

## KINGDOM CITY CRUISE TERMINAL

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### Abstract

Cruise tourism is rapid developing as focal point of recreational sector. The cruise tourism sector has the opportunity to bring financial advantages to a port city. Jeddah is mostly renowned for its import and export port, Jeddah Islamic Port. It focused on trade in products between nations. However, this port is only focused on cargo trading, thus it has overlooked the potential of cruise tourism. Thus, this work has presented a proposal on developing a cruise terminal Jeddah, Saudi Arabia. For this work, two case studies related to cruise terminal was analysed. Based on the analysed case studies, for the proposed cruise terminal, the estimated total site area for development was 44875 m<sup>2</sup>, with gross floor area of 38750 m<sup>2</sup>. The cruise terminal consists of several areas, such as arrival terminal hall, departure terminal hall, administration, hotel, common tourist activities and facilities, amenities and logistics. In this work, 2 sites were proposed for development, and site 1 was chosen as it exhibited highest site evaluation score of 66. Site 1 is located at Obhor, North of Jeddah, within Al Waleed Bin Talal Kingdom City, with site area of 45000 m<sup>2</sup>. The development of this cruise terminal is expected to improve the economy of Jeddah City and enhance the port of Jeddah as a tourism attraction center.

**Keywords**--cruise, terminal, transport, tourism, architecture, Saudi Arabia

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### INTRODUCTION

The contemporary cruise industry arose in the early 1960s and quickly evolved into a mass market using big ships and bringing aboard more profit-generating tourist services [1]. This has become a prominent sign of the tourism sector's development in aspects of commercial exposure and tourism service delivery around the globe [2]. In addition, the expansion of the cruise industry has caused the number of cruise ships to rise, fresh facilities have been created and current facilities have been upgraded to accommodate the increasing number of cruise tourists [3]. A cruise terminal is a port that only encounters tourist cruises, where ships can dock and transfer people to other regions. It creates an optimized access to a land that adds a tourist value to the city [4]. Tourist cruise terminals are usually designed to luxuriously target people who value traveling by sea and exploring different types of cultures and heritage [5].

Jeddah City is one of Saudi Arabia's major cities, located in the Hijaz Tihama region on the Red Sea coast [6]. It is the major urban center of western Saudi Arabia and one of the country's most prosperous regions. It is the country's second largest city with a large population of 3.4 million people [6]. The importance of Jeddah extends religiously, as it is the gateway to Mecca and Medina, Islam's holiest cities. Jeddah is experiencing a huge economic, cultural and commercial boost and development [7]. It has grown over the last two decades, where the city has become an economic center of money and business. Nevertheless, it has an important port for importing and exporting goods and needs [8]. Since Jeddah is the largest port on the Red Sea coast, there should be more tourist developments in the region. The port serves as a great tourist potential in Jeddah City that will boost Saudi Arabia's economic status. Thus, this work presents a proposal on developing a cruise terminal at Jeddah, Saudi Arabia. This cruise terminal mainly aims to make the city an internationally developed tourist attraction by attracting foreigners to come and experience the hidden tourist potential of the city.

### CASE STUDIES

For this work, two case studies have been analyzed. The following are the details of the case studies

