

DESERT RESORT

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Abstract

In recent centuries, human life has developed and education has flourished. The pressure on individuals has increased, making them need some entertainment to relax. From here, the concept of tourist resorts came into being. People usually travel from place to place in search of entertainment and leisure. The method in this study is to design an environmentally friendly resort in the desert, which will conform to the environmental concept. This study covered several case studies. The space program was proposed consists of hotel, accommodation, spa and fitness, kids area and teens area, restaurants and coffees, mosque, event hall, entertainment facilities, outdoor activity and other facilities. The site evaluation criteria are accessibility, visibility, views, privacy, noise level, physiographic elements, expansion capability, parking capacity and utilities infrastructure. The selected site is located in Bahrah region. The resort is considered a good place to entertain tourists, and it is owned by Jeddah, the tourism capital of the Kingdom of Saudi Arabia.

Keywords--Desert Resort, Entertainment, Tourism, Relaxation, Environment Concept

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INTRODUCTION

The concept of leisure resorts is not a modern product, but in fact resorts have existed for centuries. Historically, the oldest resort can be traced back to the Roman Empire about 2000 years ago. The early Romans created a public leisure facility called as Baths, which can be used by both men and women, and each has a different area [1-3]. The baths has gradually evolved from its structure to include more luxurious facilities, such as a gym, library, restaurant, shop, lounge, and even a museum and theatre [4]. The baths are used for health, entertainment and social fun.

Saudi Arabia's desert sand accounts for four-fifths of the geographic area of the Kingdom of Saudi Arabia, which encourages the Saudis to explore the world of the surrounding natural environment from all directions [5]. The desert is the most famous feature of the Arabian Peninsula, of which Saudi Arabia is the largest country. A lot of Saudi Arabia's area is desert. Today, the desert provides a lot of fun for tourists. Although most of them are still untapped, many deserts in Saudi Arabia have been explored [6].

Its endless beauty, the ever-changing shape of the dunes, the desert wind blowing on the shape of the dunes, and the adventure of driving on the soft beach are all unforgettable moments for desert travelers. Therefore, this study proposed a desert resort serves all people local community. This resort designed to offer several activities such as spa and sports such as, dune bashing, sand skating, camel trekking, desert walks and restaurant. The proposed resort hosts a diverse range of activity facilities such as kids club.

CASE STUDIES

This study covered several case studies that showing in unique design concept of desert resort from several countries such as America, China, Jordan, Abu Dhabi and United States. The chosen desert resorts for the case studies are:

- Amangiri Resort & Spa, Southern Utah, America
- Lotus Hotel in Desert, Xiangshawan, China
- Wadi Rum Resort, Wadi Rum, Jordan
- Qasr Al Sarab Desert Resort & Spa, Abu Dhabi
- Kaufmann Desert House, Palm Springs, California, US

Amangiri Resort & Spa, Southern Utah, America

Amangiri Resort & Spa opened in October 2009 and was designed by Marwan Al-Sayed, Wendell Burnette and Rick Joy. The resort is sensitively located next to the low-entrada sandstone rock formations (such as ancient settlements), so every guest can experience the simplicity and pure natural beauty of the surrounding terraces, as well as the charming light show (Figure 1). The resort poetically emphasizes the pure nature of beautiful landscapes such as water, rocks and sky. The resort includes many functions, such as luxury hotels. The environment is a living room, a spectacular swimming pool, a spa, a fitness center, and a central pavilion with a library, art gallery, and private/public dining area.

Amangiri Resort is a unique high-level design monument with flat terraces and water plateaus in the desert, and can capture the stunning desert landscape. The three architects gathered under an independent company called I-10 Studio, which was established specifically for the design and execution of resorts and used their respective companies to support this work [7, 8]. This resort has inspired the idea of building buildings with sand and rocks, which are designed as thick concrete blocks carved by program, movement and light. The rugged, simple geometric structure makes rough textured rocks the background, sometimes occupying the observer's position, while other rocks blend seamlessly into it, creating a natural silhouette.

Lotus Hotel in Desert, Xiangshawan, China

Lotus Hotel in Desert is designed by Plat architects. The Lotus Hotel in Desert was opened in March 2013. The Lotus Hotel is only part of the Xiangshawan Desert Plan, which is located in the center of the sand. This hotel allows each visitor to take experience the simplicity and magic of the surrounding sand. In addition, give to the visitor different experience in the space. The design of the building was influenced by environment of desert, but it has a unique design and developing more desert architecture (Figure 2). This resort includes several functions such as hotel, spa, fitness center, restaurant, cafes and theatre.

