

# Annex I: Transportation and Access Study Report

# Transportation and Access Study Report

**FOR 150 MW PV POWER PROJECT BY SINDH SOLAR IN DEH  
HALKANI, SINDH, PAKISTAN**

Prepared for:

**Sindh Solar Energy Project, Energy Department, Government of Sindh**

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## 1 EXECUTIVE SUMMARY

Sindh Solar Energy Project (SSEP), Energy Department, Government of Sindh (DAE GoS, - the “Project Sponsor”) is intending to build a Solar PV power generation project in Deh Halkani, District Malir, Karachi, located in the Province of Sindh (“the Project”). The Project Sponsor has land allotment from the Government of Sindh (GoS). The Project will be 150 MWp solar PV power project which will be built in the allocated land.

The Project site is located at Northern side of the Karachi city in District Malir near Gadap town which is approximately 74.9 km from Karachi. The Project site spans across 612 acres of land. According to the information provided by the Client, the land has been leased by the Project Company from Government of Sindh. The access to the site from Port Qasim will be through the National and Super highway link road then Karachi-Hyderabad M-9 Motorway to Karachi Northern Bypass M10 towards Project site. The major section of the track from Karachi to the site is a multi-lane, relatively flat road.

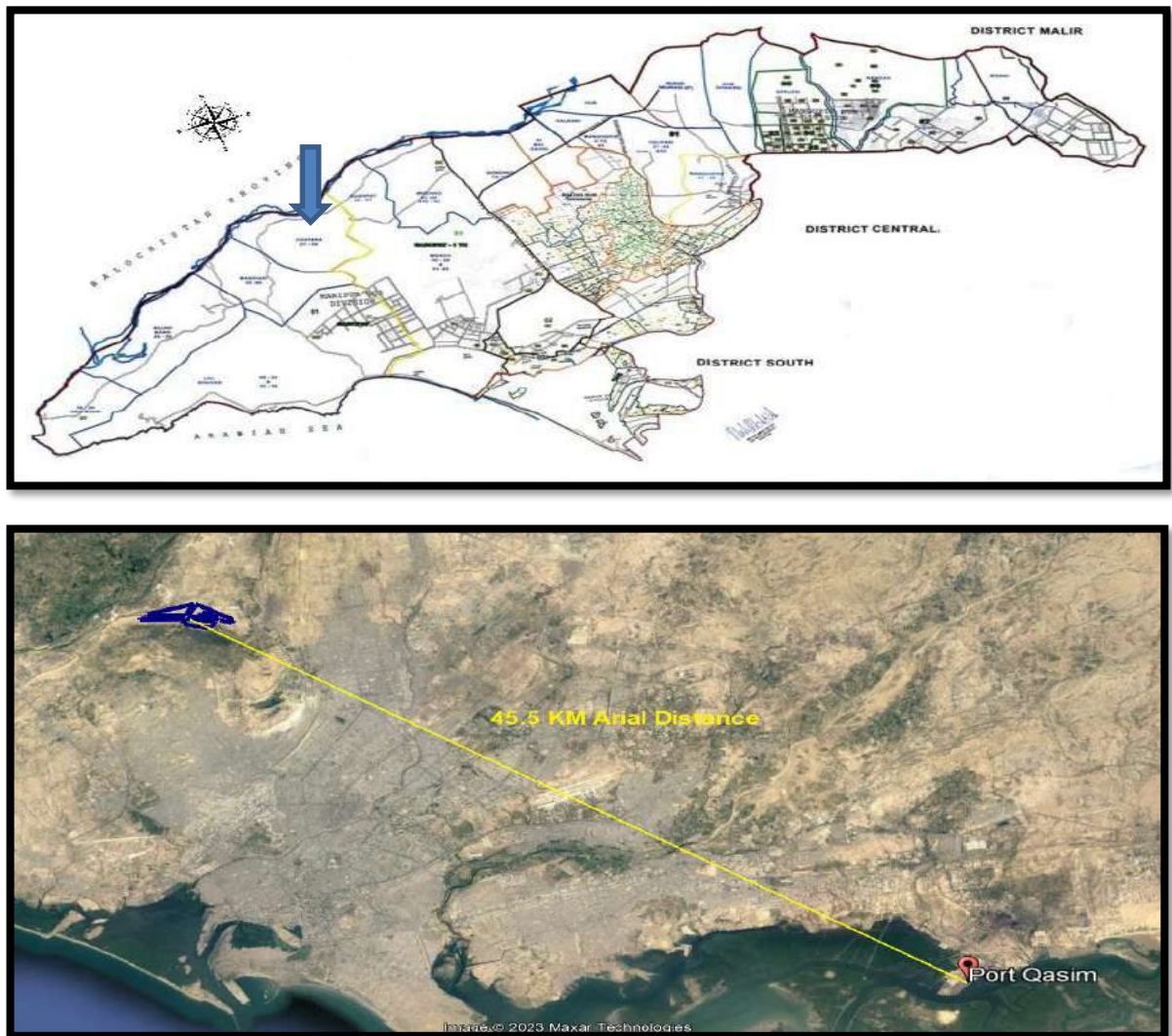
The overall condition of route via Qasim Port road to National Highway N-5 to Super Highway Link Road. Then Karachi-Hyderabad M-9 Motorway to Karachi Northern Bypass M10 towards Project site near Gadap town is much better than the other route going through N-5. The total distance is around 74.9 km starting from Port Qasim to the proposed Project Site. In parallel, the alternate route is also present for safe transportation to the Project site, which is also passing through the N-5 to Super Highway Link road. The length of alternate route is around 86 km to the site.