- a. Kai Tak Cruise Terminal
- b. White Bay Cruise Passenger Terminal

#### Kai Tak Cruise Terminal

Kai Tak Cruise Terminal is located at South-eastern end of the former Kai Tak Airport runway, at Hong Kong (Figure 1). This terminal was designed by Foster + Partners. The floor area of this terminal is 184000 m<sup>2</sup>. This iconic landmark structure is located in Victoria Harbor in Hong Kong. The distance from Hong Kong International Airport is 42 km and the airline check-in at Kowloon Airport Express station is 10 km. The cruise terminal can hold two mega cruises of 360 meter cruise of 5,400 passengers and 1,200 crew, or a gross tonnage up to 220,000 tons. The first berth is approximately 455m length x 35m width, whereas the second berth is 395m length x 35m width. The depth of water extends to 12-13 meters for dredging. The building is a three story building with a height of 40 m. It operates on a year-round regular basis. The cruise terminal includes a shopping area, travel retail, wedding registry, restaurants and cafes. The terminal has four atriums that enforce natural light deep inside the building. Its design meets a 23,000 square meter rooftop garden with 360 views of the harbour, where thousands of local visitors are welcomed on vacation. A pedestrian promenade that climbs up through the terminal and opens up to the garden reaches the roof garden. This garden has open spaces for picnics, outdoor dining and formal events. The structure of the building is predominantly concrete with the cladding of aluminium PVF2 panels and double glazed units. Its beams are made with HK Beam Platinum to increase sustainability. Basically, the port has a large rectangular footprint arranged over three main levels. Furthermore, the cruise terminal is also built with sustainability features such as solar hot water system, natural lighting, natural ventilation, photovoltaic system, rain water recycling system, self-shading design and landscaped deck. Tourism increased drastically as the

cruise terminal became an essential landmark that attracted tourists, which resulted in an economical increase.



Figure 1. Kai Tak Cruise Terminal Port

**White Bay Cruise Passenger Terminal**

White Bay Cruise Passenger Terminal is located at Sydney, Australia (Figure 2). It was designed by Johnson Pilton Walker Architects. It consists of an internal area of 4600 m<sup>2</sup> and an external area of 5000 m<sup>2</sup>. Sydney Cruise Terminal is a modern cruise facility that serves as the rapidly expanding leisure cruise industry in Australia. The city is a major destination for the cruise passenger industry, while White Bay's new terminal reinforces its role as the region's major cruise destination. The terminal features a wide open hall of arrivals and departures that can hold 2,400 passengers at a time and can meet 4 berths. The wave-like ceiling is 12 meters high with an internal area of 7,300 meters square. The number of cruise ships visiting the terminal reaches 170 each year, and on non-ship days, approximately 50 functions and events are held annually. Next to the terminal there is a waterfront area open to pedestrians and cyclists for travelers to stay in during their long hours of transit. Furthermore, the terminal design won the Harry Seidler Award for Commercial Architecture at the 2014 National Architecture Awards of the Australian Institute of Architecture (AIA).

Furthermore, the terminal participates in the city's amazing skyline having a wave-like roof structural form. This wave-like roof canopy's design draped from a historically significant gantry crane structure. Its form has a dramatic reflection of space as it gives a flexible, bright, and broad perception. The terminal is a city's attraction point that influences the tourist development of the city. The terminal port's design and construction was quite challenging because it was located in an industrial site and it was a requirement to preserve the existing high bay warehouse. The building adapted the industrial character of the site and preserved the massive steel gantry structure of the 1960s as the primary roof structure for the new cruise terminal. By removing cladding, services and redundant structural elements, the design reveals the dramatic backdrop of heritage sandstone cutting to the north and opens up panoramic views to the east of the city skyline. The open space was created using 40 meters of steel spans between heritage gantry structures. New and modern elements were enforced in the design along with the retained heritage fabric gave the project a tremendous value in the city.



Figure 2. White Bay Cruise Passenger Terminal

**PROGRAM ASSUMPTION AND SPACE DETAILS**

For the proposed cruise terminal, the estimated total site area is 44875 m<sup>2</sup>. Based on Table 1, the estimated gross floor area is 38750 m<sup>2</sup> and the net floor area is 31000 m<sup>2</sup>. The other details of program assumption is listed in Table 1.

Table 1. Program assumption

Item	Measurement (m <sup>2</sup> )
Net floor area (NFA)	31000
Gross floor area (GFA)	38750
Ratio	14 m <sup>2</sup> / user
Number of users	2700
Footprint area	13000
Outdoor area	15000
Total site area	44875
Parking area	16875

Table 2 shows the details of zone and its measurement. The cruise terminal comprises of several zone, which are arrival terminal hall, departure terminal hall, administration, hotel, common tourist activities and facilities, amenity and logistics. The comprehensive details of each zone is listed in Table 2.

