

While searching the literature for advanced procedures characterized by precision in dealing with the COVID-19 pandemic, it was found that WHO presented a progressive framework for reusing open spaces. In addition, on June 2022, the Department for Environment, Food and Rural Affairs in the UK government was one of the pioneering groups that proposed a plan for reusing open spaces. They developed a precise plan and became a reference for most countries looking for accurate and comprehensive plans in facing the COVID-19 problem. Today, laying out the stages of dealing with it in open spaces, in general, is one of the most prominent subjects, and concerns the design of such areas as waterfronts. Landscape architecture designers face different challenges in the context of COVID-19 in creating safe proposals to protect users in these areas [10]. Most countries have developed plans that match their cultural, social, economic, and environmental conditions. In particular, governments in the Arab Gulf areas applied a method guided by the UK's experiences in various areas due to its internal regulations and rules. The UK government presented a progressive framework for reusing open spaces. The return was set out in phases as a gradual process. The principles for a safe return and educating people in dealing with new circumstances included the following:

a   Ensuring team, volunteer, and visitor safety;
b   Ensuring that the teams are ready;
c   Ensuring that the assisting teams are well prepared and sufficiently educated;
d   Ensuring government standards and customer expectations are met.

So, it is necessary to ensure an effective communications campaign to explain which facilities will be opened and which may take longer to open, with a clear reasoning behind these decisions, to ensure public understanding and compliance with the return stages. Saudi Arabia's government set out a general plan for returning to an ordinary situation that matched the UK's rules. Saudi Arabia faces the problem of its large area, and each governorate has its own local characteristics. Therefore, each governorate had an action plan that matched its conditions and respected the general master plan. However, implementing the plan was difficult between stages three, four, and five, given each governorate's circumstances, as shown in Tables 1 and 2. For example, the eastern provision, from the beginning of July 2022, applied stage number four. In the case of reopening the waterfront, they announced that it would reopen to receive visitors, but if they did not follow the rules, the users would be punished. The authority mentioned that they would return to stage three if there were failures in applying the plan [11].

Table 1. The main stages of closure and return according to the Department for Environment, Food and Rural Affairs, UK.

Stage	Stage 1 Mitigation	Stage 2 Restricted Functions	Stage 3 Phased Returning Part 1	Stage 4 Phased Returning Part 2	Stage 5 Return to Full Operating
COVID-19 Alert Levels	Maximum social distancing measures and restrictions	Social distancing measures and restrictions	Gradual relaxation of restrictions and social distancing measures	No or minimal social distancing measures; improved testing, tracing, monitoring, and screening	Routine international monitoring
Are parks open/closed?	Parks closed	Urban parks are open, but facilities/functions are closed. Country parks closed	Urban and country parks are open and some facilities/functions are available	Parks and country parks are open, and most facilities are open	Everything is opened

Source: [12].

Table 2. Facilities and infrastructure for closing and returning according to the Department of Environment, Food and Rural Affairs, UK.

Stage	Stage 1 Mitigation	Stage 2 Restricted Functions	Stage 3 Phased Returning Part 1	Stage 4 Phased Returning Part 2	Stage 5 Return to Full Operating
Cafes, Visitor Centers	Closed	Closed	Cafés reopened for takeaway services only subject to maintaining social distancing and cleansing standards	Cafés and visitor centers were reopened subject to maintaining social distancing and cleansing standards	Open
Public Toilets	Closed	Closed	Closed	Open—subject to maintaining social distancing and cleansing standards—considering disabled access	Open
Children's Play Areas	Closed	Closed	Closed	Open subject to maintaining social distancing and cleansing standards; waterparks are closed	Open Waterparks open

Source: [12].

3. Materials and Methods

The value of the waterfront for society and the economy in coastal cities is significant, as it is an ideal place for social activities, recreational spaces, sports facilities, commerce, entertainment, memorials, and tourism. It is a suitable environment for building a strong economy and employment sources through unique and attractive activities for mixed-use development [13]. Moreover, it plays a significant role in providing breathing spaces for residents in condensed areas, cement-building forests, and busy urban areas, and is vital in improving a city's sustainability conditions. During the lockdown period, problems emerged on different levels, with a deterioration of the activities of local users, preventing those who came as tourists from other areas. Socially, residents were kept away from having social interactives. From an economic point of view, many restaurants and cafeterias were on lockdown, which means that many financial sources were lost. There was a massive impact due to this lockdown on the city's economy and society [14].