The form of Lotus Hotel not only integrates into the desert, but also demonstrates the power of the environment. The architect used the traditional Chinese concept of "Zhen", which is simply

the art of repeating the same elements. Consists of a unit with a square white canopy, rotated 45 degrees and connected together in a circular form to provide shade and protection from desert heat and make the shape stronger. The architects reflect structure, shadow and wind, blending function, form and landscape into a lotus shape [9].

Wadi Rum Resort, Wadi Rum, Jordan

Wadi Rum Resort is designed by Oppenheim Architecture. The Wadi Rum project aims to establish new standards of design, quality and sustainability in the natural environment planned to be completed in 2014. The project consists of 47 desert huts, elaborating the original future experience in detail, and providing ecologically sensitive design solutions. The project includes the research and development of existing villages and the creation of new villages, as well as the design of visitor centers, entrance passages, new roads and infrastructure, and environmental protection by planting plants and trees that match the characteristics of Wadi Rum [10].

The project is exploring and attracting the natural beauty of the desert to create a unique and luxurious accommodation environment (Figure 3). The main points of the concept of building a suitable desert building, including shading, natural ventilation and thermal quality, will provide guests with a comfortable microclimate while providing a natural experience in the desert, all of which will play an important role. In addition, through appropriate use of local materials and various water-saving measures for artificial irrigation and on-site irrigation, energy consumption can be minimized. The building is inserted into the landscape with a nominal influence and original style, keeping it in sync with the terrain. The project is a clear and suitable type, which can make full use of the surrounding desert natural environment. It makes full use of the mysterious valley where desert sand and stones meet. The suite will be carved directly on the sandstone cliff, and the architectural elements will be made of rammed earth and cement mixed with local red sand [10].

Qasr Al Sarab Desert Resort & Spa, Abu Dhabi

Qasr Al Sarab Desert Hot Spring Resort in Abu Dhabi was designed by Dubarch. Qasr Al Sarab has stylish suites with charming Arabic-style décor, all with stunning views of the dunes (Figure 4). Also, include different types and size of rooms which has the ability to interconnect for families. This resort offers all the facilities to make for a holiday perfect, including a spa with hammam, tennis court, kids club and three dining options. In addition, there is a desert sightseeing center that can organize trips to the desert, including camel trekking, 4x4 desert adventures and hiking trips, so that guests can really feel the location [11].

Kaufmann Desert House, Palm Springs, California, US

The Kaufman Desert House in Palm Springs was designed by Richard Neutra. Due to the harsh climate, Neutra must consider how the various buildings, spaces and material elements of the building can cover the weather and react to keep the house comfortable and pleasant. His response to the climate is to select and locate specific materials that respond well to strong weather changes, and place holes and overhangs in appropriate places to achieve natural ventilation and indirect sunlight [12].

The building is designed to float, so steel and glass are used throughout the house to keep it light and airy, while thicker floors float above (Figure 5). In addition to steel and glass, the third transparent material in the house can be seen on the thick stone wall. The building material has a high thermal quality, which means that it can adjust the temperature by slowly absorbing heat when it gets hot during the day and then releasing the heat when it gets cold at night. Because the desert experiences high temperature fluctuations during the day and

night, the stone wall can prevent the overheating of the building by slowing down the heat transfer. In addition to providing thermal protection, masonry can also resist wind, especially in the desert, sand, dust and other forms of dry, loose debris is often scattered in the air [13].



Figure 1. Amangiri Resort & Spa, Southern Utah, America [8]



Figure 2. Lotus Hotel in Desert, Xiangshawan, China [9]



Figure 3. Wadi Rum Resort, Wadi Rum, Jordan [10]



Figure 4. Qasr Al Sarab Desert Resort & Spa, Abu Dhabi [11]



Figure 5. Kaufmann Desert House, Palm Springs, California, US [12]

SPACE PROGRAM

On the buildable area, this project designed to contains the accommodations zone, spa and fitness area, kid’s area and teen’s area, entertainment area including (Hall, outdoor activities, restaurants and coffees) and other services and facilities. The expected area in total is 24,306 m², 30% of the entire project’s area including 25 % circulation. The Table 1 shows the total areas of each space separately.