The alternative route can be used while congestion on the main transport road or blocking the main road during freight transport because the main road is passing through the centre of the city.

The NOC for transportation is also required for shipment of heavy equipment before the start of project from National Highway Authorities.

## 2 Site Overview

The Project site is located at Northern side of the Karachi city in District West near Hazratabad on Northern Bypass road which is approximately 74.9 km from Port Qasim, Karachi; Pakistan's commercial hub and main port city. The Project site spans across 612 acres of land. According to the information provided by the Client, the land has been leased by the Project Company from Government of Sindh. The access to the site from Port Qasim will be through the National and Super highway link road then Karachi-Hyderabad M-9 Motorway to Karachi Northern Bypass M10 towards Project site. The major section of the track from Karachi to the site is a multi-lane, relatively flat road. The Project site is surrounded by the small graveyards, chicken sheds, residential area, connecting road, agricultural land, small goths and hills which will be neglected while the solar micro-siting and technical study of project area will be done. The aerial view can be seen in below pasted picture.

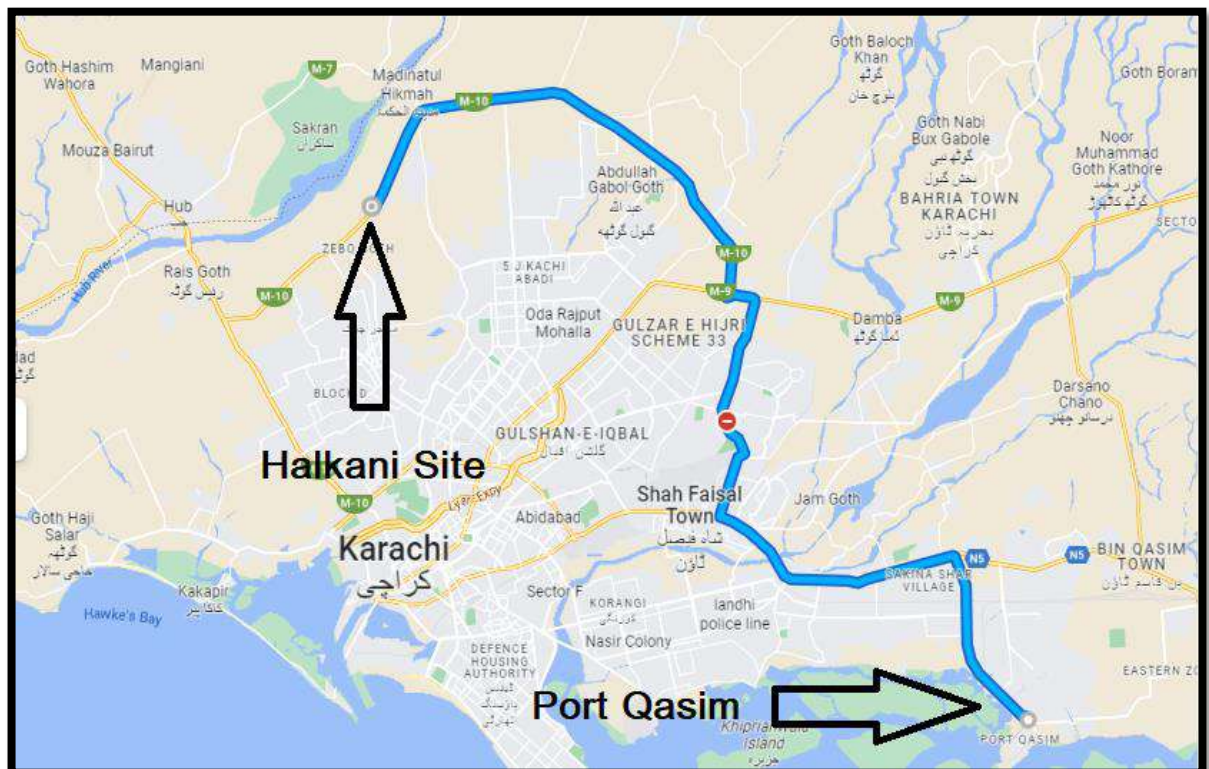


**Figure 1: Site overview**

### 3 Detail Access to Site

The most appropriate transport route for the Deh Halkani site is the Northern Ring road connecting Route M-10 at a distance of 74.9 km from the proposed terrestrial area. Obviously, the bulk of the transportation is going to be from Port Qasim.

The **Route** is from Port Qasim to Project site via N-5 National Highway to Super Highway Link road. Then Karachi-Hyderabad M-9 Motorway to Karachi Northern Bypass M10 towards Project site. Major part the track is a multi-lane road. This route is suitable for transportation of equipment to the Project site. In below picture site access route can be seen.



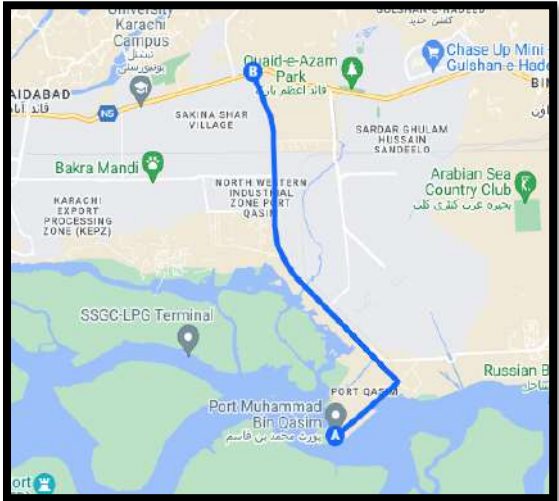


**Figure 2: Overview of Route**

The detailed route analysis can be found in the sections below.



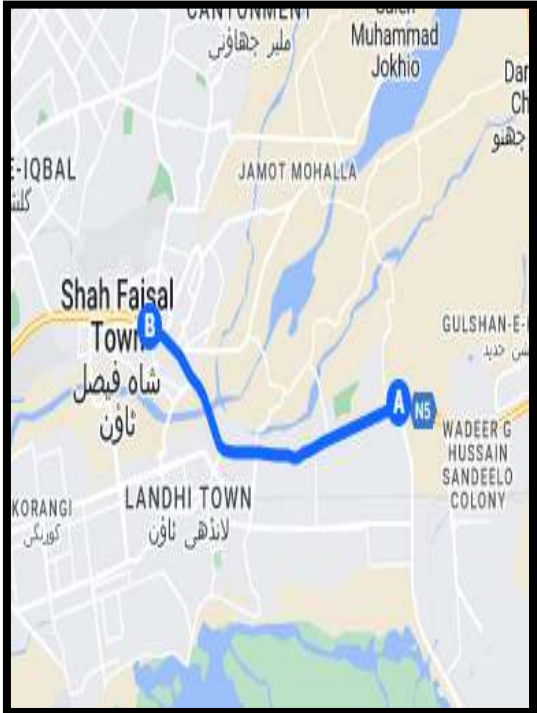
### 3.1 Port Qasim to National Highway Track