Concerning the basics of the design process for the waterfront, the literature on urban waterfront redevelopment shows it is an interdisciplinary issue. It is becoming a popular discussion topic in urban planning, architecture, and geography [15]. However, restoring the city's waterfront after the COVID-19 pandemic involves not only plans, rules, orders, and regulations. Nevertheless, waterfront users' trust and safety are necessary to attract them to cooperate. As regards the design process, Roberto Burle Marx wrote, "open spaces are a complex of aesthetic and plastic intentions" [16]. Therefore, designers in the stages proposed for reopening waterfront areas must consider different approaches. One of them is dealing with and selecting the proper design elements used in the area's infrastructure in terms of landforms, lightweight structures, pavements, site structures, water elements, lighting, street furniture, and vegetation as a part of the phased return. Providing design precautions and educating designers to use these elements effectively to control the virus is a crucial issue.

In the case of the waterfront in Al Khobar city, in the eastern provision of Saudi Arabia (Figure 1), in 1947, the launch of the Khobar city plan (Figure 2) as the first planned city marked a radical change in the concept of "public space-making". The extended waterfront area became a strong magnet for different social and economic interactions, and is considered a tourist and recreation area (Figure 3). The waterfront annually receives

thousands of visitors from the eastern part of Saudi Arabia or other regions [17]. The total budget for constructing this project was SAR 230 million (equal to about USD 26 million). They started the construction in August 2010 in many phases. The area was approximately 4,000,000 square meters. At that time, its planning included highly technical infrastructure and facilities. It significantly improved the quality of life for residents of Al Khobar city [18].
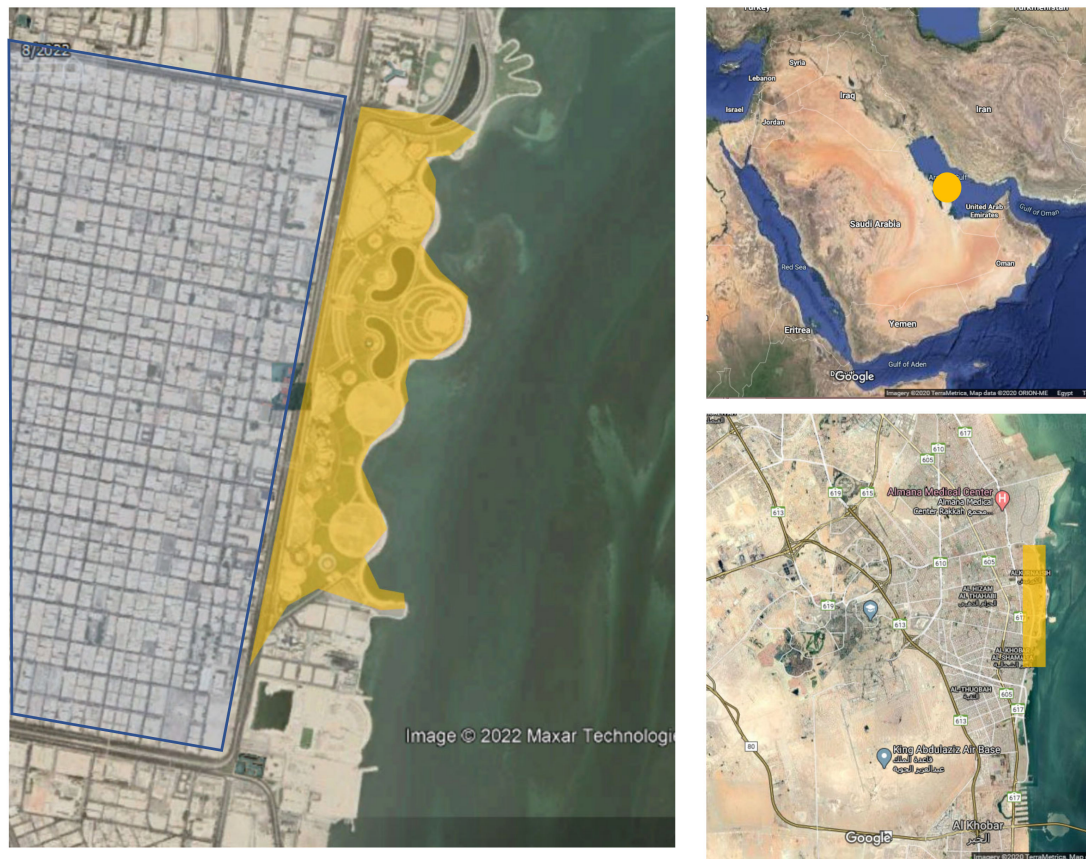
Figure 1. Eastern provision and location of the study area (Google maps, 2022).

