



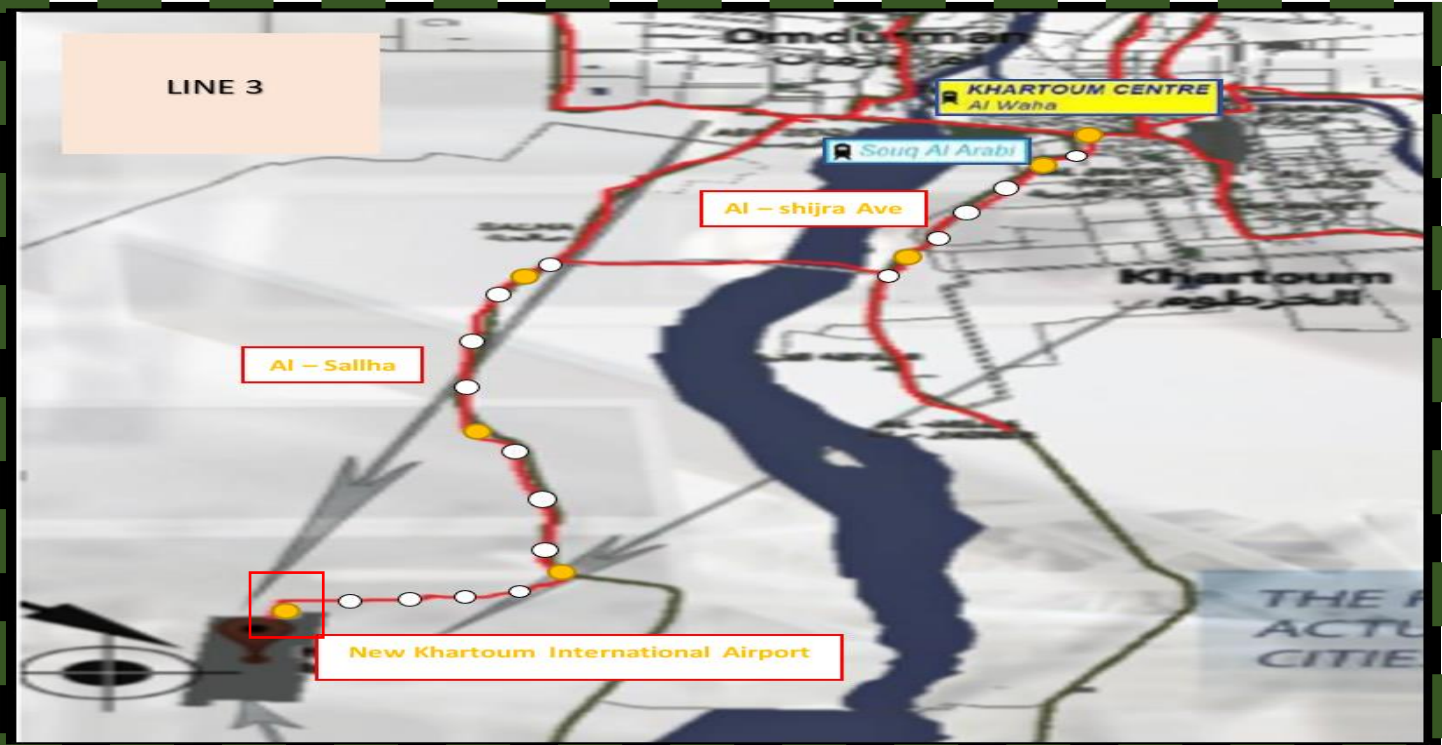
### suggested sites

Location was identified based on the map of Khartoum tram project path.

The location of the nearest Khartoum airport was chosen.

Making it easier to move between the airport and the station.

So, there will be no other sites to differentiate them.