A track of length 13.88 km approximately connects the Port Qasim to the N-5 National Highway. The track begins at the “Qasim Port Round about” and it follows the Qasim Port Road until it reaches National highway via Pak Steel road. The road condition is safer for the heavy transportation. The road details are as under with the pictorial view and road map. There is a conveyor belt on this road, but transportation is easily possible.

Port Qasim Main Chowrangi	From Port Qasim to Link Road
	
1. Area / City / Location: <b>Port Qasim Round about, Karachi, Sindh, Pakistan</b>	<p><b>Road Map</b></p> 
2. KM from Last Location to Current Place: <b>From Port Qasim to N-5 Total 9 km</b>	
3. Bridge / Underpass Dimensions (L x W x H): <b>No</b>	
4. Road Condition: <b>Double Road, National Highway (N-5)</b>	
5. Obstacles / Toll Plaza / Other Road Blockage: <b>Overhead conveyor belt</b>	
6. Barriers / Sign Boards / Road Guide Boards: <b>None</b>	


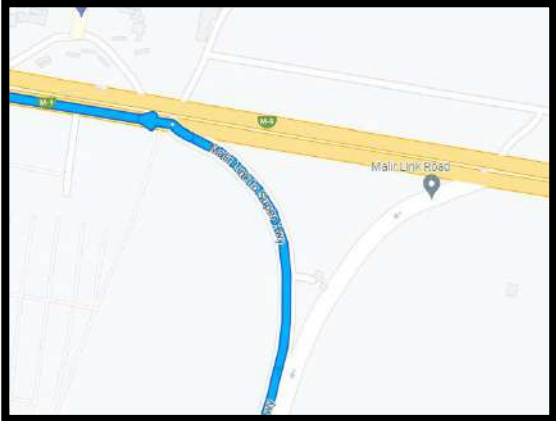

### 3.2 N-5 toward Jinnah Avenue

A track of length 14.3 km approximately connects the N-5 to the Jinnah Avenue toward Karachi city. Normally traffic congestion during the working hours on this road. The road condition is safer for the heavy transportation. The road details are as under with the pictorial view and road map.

N-5 towards Jinnah Avenue	N-5 to Jinnah Avenue Turn
	
<p>1. Area / City / Location Malir Halt, Sindh, Pakistan</p>	<p>Road Map</p>
<p>2. KM from Last Location to Current Place From PQ Bus Stop (Round About) to-wards Jinnah Avenue = 14.3 km</p>	
<p>3. Bridge / Underpass Dimensions (Lx W x H): Bridges</p>	
<p>4. Road Condition Satisfactory</p>	
<p>5. Obstacles / Toll Plaza / Other Road Blockage Traffic</p>	
<p>6. KESC / Electrical Wires / Other Overhead Wirings None</p>	
<p>7. Barriers / Sign Boards / Road Guide Boards: None</p>	



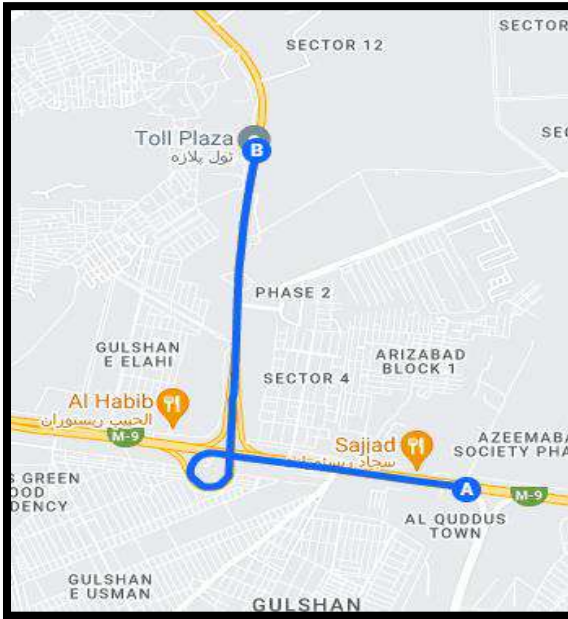
### 3.3 Jinnah Avenue/ Malir Link Road toward M-9

A track, of length 12.6 km approximately, connects the Jinnah Avenue to M-9. Normally traffic congestion on this road because this road is inside the city area. The road details are as under with the pictorial view and road map.

