PROJECT FINAL REPORT

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Introduction
The purpose of the project is to create a vibrant pedestrian system that connects two of the most active communities in Dubai, the JLT area to Marina/JBR area.

The bridge should create a flow of activities from the vibrant areas in JLT to those in Marina/JBR area.

This project was introduced to us by the office of H.H. The Crown prince of Dubai in February 2016 as part of the MUP program at AUS. The purpose of the project is to create a vibrant pedestrian system that can connect two of the most active communities in Dubai, the JLT area to Marina/JBR area. These two vibrant communities are currently separated from one another through Sheikh Zayed Road (SZR) - a 558.4 km highway road - which is considered a main artery of Dubai. SZR is the most recognized and highly utilized road in the city. It consists of 7 – 8 lanes in each direction and parallel to it runs most of the red line of Dubai Metro. There are numerous landmarks across the highway as it runs parallel to the coastline connecting Sharjah all the way to the border of Abu Dhabi.

The highway is functioning as a major infrastructure connector for the city from the north to the south but it is certainly creating a great divider across the developments from the eastern to the western side of the city. The high-rise buildings stretching along Sheikh Zayed road from both sides are contributing to the concentration of the pollution within the area.

Our study area - marked in red (Figure #) – is located between interchanges 5 and 6 of SZR. It functions as a virtual gate for the people who come from Abu Dhabi to Dubai. It also has a significant importance due to its proximity to the Expo2020 site.

The site is already a point of attraction to both residents and tourist in Dubai due to the concentration and variety of activities within. We expect it to accommodate at least 20% more visitors and residents in the coming decade as a result of the Expo2020.

If one takes a cross section of the site from point A to B on (Figure #), almost all the different lifestyles experienced by Dubai residents can be found within the site. Starting from the desert areas, and moving towards the low-rise high end luxury homes in Emirates Hills. The density then increases as one moves towards the JLT area where a good mix of live, work, and play can be experienced by residents in high rise buildings. Crossing through SZR, one arrives to the vibrant area of Dubai Marina and JBR prominently recognized for its numerous restaurants across the beach side.

In order to analyze the current conditions, we conducted several site visits focusing on the opportunities and constraints of the following points:

1. Land Uses
2. Building Heights
3. Activity Zones
4. Mobility
5. Demographics
6. Transportation

As a result of the conducted analysis, the team specified points of interest that we believe are most important to connect throughout proposed structure.

We imagine the proposed structure to be a large elevated urban space consisting of pedestrian lanes, bicycle lanes, urban parks and other commercial activities that can help in bridging the connectivity gap and revitalize the vehicular dominated SZR.

We think that the connecting structure should not only function as a connecting bridge between the JLT and Marina/JBR area but should also create a flow of activities from the vibrant areas in JLT to those in Marina/JBR area. It should add to the limited greenery and open space on site and contribute to the reduction of the pollution concentrated on SZR. The proposed structure should also contribute through adding more attractions to the area and therefore decreasing the load from the existing activity areas.
Opportunities

1. Site Location: due to proximity to Expo2020 site and gateway from Abu Dhabi
2. Existing Public Transport: Existing metro and tram
3. Residents: Expats that come from culture that are familiar with non motorized modes of transport
4. Podiums of building has an opportunity for connecting to transport systems
5. Economic Growth due to high value of Land
6. High activity levels within the site: Beach, Skydive Dubai, waterfront walkways.

Challenges

1. Connectivity or breakage between both the JBR/MARINA and JLT (SZR is separating both sides)
2. Mobility: Going from one side to other takes time
3. Parking
4. Pollution
5. Traffic Congestion
6. Lack of public green space
7. Existing levels are not aligned
8. Metro line across SZR
9. Hot Climate
According to Dubai Statistic Center, the study area is divided into three different communities, (refer to figure#).

1- Dubai Marina [Marsa and Jumeirah Beach Residence]
2- AlThanyah Fourth [Emirates Hills]
3- AlThanyah Fifth [Jumeirah Lakes Towers and Jumeirah Islands]

Who Lives There?

1- In Dubai Marina:
This community is young and vibrant, popular with singles [in an age of 20s], couples and young families, in which most of them are Western expats.

2- In AlThanyah Fourth:
This community is subdivided into four parts; Emirates hills, The Lakes, Meadows, and The Springs.