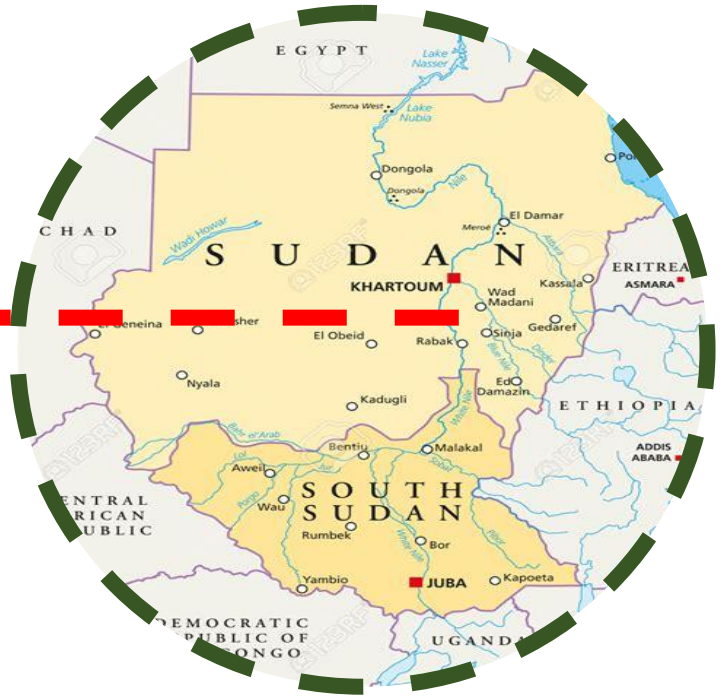
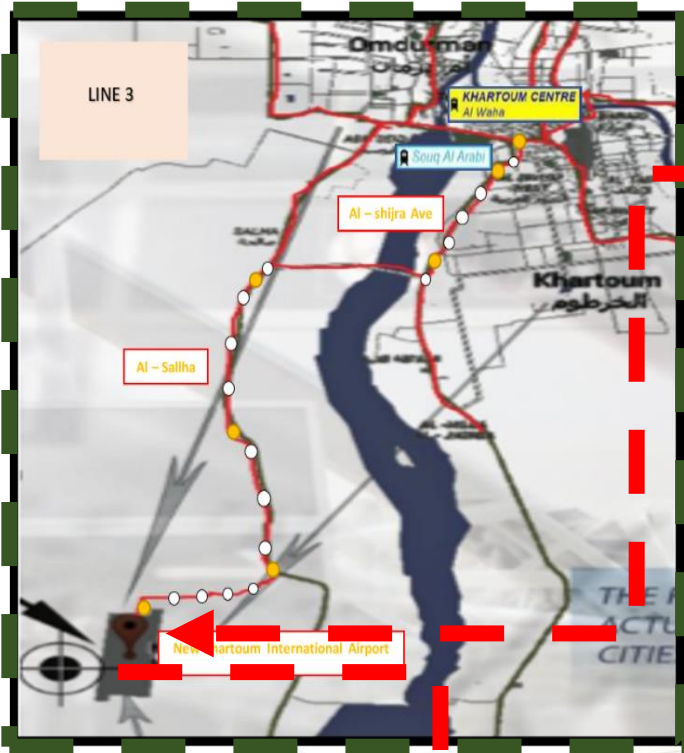


The Tram router (Khartoum – new airport )





### The Site Location



The site is located in Khartoum State (local Omdurman) next to Khartoum's new airport.