Jinnah Avenue/ Malir Link Road	Jinnah Avenue/Malir Link Road to M-9 Turn
	
<p>1. Area / City / Location</p> <p>Malir Halt, Sindh, Pakistan</p>	<p>Road Map</p>
<p>2. KM from Last Location to Current Place</p> <p>From Jinnah Avenue Towards M-9 = 12.6 km</p>	
<p>3. Bridge / Underpass Dimensions (Lx W x H):</p> <p>None</p>	
<p>4. Road Condition</p> <p>Satisfactory</p>	
<p>5. Obstacles / Toll Plaza / Other Road Blockage</p> <p>Traffic</p>	
<p>6. KESC / Electrical Wires / Other Overhead Wirings</p> <p>None</p>	
<p>7. Barriers / Sign Boards / Road Guide Boards:</p> <p>None</p>	

### 3.4 M9 to Northern Bypass Interchange




At the distance of 3.8 km from M9 Motorway Karachi, M-10 Northern Bypass interchange is located, which is suitable for heavy transportation and it connects to HUB city at the distance of 45 km. There are strict regulations for transporting heavy and over-sized goods on Motorway. NOC from National Highway and Motorway Police NH&MP and National Highways Authority NHA is required before start of transportation.

M-10 Northern Bypass Toll plaza	Northern Bypass M-10
	
1.Area / City / Location <b>Karachi, Sindh, Pakistan</b>	<p>Road Map</p> 
2.KM from Last Location to Current Place: <b>M9 Motorway to M10 Northern Bypass = 3.8 km</b>	
3.Bridge / Underpass Dimensions (L x W x H): <b>Overhead and pedestrian bridges</b>	
4.Road Condition: <b>Good</b>	
5.Obstacles / Toll Plaza / Other Road Blockage: <b>Toll Plaza, Safety signage and overhead bridges</b>	
6.KESC / Electrical Wires / Other Overhead Wirings: <b>None</b>	
7.Barriers / Sign Boards / Road Guide Boards: <b>None</b>	