1995   2005   2010
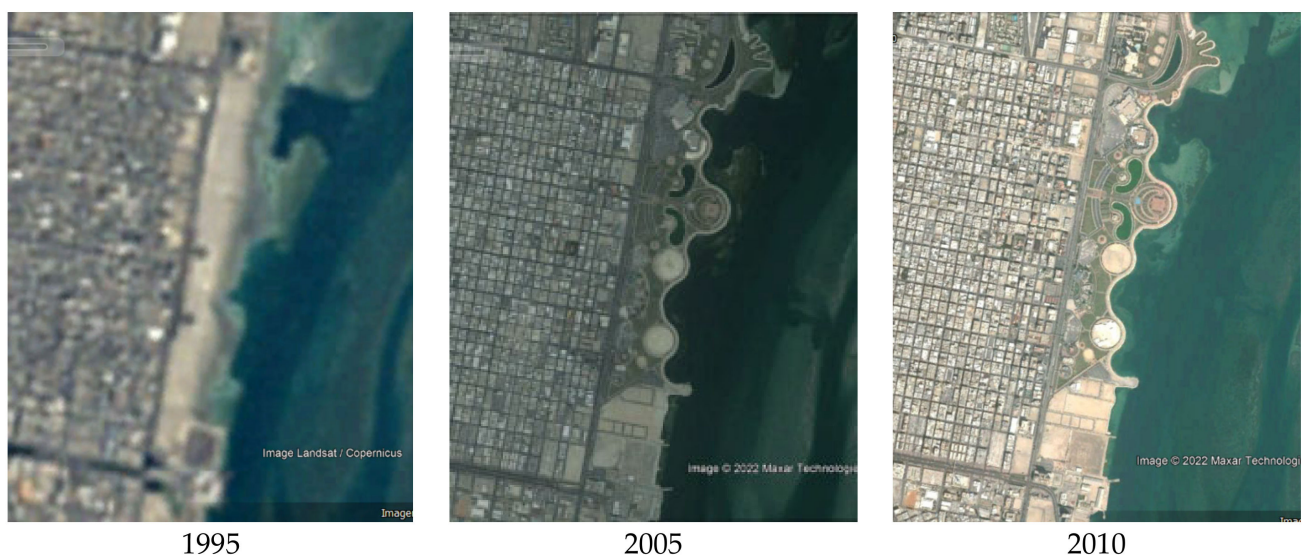
Figure 2. The waterfront of Al Khobar city development from 1995 until 2010 (Google Earth).

Figure 3. The existing design of the waterfront's landscape architecture, which includes sitting areas, pathways, pavements, playgrounds, and children's play areas, showing sports groups in different gardens and social zones interacting without social distance [18].