Total Area of Site = 750000 m<sup>2</sup>





## The accessibility of the site

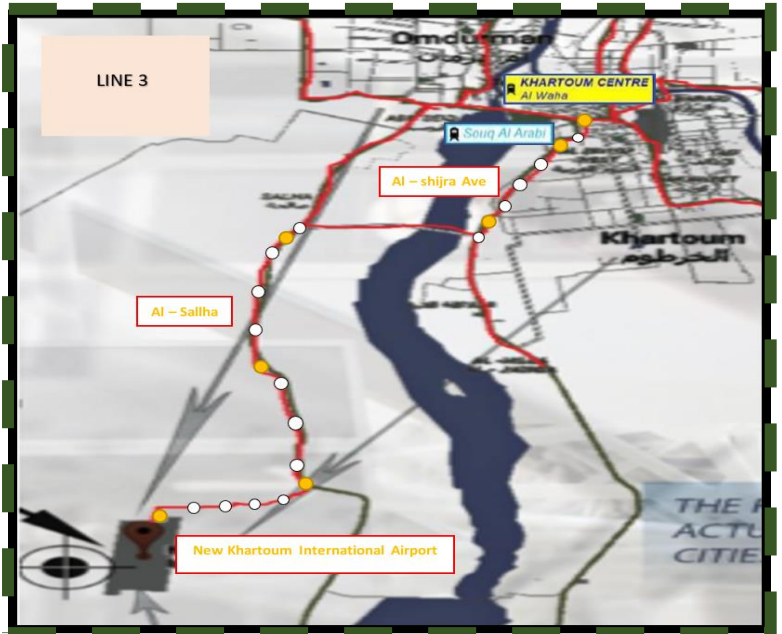
For departures, the site is accessed by tram used as a means of transportation.

The site is accessed from Khartoum via Al Ftihab Bridge or Al-Dabasin Bridge, then Salah Road and even the Airport.

The site is accessed from Bahri via Shambat Bridge or Halfaya, then Nile Street and Salah Street to the airport.

As for Omdurman from Al Shohda Al-Arbaeen Street to Al-Ftihab Street and then Salah Road to the Airport.

As for the arrivals, the site is accessed by special means of transport of the station.



### Result

Prefer to work the main entrance on the western side on the new airport road and the secondary entrance on the eastern side

## Neighborhoods and services

The airport is located in the south and east sides of the site

The location of the north and west limits investment areas.

The site is located on the east and south side of the 30-meter street.

The location on the western side of the new Airport Road is 50 meters away.

As the airport is a new planned area, the services are available. The water and electricity lines pass from the east side of the airport. There is also a sewage network for the airport and the surrounding areas

As for the surface drainage there is a creek north of the airport leads to White Nile.



### Result:

It is preferable to introduce water, electricity and sanitation services from the east. And the surface discharge from the north side across the main creek.



## The impact of the site on the neighborhood and on the site

Neighboring	Impact on the site	Impact on adjacent
The new airport	Having an airport near the location makes it a major and main station and facade of the city.	The presence of the station facilitates the arrival and movement of the new airport, especially the location of the remote airport.
Investment areas	The presence of investment zones near the station increases the value of the economic station and increases the demand for it.	The presence of the station near the investment areas makes the investment areas more popular and increase the price and the establishment of new projects in which serve the station and the airport together.
New Airport Road	The new airport road near the station is easy to reach.	Adversely affect the creation of congestions at the terminal entrances and thus the main street.

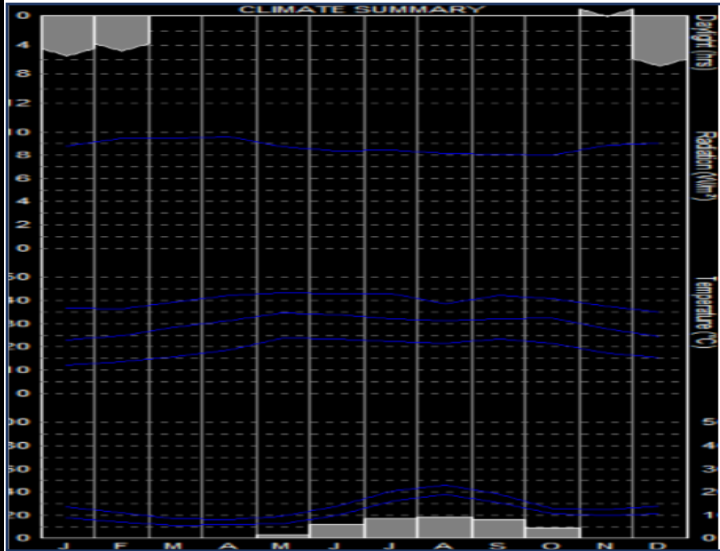




## Climate analysis

### Heat and solar radiation:

The site is located in the state of Khartoum, Omdurman, and this region is close to the Equator line. It has a seasonal composite climate where clear seasonal changes occur in solar radiation.