Residents of Emirates Hills, are rich, famous, celebrities, politicians and artists.

Who Works There?

Jumeirah Lakes Towers estimated working population is 120,000.

35% of Jumeirah Lakes Towers are businesses and a large number of Abu Dhabi residents work there.
The lifestyle: many residents in the study area are expats, hence, many of which they come from cities in which cycling and walking are the main modes of transportation.

Economic Growth is also to be considered.

Importance of connection and scale of the project can be conducted through phases.
**Existing Landuse**

**Level 1 Podium/Podium Plan**

**Approach**

The approach towards creating these maps was mainly site visits. Studying different land uses and analyzing the current condition have increased the level of understanding.

**Analysis**

- Retail commercial and parking areas are the most common spaces to appear in the map.
- The lower parts of the map show more residential units.

**Recommendations**

- There is a possibility for some bridge gathering space to occur at any location of this level.

**Legend**

- High Density Residential Housing
- Medium Density Residential Housing
- Low Density Residential Housing
- Commercial
- Retail Commercial
- Mixed Use
- Parking area
- Viewpoint
- Utilities
- Mosque
- Hotel
- Healthcare centre
**EXISTING LANDUSE**

**LEVEL 2 PODIUM PLAN**

**Analysis**
- Most of the buildings at Al Marsa Street don’t own a second level podium.
- Most of the buildings at Al Mamsha Street have a huge connected podium reserved for parking at the second level of podium.
- All Jumeirah Lakes Towers have an active podium at this level, where part of it is reserved for parking area while retail commercial occurs in scattered parts around it.

**Recommendations**
- An active environment for bridge assembly points may occur at JLT Level 2 Podium.
**Existing Landuse**

**Level 3 Podium Plan**

**Analysis**
- Nothing of a great interest is happening at this elevation level.
- The towers located at Al Mamsha Street have some retail commercial spots at the third level of podium.

**Recommendations**
- This level can act as an extension for the activities happening on the bridge, in case the JBR area got included in the bridge connecting points.
**EXISTING LANDUSE**

**TOP LEVELS PODIUM PLAN**

**Analysis**

- Most of the residential, offices and hotel apartments’ towers are witnessed at this level.

**Recommendations**

- The bridge will serve a large number of residents living in either JLT or Marina, as high density towers occupies most of the zones.
- Some office towers and mixed-use towers are found at the JLT, this makes it clear that the flow on the bridge during day time will be from Marina side to JLT.

**LEGEND**

- High Density Residential Housing
- Commercial
- Retail Commercial
- Mixed Use
- Hotel
Possible Connection Points
<table>
<thead>
<tr>
<th>Landuse</th>
<th>Podium Layout</th>
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<tbody>
<tr>
<td>Podium Layout in JBR</td>
<td></td>
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<td>Podium Layout in JLT</td>
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<tr>
<td>Podium Layout in Dubai Marina</td>
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</table>
**Open Space**

**Analysis**

Recognising the location for active open spaces allows us to mark the most vibrant and dynamic zones worth connecting. Marking open spaces has also allowed us to recognize how little public green space exists on site.

**Approach**

Site surveys during most active times of the day

**Recommendations**

Urban structure should aim at connecting active open spaces to one another through further enhancing the users vibrant experience. More public green open spaces need to be introduced to the area.
Heights

Analysis
An analysis of building heights provides us with an idea of the density of users within the block. It also provides us with an understanding of possible connection points at a vertical level.

Approach
The analysis was conducted through numerous site visits and using Google Earth.

Recommendations
The highest and most dense areas are across JLT and Dubai Marina with buildings that rise up to an average of 40 floors. Numerous connection options are available.

Legend
- 15+ FLOORS
- 5-15 FLOORS
- 0-5 FLOORS
Connectivity

Example of Connectivity

The Approach
We analyzed the streets pattern map to study the connectivity within the study area, and then we assigned 2 points within the area. Point A in the JLT area (Tiffany Tower) and point B in the JBR area (The Beach). We measured the actual distance between the two points and then the travel distance by walking and by car.

The analysis
Although point A and B are 1.84 Km apart, but there is no direct access to it. If someone wants to walk from Point A (JLT) to point B (JBR) the distance will be 3.3 km by walking and 6.8 Km by car. It is because of Sheikh Zayed Rd. acting as separator between the two areas, the travel distance is high compared to the actual distance.