### 3.5 Project Site

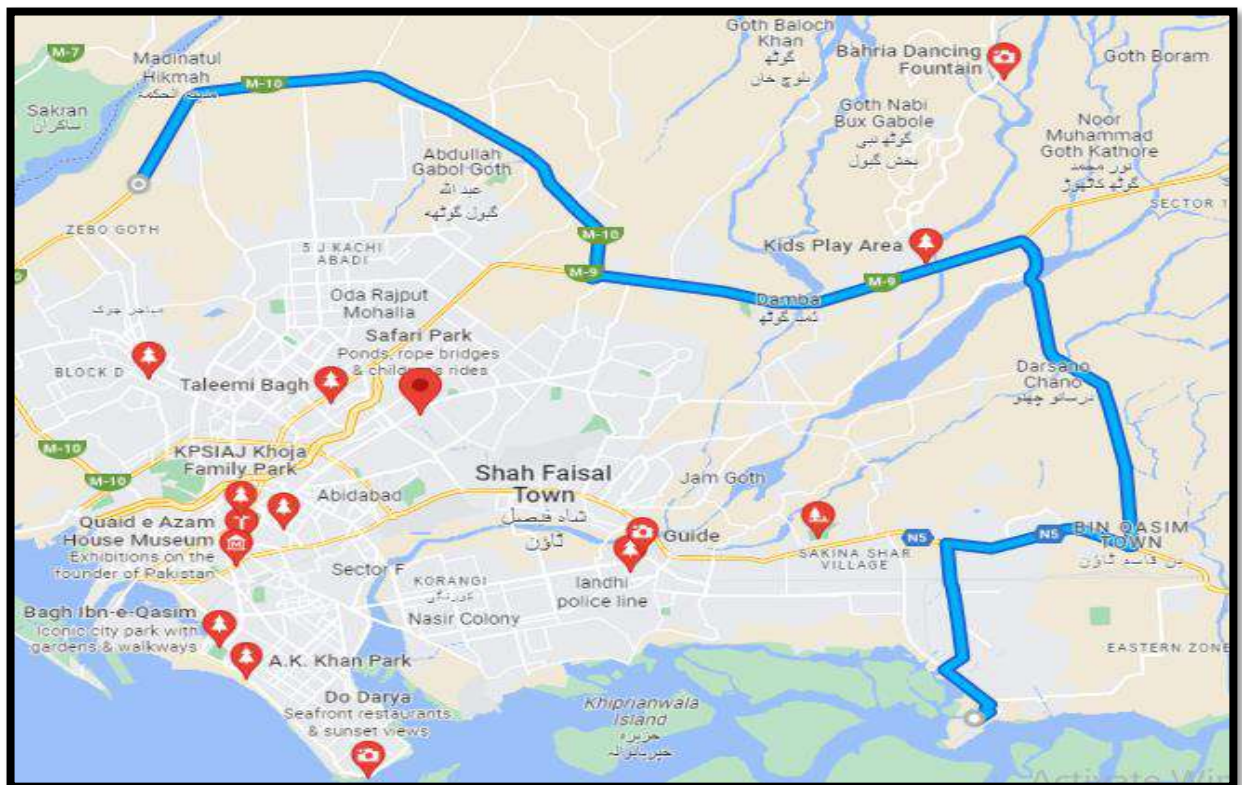
Travelling on Northern Bypass road, at the distance of 28 km, Deh Halkani site is located on both sides of the road. The main access road to the Project site is already constructed by the government and heavy transportation utilizes this road on daily basis for commute of goods. Meanwhile, this route is suitable for transportation of equipment to the Project site.

After travelling, 28 km on the same route the site is located at the right and left-hand sides of the road, the entrance of the site is unpaved and surrounded by wild bushes and shrubs, which need to be cleared before the start of project transportation and construction. In below picture site entrance can be seen.

M-10 Hill cut near Project Vicinity	Rough Road in Project premises
	
1. <a href="#">Area / City / Location</a>  Hazratnabad Hill cut stop/Project Site	<p>Road Map</p> 
2. <a href="#">KM from Last Location to Current Place</a> 6 km from M-10 Hamdard Pakistan Custom Check Post Turn	
3. <a href="#">Bridge / Underpass Dimensions (L x W x H)</a>  None	
4. <a href="#">Road Condition</a>  Paved Road, (Ok Condition)	
5. <a href="#">Obstacles / Tol Plaza / Other Road Blockage</a>  Drains and temporary water channels	
6. <a href="#">KESC / Electrical Wires / Other Overhead Wirings</a>  None	
Access road towards the site	After Left Turn Rough Road Starts

## 4 ALTERNATE SITE ROUTE

The **Alternate Route** to the site from Port Qasim will be through the National and Super highway link road then Karachi-Hyderabad M-9 Motorway to Karachi Northern Bypass M10 Road towards Project site. The main part of the Karachi trail at the site is a multi-lane route, relatively flat. The Distance of alternate route slightly long from the main access route to the site. The total length of the alternate route is 86 km from Qasim Port (Karachi) to the Halkani project site. The alternative route can be used while congestion on the main transport road or blocking the main road during freight transport.



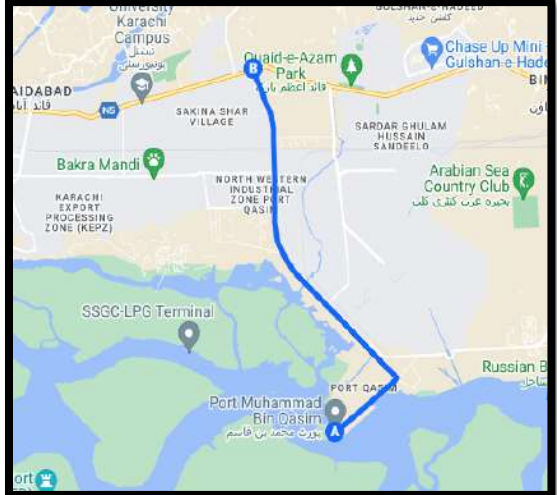


**Figure 3: Alternate Site Route via Google Maps**

The detailed route analysis can be found in the sections below.