The scheme of heat and sun

The climate is varied and characterized by two seasons:

Hot dry takes two-thirds of the year and the other warm-wet takes a third of the rest.

In the summer the maximum temperature in May is 40 ° C

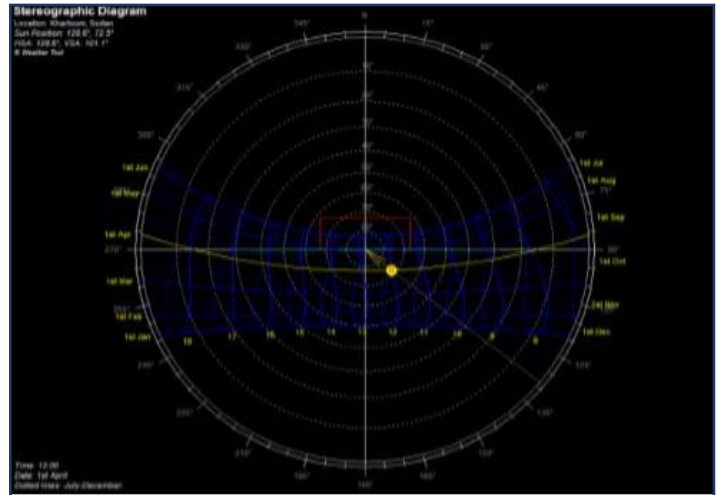
The lowest temperature in February is 37 ° C.

The highest temperature is in June and is 38 ° C.

The lowest temperature in January is 13.6 ° C.

### In the Winter:

We find that temperatures are much lower, and the air is generally warm and humid.



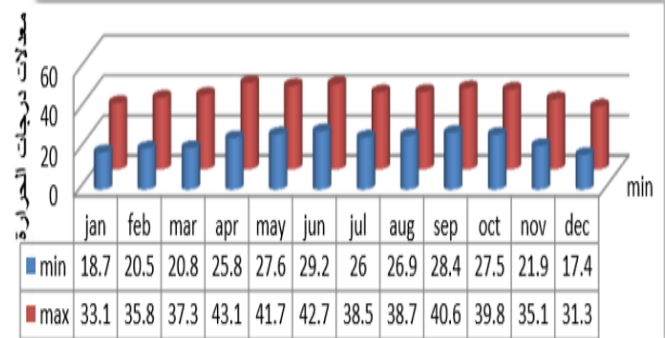
Thermometer

### Result:

To reach the degree of thermal comfort must be adapted to the spaces especially and especially that contain a large pool of people.

Choose a suitable air conditioning system.

## Temperature C



Temperature Chart

### Result:

In order to deal with the climate, it is necessary to increase the fields, the water bodies, the green spaces, the use of the sun breakers and light colors in the buildings

Choose an appropriate insulation that resists moisture  
Determination of external finishing materials suitable for the external environment.