Conclusion
The connectivity within the study area is low. Sheikh Zayed Rd. is dividing the study area into 2 parts and therefore decreasing the connectivity.

Recommendation
Propose points of connection within the area to bring them closer to each other.

Legend
- Landmark
- By Foot
- By Car
**Mobility**

**Roads Hierarchy**

**Approach**
While searching through Google Earth, and driving within the area we find out that there are four types of roads: a high way which is Shaikh Zayed Road, arterials street which is First Al Khail street, collectors such as Al Sufouh road, Al Marina Street, etc. and local roads between the blocks.

**Analysis**
The map shows that the main emphasize is on Shaikh Zayed Road because it is a high way and it is the linkage between the upper and the lower area. Also, we can notice that there are only two entrance and two exits collector streets that link the high way with Al Marina street and Al Sarayat street (JLT). During the day and specially through the rush hours, Shaikh Zayed Road become very congested, and that causes pollution, time consuming, lack of connectivity between the upper and the lower area, etc.

**Recommendation**
1. Add more entrance and exit collector streets from the high way to Al Marina Street and Al Sarayat Street.
2. Prepare First Al Khail Street to carry bigger numbers of cars to support the high way through the rush hours.

**Conclusion**
The main concept of adding more entrances and exits streets/collector from the high way to Al Marina Street and Al Sarayat Street is to maximize the connectivity and accessibility between the JBR and Dubai Marina, the JLT, The Meadows 2, and Jumira Heights. Also, preparing First Al Khail Street to carry bigger numbers of cars can minimize the highway congestions and minimize nose and air pollution on that road. Less dependent on Shaikh Zayed road gives a chance for new developments to be added to the high way such as adding pedestrian lanes or Bicycle lanes. So that, the area will be more connected and pedestrian friendly.
MOBILITY
Public Transportation systems

LEGEND
- **B**: Bus Stops
- **T**: Tram Stations
- **M**: Metro Stations
- **#**: Bus Routes
- **$**: Tram Routes
- **!**: Metro Routes
- **@**: Proposed Bus stations
- **#**: Proposed Tram stations
- **$: Proposed Tram Routes
- **!$: Proposed Tram Routes

Arabian Gulf

Skydive Dubai

AL MAMSHA ST.

AL SUFOUH RD.

AL MARSA ST.

AL SUFOUH RD.

EL MREEF ST.

BRAIH ST.

AL GHARBI ST.

AL SAYDIA ST.

AL QAHERI ST.

BAKH ST.

AL MAMSHA ST.

AL MARSA ST.

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Approach

In this map we can see almost all the RTA systems. It has two metro stations, seven tram stations and almost 36 bus stops. Also, in the small maps we can see bus routes, metro routes, and Tram routes. We searched for these stations and stops by visiting the site, searching RTA website, and searching Google Earth and Google Maps.

Analysis

The map shows that the Bus stops are almost located in the JBR, Dubai Marina, The JLT, and few stops are located next to The Meadows 2, but we could not find any bus stops in Jumirah Heights and that’s because the residents of this area are VIPs and it’s a closed community. The Tram Stations are only located in the JBR. These Tram Stations are connecting the JBR along with Al-Sufouh Road. The metro stations of course are located parallel to Shaikh Zayed Road.

Recommendation

1- Provide more bus stops near The Meadow 2, and the JLT.
2- Add one or two bus stops next to Jumirah Heights gates.
3- Create Tram system and stations in the JLT, and connect them with the Tram stations in JBR directly

Conclusion

One of the main aspects of the project is to connect the JBR, Dubai Marina, and the JLT with RTA system as much as possible. The system will increase the connectivity and accessibility in the area which will make it more pedestrianized, car-free, desirable and attractive for residents and tourists. The high connectivity and accessibility will affect the economy and tourism of the area, and also, it can make the area more sustainable, livable and pedestrian friendly.
MOBILITY
PEDESTRIAN SHED

LEGEND

- **B**: Bus Stops
- **T**: Tram Stations
- **M**: Metro Stations
- Pedestrian Shed
- Proposed Pedestrian Shed
Approach

The map shows Bus stops, Metro stations, Tram stations, and the Pedestrian Sheds around each one. The standards pedestrian sheds is 400m in winter in 5 minutes walk and 150m in summer in 5 minutes walk. When we went to the area and measured the 5 minutes walk, we found out that the distance is almost 370 meters not 400 meters. So that we used our findings to calculate the pedestrian sheds between the stations and stops.