The project was designed to provide different elements of landscape architecture in good arrangements and other necessary visitor facilities (Figure 4), such as open green spaces and sports areas, training walkways, skating zones, entertainment, restaurants, cafeterias, cafes, mosques, toilet promenades, parking for about 2000 cars (Figure 5), a desert landscape zone, playgrounds, an oasis zone, a water games zone, boat marinas, and a sand beach [18] (Figures 6–9).
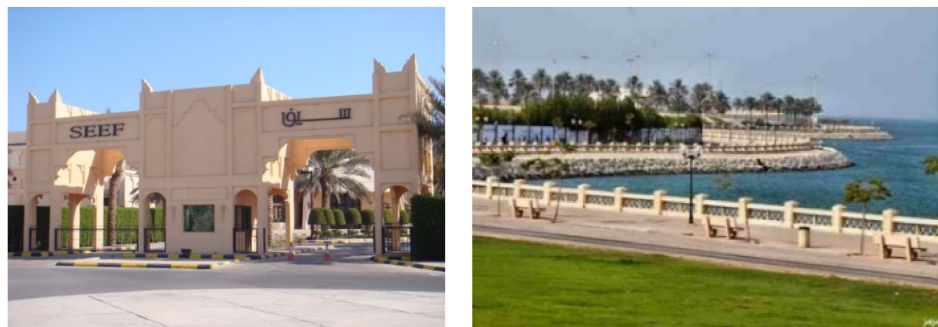
Figure 4. The waterfront's main landscape architecture features (researcher and Google maps, 2022).

Figure 5. General view from a tall building showing the general view of the waterfront.
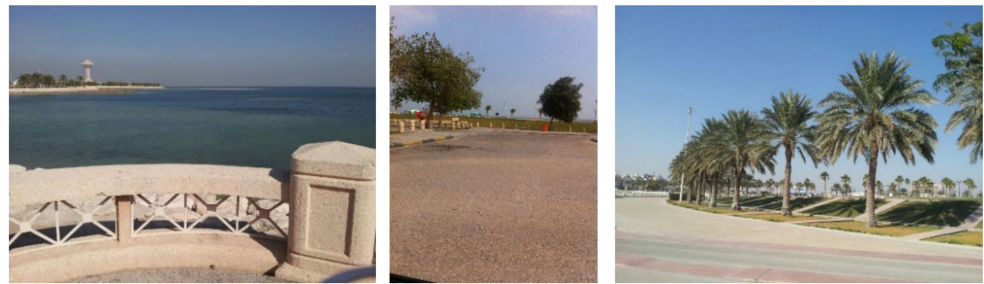
Figure 6. The waterfront promenade enables visitors to practice walking sports at a social distance with no problem (researcher).

Figure 7. Different services to facilitate the daily use by the visitors on the waterfront (researcher).

Figure 8. Shows different facilities available for enjoyment by children (researcher).
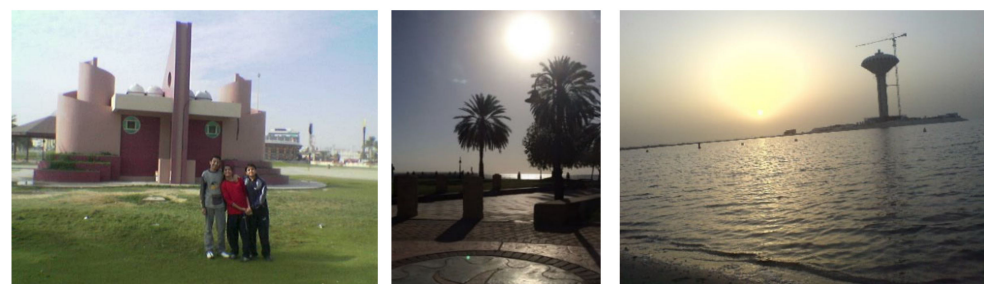
Figure 9. Facilities (toilets and sitting, etc.) in addition to the landmark of the water tank (Researcher).

Visitors used to use the waterfront area until COVID-19 restrictions were enforced by the local authority of Al Khobar City. At the end of June 2022 and the beginning of July, the government relaxed its restrictions preventing use of the waterfront and allowed the return of public use [19]. Consequently, the recommendation for safely accessing the waterfront was to review social distancing, a general strategy the government issued in Saudi Arabia based on the WHO regulations and guided by the UK's experiences. Accordingly, local authorities took these recommendations and transferred them to action plans. We are aware that the situation in the eastern part is different from the other parts of Saudi Arabia. We hope that the experiences of the pilot study in this location, where the lockdown has

been lifted, will help designers to control other waterfronts [14]. The government's general strategy was to preserve the city's resources and not waste them during other future pandemics, and at the same time, to manage the restoration correctly. This means that there is a need to reexamine the planning of the spaces in relation to the WHO's advice. This is in addition to considering the basics of social distance issues and using proper landscape architecture materials that reduce virus transmission between users [20].