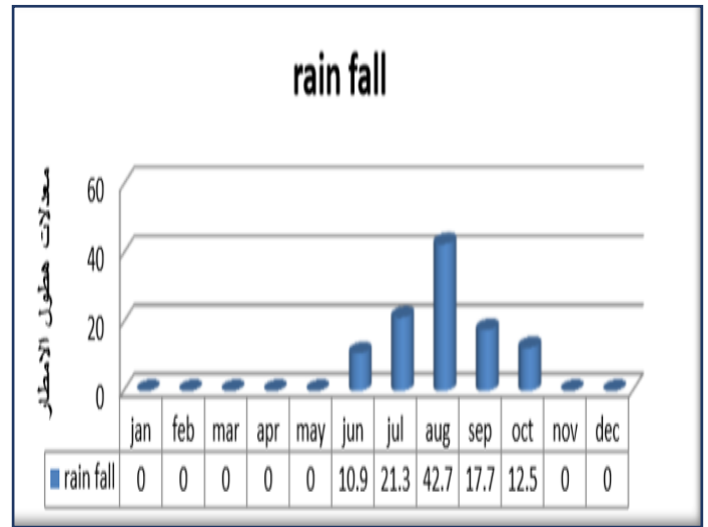


**Rain:**

The highest rainfall in August was 42.7 mm, the lowest amount of rainfall in January, February, March, April, May, November, December

**Result:**

- Determine the type of condoms used
- Specifies the base depth used
- Determine the direction of the surface drainage
- Determination of AC roofs



Rainfall Chart

**Wind:**

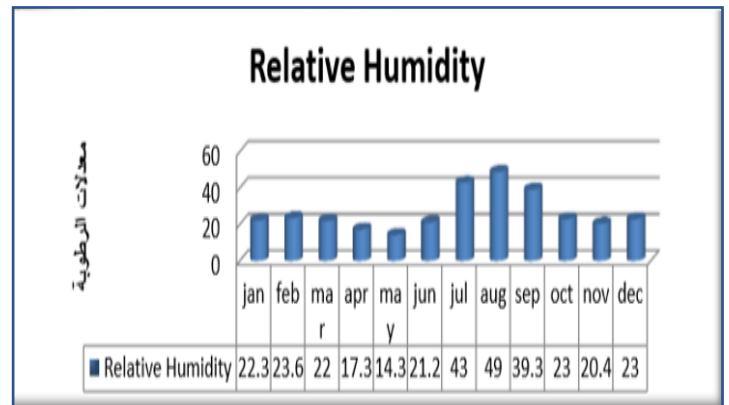
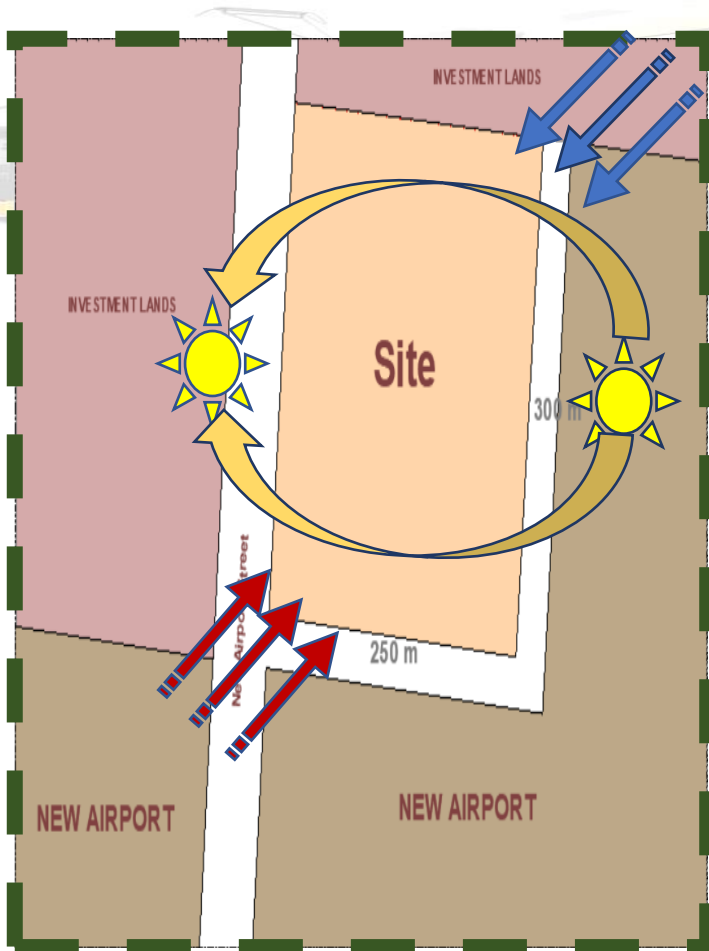
Northerly northeastern winds.  
Southwest winds laden with dust.