Table 1. Space program of buildable area

Main Zones	Net Area (m ²)	Gross Area (m ²)
Hotel	5420	6775
Accommodation	3000	3750
Spa and Fitness	2455	3068
Kids Area and Teens Area	780	975
Restaurants and coffees	3280	4100
Mosque	190	237.5
Event Hall	1890	2362.5
Entertainment Facilities	490	612.5
Outdoor Activity	1580	1975
Other Facilities	357	450.75
Total Buildable Area	19442	24306.25

For the unbuildable area, the site designed to contains parking spaces and outdoor recreational areas, with a total space of 50,694 m², 70% of the entire projects area. Recreational outdoor spaces are used as safe grounds for activities, improve microclimate within the project, integrates project with the environment and provide a buffer zone between different spaces yet keeping them united. The space program of the unbuildable area is shown in Table 2.

Table 2. Space program of unbuildable area

Facility	Standards	Quantity	Total current area (m ²)
Parking for residency	1 car for each 60 m ²	300	3750
Parking for employee	Number of employees	30	500
Parking for public space	12.5 m ² for each car	800	10000
Parking for maintenance	Number of employees	20	250
Parking doe Dune Bashing Car	12.5 m ² for each car	150	1875
Total Unbuildable Area		1300	16375
Outdoor Recreational Area			34319
Total Unbuildable Area			50694

Based on the project’s area calculations, design capacity standards, and estimated number of users. The total project area is about 75000 m², while buildable and unbuildable area is about 24306 m² and 50694 m² respectively.

SITE SELECTION AND ANALYSIS

There are three site locations around Jeddah, Saudi Arabia are proposed for project site location. Figure 6 shows the location of Site 1 located in Bahrah. This site is located on south Jeddah’s boundaries, between Makkah and Jeddah. Bahrah area is away from the Jeddah city, about 40 kilometres. Figure 7 shows location of Site 2 located in Mastorah. This site is located on north Jeddah boundaries. An advantage of the site is that it’s considered as a linking point Jeddah to Al-Medina. Mastorah area is away from the Jeddah city, about 200 kilometres. Figure 8 shows location of Site 3 located in Yanbu. This site is located on north Jeddah boundaries. The desert is in northeast of Yanbu. Yanbu area is away from the Jeddah city of, about 300 kilometres.



Figure 6. Site 1 [14]



Figure 7. Site 2 [15]



Figure 8. Site 3 [16]

The site comparison evaluation covered several criteria such as accessibility, visibility, views, privacy, noise level, physiographic elements, expansion capability, parking capacity and utilities infrastructure. The site evaluation result is shown in Table 3. It is critical to select a site that can be easily accessible by visitors, and within walking distance of some potential users coming from

and to the Jeddah or City. The visibility is not that necessary in this case. In order for the project to be accepted by visitors, there should be enjoyable views. Therefore, it should be study how to manipulate the wanted views and avoid unwanted views. The site should be placed in an area with a strong positive identity and image. The project will have a main and major view towards the desert. This will assist in creating recreational areas and interesting outdoor spaces for incomers. The site should not be surrounded by any building in order to reserve for privacy purpose. It is important to not place the project in residential areas or in middle of the city because of the noise. The topography is the most powerful aspect of the site, the orientation, and the climatic aspects are considered. The site should has the capability for future expansion and also capable to hold sufficient parking spaces. The site must have available utilities infrastructure such as electric and water supply.

Based on the site comparison evaluation result in Table 3, the selected site location is Site 1, which appeared to have to the highest total score making it the best fit site for the project. The selected site is located in south Jeddah in Bahrah region with a prime location by the sand dunes. The site total area is approximately 75,000m². The site's orientations and interesting form allow for benefit from the north western prevailing winds. The sun path determines where shading devices must be used (Figure 9). The site's existing topography is the most powerful aspect of the site. The site can be accessed through old Makkah road by automobiles. Visitors can access the site easily by the main road that connected Jeddah to Makkah together (Figure 10). There is a secondary road that connected the main road to the site.

Table 3. Site Evaluation

Criteria	Weight factor (%)	Site 1		Site 2		Site 3	
		Rating (1-10)	Score	Rating (1-10)	Score	Rating (1-10)	Score
Accessibility	19	10	1.9	6	1.14	8	1.52
Visibility	8	5	0.4	6	0.48	5	0.4
Views	12	8	0.96	10	1.2	8	0.96
Privacy	10	6	0.6	5	0.5	7	0.7
Noise level	16	9	1.44	8	1.28	6	0.96
Physiographic Elements	12	7	0.84	9	1.08	7	0.84
Expansion Capability	10	8	0.8	6	0.6	7	0.7
Parking Capacity	8	6	0.48	5	0.4	5	0.4
Utilities Infrastructure	5	3	0.15	3	0.15	2	0.1
Total	100		7.57		6.83		6.58