Table 2. Cruise terminal zone and area estimation

Zones	Percentages (%)	Gross floor area (GFA) (m <sup>2</sup> )	Net floor area (NFA)(m <sup>2</sup> )
Arrival terminal hall	19	7363	5849
Departure terminal hall	16	6200	5055
Administration	5	1937	1364
Hotel	16	6200	5105
Common touristic activities and facilities	38	14725	11962
amenity	2	775	465
logistics	4	1550	1200
total	100	38750	31000

**PROPOSED SITE**

**Proposed site: Site 1**

For Site 1 (Figure 3), the site is located in Obhor, North of Jeddah, within Al Waleed Bin Talal Kingdom City. This site has an estimated area of 45000 m<sup>2</sup>

**Proposed site: Site 2**

For Site 2 (Figure 4), this site is also located in North of Jeddah, next to King Abdullah Economic City at Al-Morooj Golf Center. This site has an estimated area of 45000 m<sup>2</sup>



Figure 3. Site 1



Figure 4. Site 2

**SITE EVALUATION AND ANALYSIS**

Based on the two proposed sites, site evaluation was performed. Weighting factor was used for site evaluation, where 1 = not very important, 2 = slightly more important, and 3 = important. The sites were evaluated in terms of accessibility, future development plans, shape/proportional, views, utilities, visibility and surroundings. Based on Table 3, site 1 has exhibited highest evaluation score of 66, compared to site 2, which exhibited score of 53.

**Table 3.** Site evaluation

Site criteria	Site 1	Site 2
Accessibility	10	9
Future development plans	15	15
Shape/proportional	4	4
Views	10	7
Utilities	9	6
Visibility	9	6
Surrounding	9	6
Total	66	53

Site 1 is located adjacent to a new developing area that is emerging in Jeddah, Al Waleed Bin Talal Kingdom City. Furthermore, it is located on a main road, Obhor Road. Moreover, several utilities, services, resorts, a college, and a hospital surround this site. On the other hand, the site views overlook Kingdom tower, several resorts, and the sea. Furthermore, the new metro station is located close to the site, which will allow the government to control tourists paths and facilitate transportation. Furthermore, in terms of climate, Summer

temperatures are considered very hot and break the +40°C (104 F) mark in the afternoon dropping to +30 °C (86 F) in the evening. In addition, Jeddah is relatively humid, with average daily relative humidity varying between 55% and 70% throughout the year. Relative humidity is lowest during late spring and early summer. On the other hand, the location of the mountains to the east of Jeddah and the general wind pattern over the Arabic peninsula, therefore the predominant winds move parallel to the coast.

**PROJECT DESIGN**

Figure 5 and Figure 6 shows the proposed design of the cruise terminal. The main concept came from taking the main vertical access of Kingdom Tower and make it the dominant source of creating this international gateway. The development plan lacks a touristic port, so this addition will make the port a gateway to the city's new development plan for tourists travelling by sea. This cruise terminal has several zone, which are arrival terminal hall, departure terminal hall, hotel, terminal facilities, main reception, admin, common touristic activities and facilities.



Figure 5. Proposed cruise terminal view 1



Figure 6. Proposed cruise terminal view 2



**CONCLUSION**

This work has proposed the development of cruise terminal at Jeddah, Saudi Arabia. Obhor, North of Jeddah, within Al Waleed Bin Talal Kingdom City. This proposed cruise terminal will serve as a touristic gateway for Jeddah city with large spans of green outdoor areas and marine activities. Furthermore, it creates a stop point for foreigners to view the city from a different perspective by considering essential touristic and entertainment facilities. In addition, the development of the cruise terminal will enforce new activities for local citizens as well as for family quality time and socializing with others.

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