**Result:**

- Increase windbreaks in the southwest to reduce dust
- Direct the building north of the south and reduce the need for industrial ventilation
- .Increase the green areas

**Humidity:**

According to meteorological statistics, the highest humidity was 49% in August and 17% in April.  
The result  
Use of moisture proofing as possible in ceilings and walls.



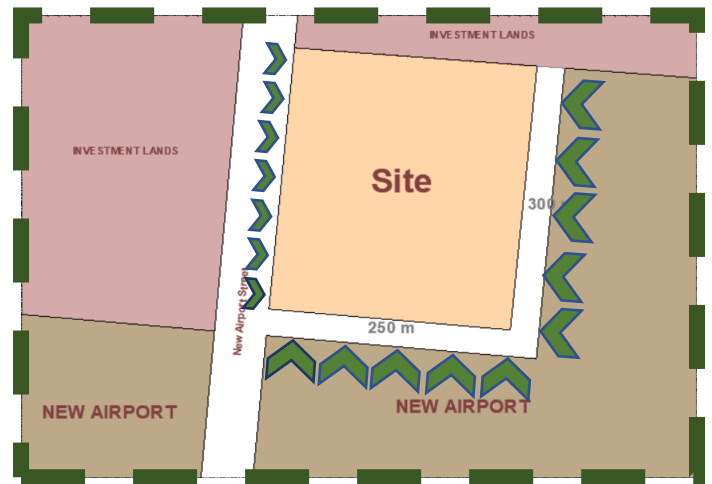


**the noise**

Increased noise in the southern and eastern area of the presence of the airport and in the western area of the presence of a main street Conclusion.

**Result**

The buildings that need quiet in the northern region.



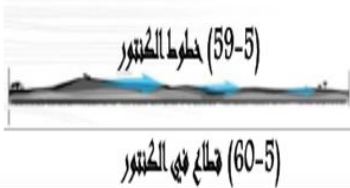
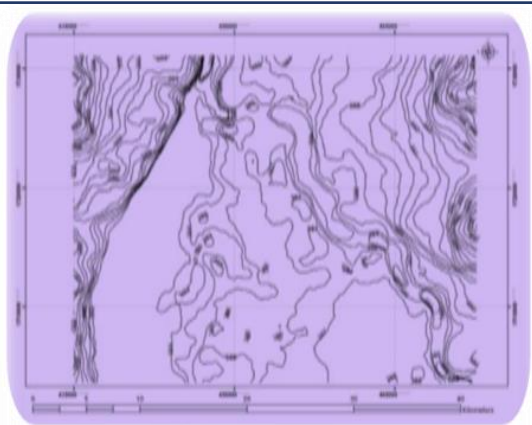
**Study of active contour lines**

The site is considered almost flat except for some slight elevation

About 2 meters from the center of the site.

**Result**

The area does not need for landfill and drilling operations where it is considered relatively flat.