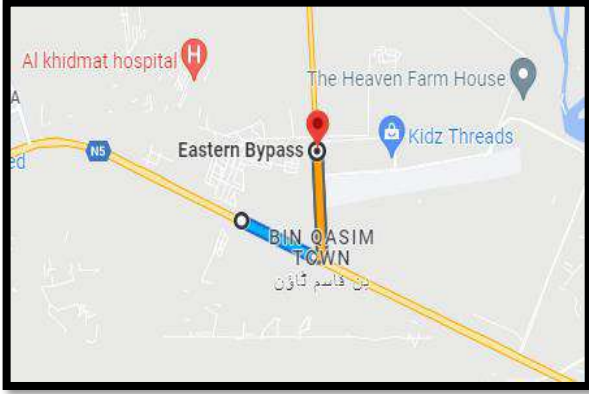

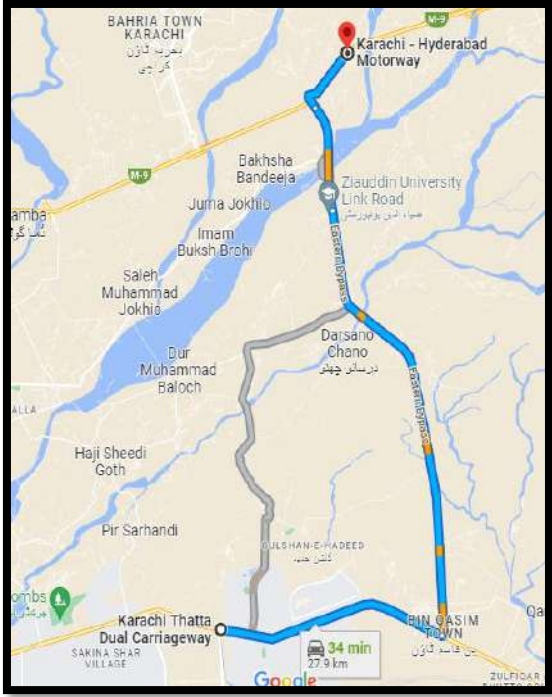
## 4.1 Port Qasim to National Highway Track

A track, of length 13.8 km approximately, connects the Port Qasim to the N-5 National Highway. The track begins at the “Qasim Port Roundabout”, it follows the Qasim Port road until it reaches National highway via Pak Steel road. The road condition is safer for the heavy transportation. The road details are as under with the pictorial view and road map. There is a conveyor belt on this road, but transportation is easily possible.

Port Qasim Main Chowrangi	From Port Qasim to Link Road
	
1. Area / City / Location: <b>Port Qasim Round about, Karachi, Sindh, Pakistan</b>	<p style="text-align: center;"><b>Road Map</b></p> 
2. KM from Last Location to Current Place: <b>From Port Qasim to Link Road Total 9 km</b>	
3. Bridge / Underpass Dimensions (L x W x H): <b>No</b>	
4. Road Condition: <b>Double Road, National Highway (N-5)</b>	
5. Obstacles / Toll Plaza / Other Road Blockage: <b>Overhead conveyor belt</b>	
6. Barriers / Sign Boards / Road Guide Boards: <b>None</b>	

## 4.2 Kathore Link Road (Eastern Bypass)

Up to Bin Qasim town on National Highway, the track is same as in Route-1. There onwards, Route 2 changes and turns left on Eastern Bypass from Bin Qasim town just before Sassi Toll Plaza. After travelling for 17 km on Eastern Bypass, it joins M-9 Motorway towards M-10 Northern Bypass interchange. The track is suitable for heavy transportation only a connecting bridge is under construction which needs to be repaired but transportation is being carried out from the diversion on the road.