With its aim of facilitating access to health care, the Ministry of Health of the Kingdom of Saudi Arabia, in improving health awareness in the community, created many applications, such as "Sehhaty, my health", "Tataman", and "Tawakkalna". "My Health" [21] is a national platform promoting the health of the Kingdom's population, both citizens and residents, by providing health information and related services to more than 24 million beneficiaries. Keeping data safe starts with understanding how developers collect and share the users' data. Data privacy and security practices may vary depending on how the app is used, as well as the region and the age of the user. The developer provides this information, and may modify it over time.

Moreover, "Tawakkalna" is a mobile application for smartphones affiliated with the Saudi Ministry of Health. It was launched on 11 April 2020 [22], and it provides protection and health care for citizens and residents of Saudi Arabia. The application provides a library of educational content about diseases, test results, and contact updates. In addition to its daily monitoring of the user's health status and provision of a countdown indicator for health isolation, it provides links to support epidemiological investigation and offers immediate communication with the health center to request assistance. These applications are, to some extent, highly dependent on the use of G.I.S. to facilitate the monitoring of changes in the COVID-19 pandemic. Some criticism of the application was raised due to the complexity of its use (Figure 10).
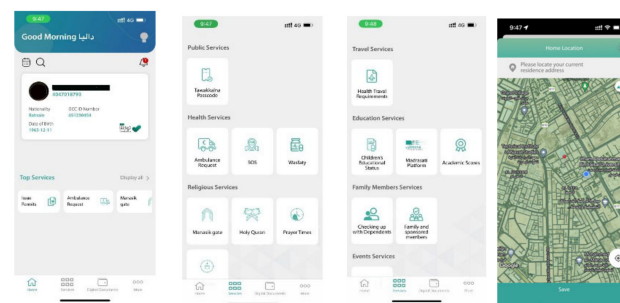
Figure 10. These applications depend on the use of geographic information systems (G.I.S.) to facilitate the monitoring of changes in the COVID-19 pandemic.

4. Results

In the case study, the waterfront in Al Khobar city, in the eastern provision of Saudi Arabia, which was designed for "public space-making", became a strong magnet for different social and economic interactions, and is considered a tourist and recreation spot. It plays an important role in the social and economic activities of the city. The last update development occurred in 2010 and cost SAR 230 million (equal to about USD 26 million), a large-budget project that had been intended to implement a high level of design for the different facilities and services for the visitors there.

After the systematic inventory framework's establishment and data collection, the inventory outcomes have been summarized in table three. The results show significant correlations between the project components and the city's cultural, social, economic and environmental benefits. The inventory shows the high significance of the waterfront to the city residents. This project is considered an interest for most residents and visitors from outside Khobar city, especially on the weekends.

Last July (2022), the government announced reducing the restrictions on using open spaces. During the soft reopening, the authorities were very cautious, and mentioned that

they would return to stage three if a failure occurred in applying the plan. Some waterfront users tried to use it as regularly as before the COVID period. However, the point here is that COVID-19 has not finished yet, and the number of infections is not regular; it is believed that it will persist for some time. At this stage of trying to control the spreading of the pandemic, there is general (but not clear) published guidance on the return to an ordinary situation. The propositions should be considered for control in the coming years. Table 3 explains the priorities and degree of action taken to restrain the waterfront operation. It shows the degree of action as solid and direct, an indirect precaution, a minor consideration, or no relation at all.

Table 3. Example of the guidelines concerning the general elements related to the return of the waterfront (waterfront).

Sustainability	Activities			Users				Facilities and Design Elements						Infrastructure			
	National	Tourists	Sports	Visitors	Staff and employees	Volunteers	Special need	Playing areas	Information desks	Ball	Children zones	Coffee and restaurants	Outdoor gym	Parking in the car	Site structure	Public Toilets	Wi-Fi network
Social	•	•	√	√	•	•	√	√	√	•	√	•	•	√	□	√	•
Econom	√	√	◊	•	√	√	◊	◊	√	√	◊	√	◊	√	√	√	√
Enviro	◊	◊	√	•	•	•	√	◊	□	□	□	◊	√	•	□	•	◊

Strong and direct action: √; Indirect precaution: •; Minor consideration: ◊; No relation: □.