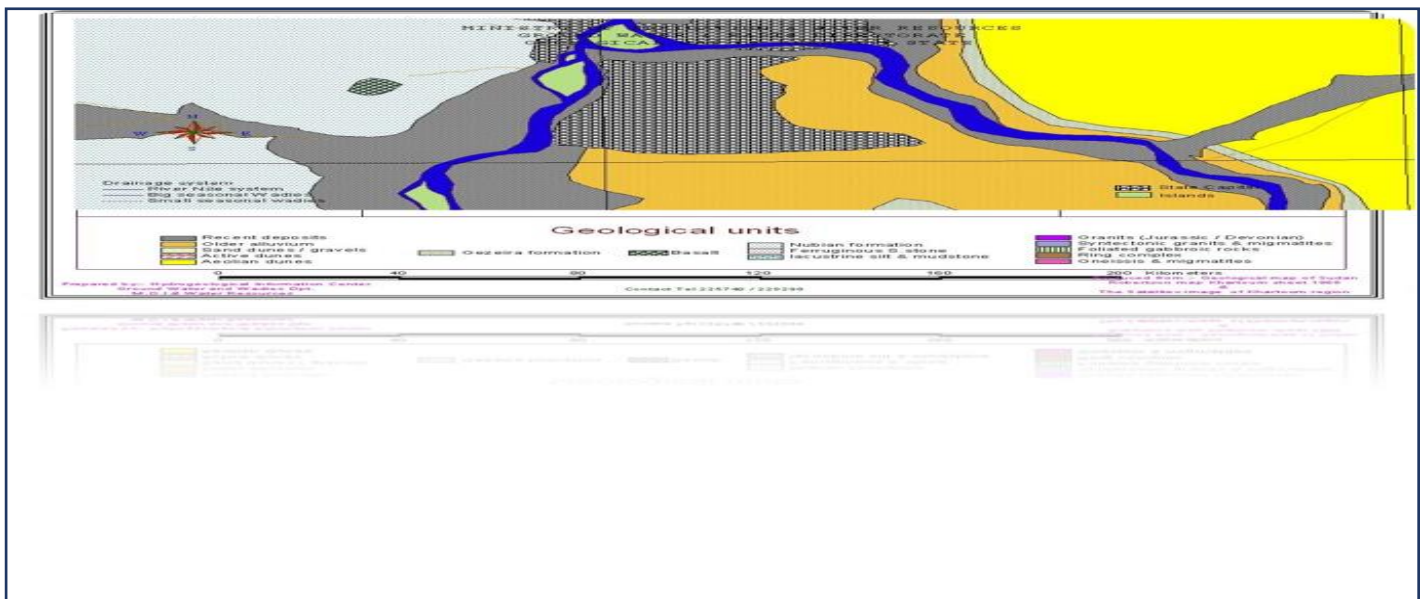
**Site Soil;**

The soil of the site is characterized by what is called Nubian rock, which is a crumbling stone and contains a solid stone

Nubian rock bears heavy installations and is

**Result;**

Specifies the base depth used.