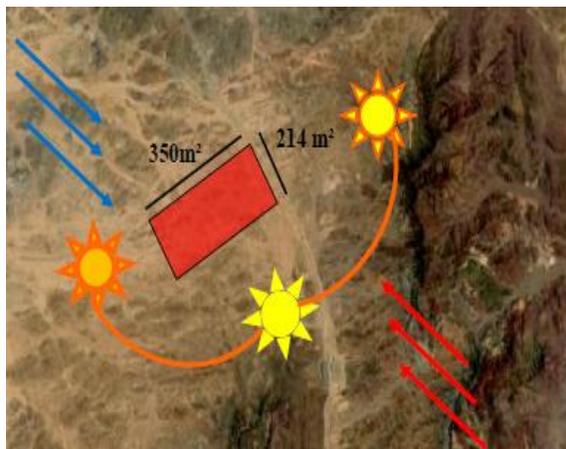


Figure 9. Site climate analysis



Figure 10. Site accessibility

ZONING AND PROJECT DESIGN

Figure 11 and Figure 12 demonstrate the final site zoning diagram and site plan of the project respectively. The main entrance is located with at the hotel and accommodation zone, which is at the east of the project site. The entertainment facilities, restaurants and event hall are located at the north of the project site. Figure 13 and Figure 14 show the community service area view and hotel view respectively. The main perspective of the project is shown in Figure 15.

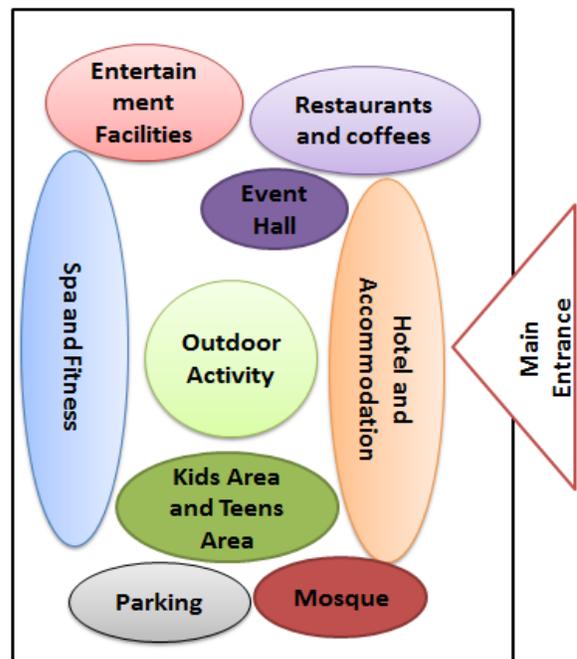


Figure 11. Final site zoning

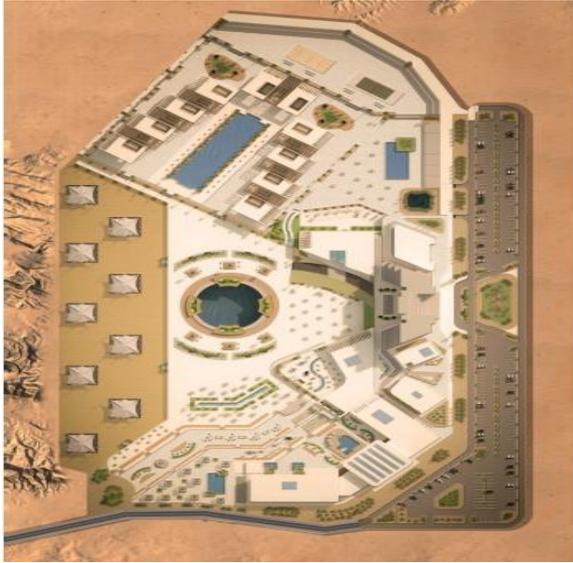


Figure 12. Site plan



Figure 13. Community service area view



Figure 14. Hotel view



Figure 15. Main perspective view of the project

CONCLUSION

The goal of the project is to creating attractive destination and improves tourism in Saudi Arabia, which depends on environmental attractions. This project aims to become a point of attraction for tourists outside of Jeddah city. This desert resort considered a new type introduced to Saudi, includes different activities that are related to the environment. The covered space program of this project are hotel, accommodation, spa and fitness, kids area and teens area, restaurants and coffees, mosque, event hall, entertainment facilities, outdoor activity and other facilities. The selected site is located in Bahrah region, based on the site evaluation criteria of accessibility, visibility, views, privacy, noise level, physiographic elements, expansion capability, parking capacity and utilities infrastructure.

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