As explained earlier, the main objective was maintaining the safety of visitors and sanitizing to keep the waterfront areas open. To achieve this, the researchers managed many focus groups between government officials, academics, and professionals to discuss strengthening the waterfront and serving the community. Moreover, many online and physical discussion panels and workshops were conducted to examine the methods that should be employed to sustain the project. The researchers had support from one of the offices of volunteer architects in Khobar city to conduct these discussion panels and workshops, and discuss the site survey (Figure 11). As a result, the following guidelines to control the proper operation of the waterfront were given:

Figure 11. One discussion group under the sponsorship of the ARCHMO consultant office, Khobar.

i. The precautionary plan must consider the innovative technology linking the G.I.S that was prepared by the authorities and developing software for the intelligent devices' application on the waterfront, in order to create a successful operation. It proposes using innovative tools such as QR codes that will positively impact current government systems in producing an intelligent precautionary plan;

ii. Operators (teamwork) should be provided to ensure the proper operation of the waterfront. The operation teams have to perform sufficient risk assessments for the project and maintain a high educational standard. It is essential to ensure team, volunteer, and visitor safety, be ready and well-prepared with sufficiently learned skills, and meet government standards and customer expectations. In addition, they must maintain the sanitization rules for functional spaces and social distancing between visitors;

iii. For visitors, social distancing (a 2 m distance from other customers) is a priority, with an appropriate number of users allowed to be near each other simultaneously.

Standard precautions such as digitally monitoring visitors' temperature are necessary. Moreover, they must provide handwashing facilities or hand sanitizer at entrance and exit points of the waterfront [19]. The must appoint controllers to minimize infection risks and reduce or prevent the use of interactive equipment [23];

iv. Landscape design elements:

- Paths—the main issue is placing markings on the surfaces to show the relation to social distancing, managing grass alongside tracks to provide 2 m-wide routes, and considering meeting points to ensure routes adhere to social distancing. Bench materials and designs have been the subject of debate, and some organizations initially prevented visitors from sitting and using them. It is now considered how to enforce social distancing, and the design of such benches should consider this point. In stage three, the preferred management option is to allow people to use benches and assume that they respect the social distancing guidelines. In certain circumstances, local authorities have removed benches to prevent people from gathering, but these decisions should be made while considering children, the elderly, or less able visitors;

- As regards litter bins, the initial options in stage two included blocking off or removing them, as the staff who would generally empty them had been redeployed. However, parks services attempted to keep emptying bins with reduced staffing and occasional informal volunteer support. In stage three, an intelligent mechanism should be designed so they can avoid direct contact;

- Install intelligent signage/visitor digital information regarding safe usage, and ground markings at entrance gates, in addition to booking systems wherever available to regulate numbers and allow time between bookings for safe entry/exit [24];

- A monitoring system should be developed to remove any unnecessary equipment or items from the waterfront and to consider the frequency of cleaning at any contact points;

- A sanitization system for the sports and activities areas should be set up. Individual sports (normal users or disabled users) should be allowed. Visitors can exercise individually or in groups, while keeping two meters apart. Outdoor sports courts, gyms, playgrounds, and other sports activities are permitted to reopen with the assignment of a responsible person to manage any events that may occasionally happen, so they can be done safely, following public health guidance.

v. Facilities such as clubs should be under strong control, especially the toilets and walkways. The risk assessments and safe methods of use for public restrooms should be updated. Minimum frequency regimes for cleaning/sanitizing contact points should be ensured, with the provision of enhanced personal protective equipment (PPE) and cleaning materials for employees, including safe disposal procedures;

vi. As regards cafés and food outlets, takeaway cafés are recommended, and these should provide a revised risk assessment to demonstrate that they can provide a safe and protected working environment for staff, allowing social distancing;