Analysis

The map on the left shows us all the pedestrian sheds of 370m for the whole system, and the small maps shows us the pedestrian shed around each RTA system individually. According to the bus stops, almost all stops that are located in JBR and JLT are near each other and located within the pedestrian sheds. Some stops in Dubai Marina and The Meadow 2 are within the pedestrian sheds, but many are out of range. The pedestrian sheds between Tram stations and Metro stations exceeded the 370m or also the 400m. But, when we look at the whole pedestrian sheds around the whole RTA systems we realize that the Bus stops locations succeeded to fill the gaps between Trams and Metro stations.

Recommendation

1- Provide more RTA systems near Meadow 2, and the Dubai Marina to fill the pedestrian sheds gaps.
2- Add almost one or two RTA systems next to Jumirah Heights gates.

Conclusion

The pedestrian sheds concept is to make the residents comfortable and safe while they are walking and using the RTA systems. It will be easier for users to use the metro for example when they make sure that there is another transportation mode provided near the metro station. Also, users will feel safe to reach the next station or bus stop as soon as possible specially at night, and it will reduce the sun exposer in the morning and afternoons. On the same hand, providing RTA within the pedestrian sheds is a time saver process and a successful option to encourage healthy lifestyles and exercise.
The Approach
Several site visits were conducted to analyze the vehicular flow in the study area. The analysis was done by counting the vehicles passing in 20 minutes. Counting was done twice during weekdays and weekends. The weekday counting was done at 5:00 p.m. (during the rush hour) and the weekend counting was done at 11:00 a.m. The counting was done for certain roads that are of significant importance for our study area.

The analysis
The vehicular flow recorded in weekday and weekend was almost high – more than 200 vehicles in 20 min - in all of the selected roads of the study area except for the Al Mamsha St. which is considered a more pedestrian attraction than vehicular due to the traffic congestion. The Al Mamsha St. has the lowest traffic flow – less than 100 vehicles in 20 min – because the road was jammed in the selected time for the analysis and therefore the number of vehicles passing across a certain point is 20 min is less than normal roads.

Conclusion
The study area has a significantly high flow of vehicles almost all of the week.

Recommendation
Avoid the points where the traffic flow is high for the safety of pedestrian.
Mobility

Vehicular Flow

Possible Connection Points
**Mobility**

**Pedestrian Flow**

**The Approach**
The pedestrian flow within the study area was analyzed by conducting site visits during both weekdays and weekends. In those site visits, the task was to count the number of pedestrian passing by a certain point in 20 minutes in selected roads within the study area. Weekday counting was at 5:00 p.m. while weekend was at 11:00 a.m. The counting was done in parallel to the vehicular flow counting in order to compare both flows.

**The Analysis**
Unlike the vehicular flow, the Al Mamsha was recorded to have the highest flow of pedestrian (more than 250 people in 20 min) due to its location within a pedestrian friendly area. Al Gharbi St. has a high flow as well because it’s used by pedestrians to cross the marina and go to JBR. Other roads have a medium flow of pedestrian except the roads around the JLT area where the pedestrian flow is very low as most of people prefer walking inside the area.

**Conclusion**
The flow of pedestrian within the study area is high which means the area encourages walkability and people prefer walking as a mode of transport.

**Recommendation**
Enhance the study area to encourage walkability and to be more pedestrian friendly.

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**Legend**

**Points of Analysis**

<table>
<thead>
<tr>
<th>Weekday</th>
<th>Weekend</th>
</tr>
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<tbody>
<tr>
<td>0 - 50</td>
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<td>&gt; 250</td>
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</tbody>
</table>
**Mobility**

Pedestrian Flow

Possible Connection Points
**Mobility**

**Traffic Congestion**

**The Approach**
Using Google maps and visiting the site.
Analyzing the traffic density.

**The analysis**
To study the traffic congestion in the area.

**Recommendation**
Traffic congestion zones are marked.
Points to avoid in our proposal are marked.

**Legend**
- **High Congestion**
- **Medium Congestion**
- **No Congestion**
ALL POSSIBLE CONNECTION POINTS [OVERLAPPED]