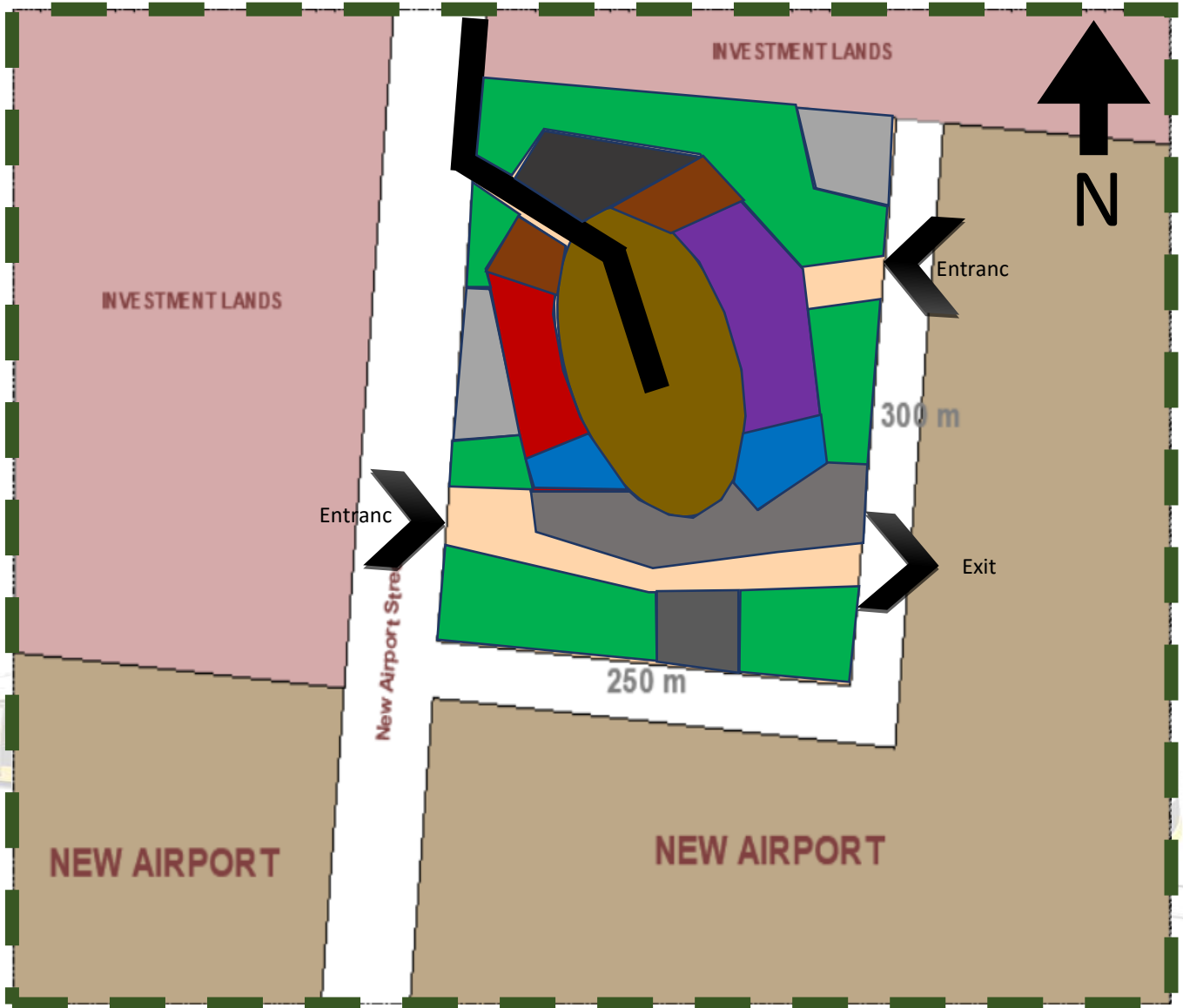
## Indicators, guidelines and decisions

Indicators	Guidelines	Decisions
The variety of activities within the station leads to multiple blocks and thus multiple entries.	The site is bordered by streets from the south, west, and east.	The entrance from the western and eastern side.
The station contains several means of transport.	Tracks should be separated between tram, bus, taxi traffic and linked to their external routes.	The entrance of the buses and taxis on the western side and the exit from the east and the entrance of the trams from the north-west.
The site has a very large area that is much larger than the required space.	Use the required space and consider the rest a future expansion.	Design on large floor area.
The site is located east-west long ribs resulting in design challenges.	The presence of a main street on the western side and secondary streets on the eastern and southern sides.	The main entrance on the long side and the sub entrance on sub streets.
The station is special for transport to the airport.	Special transfer from the terminal to the airport and departure lounge.	Bus station and taxi within the station for transportation to departure lounge.
Location in Omdurman.	Fixed rocky soil.	Use a separate base system (Isolated Footing).
Long site side in east and west.	Orientation and ventilation of the site as well as its shape suitable for the spaces of the long station.	The use of large – scale construction systems direction the north – south spaces.
The location is next to the new airport entrance.	The station is facing the city for those arriving from the airport.	The design of the station to be a landmark and distinctive façade of the city reflecting the civilization of the city.
The station is considered a medium-risk building.	Keep the security and safety component inside the station.	Separation of departure and arrival berths and the use of means of movement to facilitate the functioning of the function within the building.





### Site Zoning



The zones	The colors
Tram Router	
The main tram hall	
Commercial & Entertainment	
Tourist	
Bus & Taxi station	
Administrative	
Service	
Green area	
Streets	
Parking	