vii. Doors should be propped open where possible to reduce the need to touch door handles and push plates [25]. In addition, intelligent payment systems are recommended as the primary payment method (it is advisable to take only card payments or phone-based payment systems (Figure 12));
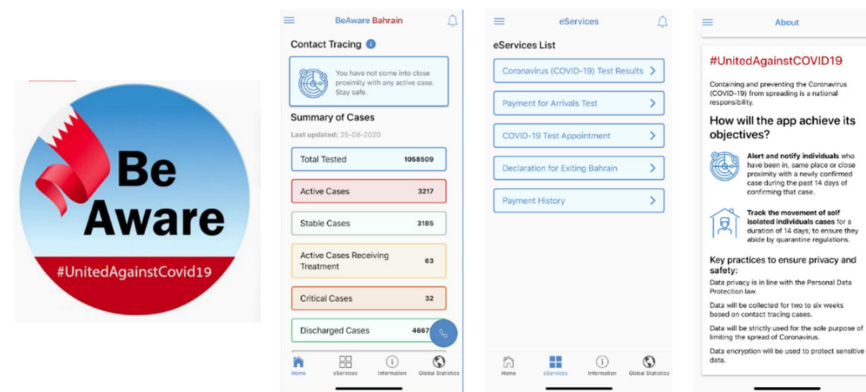
Figure 12. A unique program used to observe the spreading of COVID-19 [23].

viii. As regards activities, it should be noted that the waterfront will receive visitors from outside the eastern provision due to the return of regular movements between cities. However, the tourism-dependent sectors are unlikely to see a "return to normal" before the next three to five years, as reported by the WHO [9]. The rating agency expects lower consumer demand for global travel and tourism-dependent sectors for some time after restrictions are lifted. Therefore, the impacts will not be shown in a short time, since tourists in large numbers from outside Saudi Arabia are not expected to visit the city of Al Khobar soon [26];

ix. An intelligent queuing system should be used to enable social distancing. Transparent markings showing where to queue and the distance should be clear in order to maintain this. It should be noted that customers should avoid queueing near café entrances, and queues should be directed away from seating areas, if applicable. Customers should leave the café area after collecting their order unless there is a designated seating area.

5. Discussion

Managing the activity in the waterfront zone is crucial (Table 4). The researchers analyzed the practical results of focus groups and discussion panels through deep monitoring via geographic information systems (G.I.S. program—Figure 10). The analysis showed that the future use of advanced G.I.S. software would help in monitoring circulations and controlling the activities.

Table 4. Guidelines for the precautions in relation to activities necessary for the waterfront's return.

Sustainability	Activities		
	National	**Tourists**	**Sports**
	Festivals, with Social Distancing, Will Enhance Local Investments	**Celebrations with Social Distancing Will Attract External Investments**	**Individual Tournaments with Social Distancing Will Develop Sports**
Social	√	√	√
Economic	●	●	◊
Environmental	◊	◊	◊

Strong and direct action: √; Indirect precaution: ●; Minor consideration: ◊.

Moreover, part of this software will be used to update the data on the waterfront components for employees in different zones with recent notes and advice that may be given by the local authority. General modifications to the existing design must be made to modify the types of sports and social activities allowed according to the sanitization issues. On this point, different workshops for designers should be set up to help them choose

the proper landscape architecture materials for the modified design of the waterfront, in addition to rearranging and redesigning the spaces considering social distancing.

Therefore, proposing sustainable and resilient guidelines to operate the waterfront intelligently so as to control the spread of COVID-19 will facilitate decision makers and designers in dealing with such projects. These will utilize intelligent devices and intellectual networks in the operation plan. It will manage the activities, control the users' movements, develop the infrastructure to be contact-free and use accessible and suitable materials for the landscape architecture's elements. It is an important and vital factor to the efficient operation of the waterway.

Table 5 shows the general modifications required for the facilities and the design elements of the landscape architectural works. It considers intelligent tools and systems, the finishing materials, building equipment, landscape furniture made of easily sanitized materials, non-touch water supply systems, the sewer system, and the electrical networks to control the spreading of COVID-19 and future viruses. The physical contact of users within the zones should be restricted [27,28]. Infrastructure, an open Wi-Fi network, and intelligent technology are considered when preparing the guidelines (Table 6).

Table 5. Guidelines for the precautions that concern the facilities and design elements within the waterfront.

Sustainability	Facilities and Design Elements					
	Playing Areas	**Information Desks**	**Ball**	**Children Zones**	**Coffee and Restaurants**	**Outdoor Gym**
	Social distancing and individual games	Social distancing	Social distancing and individual games	Social distancing and unique games	Social distancing	Social distancing and individual games
Social	√	√	√	√	√	√
Economic	√	√	√	√	√	√
Environmental	●	●	●	●	●	●

Strong and direct action: √; Indirect precaution: ●.

Table 6. Guidelines for precautions that concern the infrastructure within the waterfront.

Sustainability	Infrastructure			
	Car Parking	**Site Structure**	**Public Toilets**	**Wi-Fi Network**
	The social distancing should be considered while using the area	Having to examine the materials	Social distancing, non-touchable equipment	It should be available and spread widely
Social	√	√	√	√
Economic	√	√	√	√
Environmental	√	√	√	√

Strong and direct action: √.

The research proposes smart boards with QR codes (Figure 13) in apparent locations to inform users that social distancing should be prioritized. These use digital announcement boards (screens/barriers at receptions and sale points), which control the visitor numbers and movements (directions) (Table 7).
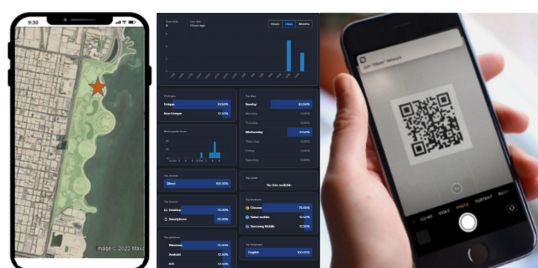
Figure 13. QR Code Use Analysis.

Table 7. Guidelines for the precautions that concern the users within the waterfront.

Sustainability	Users			
	Visitors	**Staff and Employees**	**Volunteers**	**Special Needs (Elderly and Handicapped)**
	From within and outside of Al Khobar city	For the facilities and services	From local communities	From within and outside of Al Khobar city
Social	√	√	√	√
Economic	●	●	●	●
Environmental	□	□	□	□

Strong and direct action: √; Indirect precaution: ●; No relation: □.

6. Conclusions and Recommendations

The WHO, on many occasions, illustrated that COVID-19 has not yet finished, and they expect it to be here for some time [9]. Therefore, in dealing with waterfront areas, the physical environment requires improvements to enable sanitizing precautions, which require new and technologically advanced facilities. In the same context, the advanced waterfront of Al Khobar city showed that it is rich in physical components, significantly impacting urban activities in various was. The Eastern Province Municipality of Saudi Arabia's Ministry of Municipal and Rural Affairs invited the input of professionals interested in developing the waterfront in Al Khobar in terms of its high physical quality, functional aspects, social factors, economic factors, cultural characteristics, and political issues. This project focused on creative and aesthetically pleasing places and activities, appropriate rules and regulations, motivated entrepreneurs, continuous funding opportunities, the preservation of the existing historical context, cultural heritage, unique values, modern physical sufficiency, and social well-being [29].

Therefore, the research proposes an intelligent plan linking the G.I.S. to existing governmental strategies and available resources using smart devices, and adding QR codes for buildings. These will give the place's status and manage its use in future events to avoid massive losses. This plan should start with the policy, then the strategy, and end with an action plan. Specialists in different disciplines must cooperate in a comprehensive, innovative program to properly deal with the operation, and reopen the area. This plan should consider similar pandemics in the future. The operators must be willing to manage the situation to avoid lockdowns and enable a successful restoration of the waterfront by utilizing existing facilities to entertain residents. The issue is not only focused on sanitizing furniture, which is inadequate. Moreover, while planning, there is a need to consider safe usage by individuals with a disability, and children.

This research emphasizes the need for a comprehensive plan for enhancing knowledge and educating designers in controlling the situation. In addition, it recommends a sustainable, resilient protection and sanitization plan to address the broader aspects of restoring the city's waterfront after the COVID-19 pandemic. Numerous factors affect the success and effective use of urban waterfronts after the pandemic. It is vital to consider the opinion of NGOs, residents' representatives, and public and private stakeholders, in addition to advice from focus groups and discussion panels; such a plan should satisfy users' needs securely and safely, and be easy to handle.

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