N-5 to Eastern Bypass turning	Eastern By- pass to M-9 Motorway
	
<p>1. Area / City / Location</p> <p>Kathore Link Road, Sindh, Pakistan</p>	<p>Road Map</p>
<p>2. KM from Last Location to Current Place</p> <p>From PQ Bus Stop (Round About) to Eastern Bypass turn towards M-9 = 8 km</p>	
<p>3. Bridge / Underpass Dimensions (Lx W x H):</p> <p>Bridges</p>	
<p>4. Road Condition</p> <p>Satisfactory</p>	
<p>5. Obstacles / Toll Plaza / Other Road Blockage</p> <p>Toll Plaza</p>	
<p>6. KESC / Electrical Wires / Other Overhead Wirings</p> <p>None</p>	
<p>7. Barriers / Sign Boards / Road Guide Boards:</p> <p>None</p>	



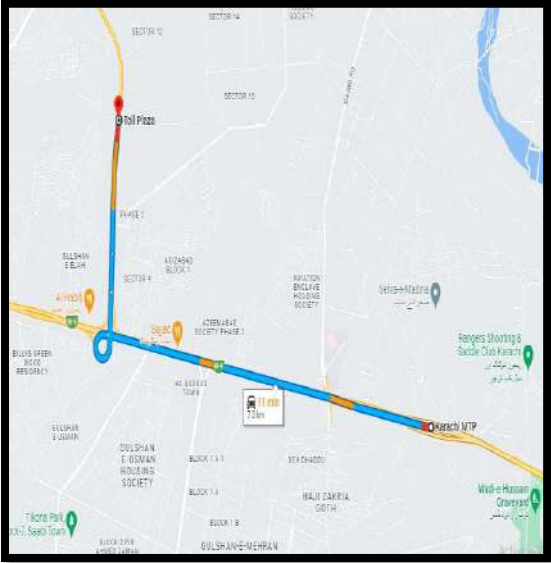
### 4.3 Motorway M-09 to Karachi Toll plaza

After turning towards Karachi on M-9 Motorway from Eastern bypass, the track is in good condition. After travelling for 13.5 km on M-9 Motorway, Karachi Toll Plaza - M9 Motorway is located. There are strict regulations for transporting heavy and over-sized goods on Motorway. NOC from National Highway and Motorway Police NH&MP and National Highways Authority NHA is required before start of transportation. The height clearance also needs to be confirmed after finalization of equipment size.

M-9 Motorway	Karachi Toll Plaza - M9 Motorway
	
<p>1.Area / City / Location</p> <p><b>Karachi, Sindh, Pakistan</b></p>	<p><b>Road Map</b></p> 
<p>2.KM from Last Location to Current Place:</p> <p><b>From Kathore Link Road to M9 Motorway</b> <b>Karachi Toll Plaza = 13.5 km</b></p>	
<p>3.Bridge / Underpass Dimensions (L x W x H):</p> <p><b>Overhead and pedestrian bridges</b></p>	
<p>4.Road Condition:</p> <p><b>Good</b></p>	
<p>5.Obstacles / Toll Plaza / Other Road Blockage:</p> <p><b>Toll Plaza, Safety signages and over-head bridges</b></p>	
<p>6.KESC /Electrical Wires/Other Overhead Wires:</p> <p><b>None</b></p>	
<p>7.Barriers / Sign Boards / Road Guide Boards:</p> <p><b>None</b></p>	




#### 4.4 Karachi Toll Plaza M9 to Northern Bypass Interchange

At the distance of 7.3 km from M9 Motorway Karachi Toll Plaza, M-10 Northern Bypass interchange is located, which is suitable for heavy transportation and it connects to Hub city at the distance of 45 km. There are strict regulations for transporting heavy and over-sized goods on Motorway. NOC from National Highway and Motorway Police NH&MP and National Highways Authority NHA is required before start of transportation.

M-10 Northern Bypass Toll plaza	Northern Bypass M-10
	
<p>1.Area / City / Location <b>Karachi, Sindh, Pakistan</b></p>	<p><b>Road Map</b></p> 
<p>2.KM from Last Location to Current Place: <b>M9 Motorway Karachi Toll Plaza to M10 Northern Bypass = 7.3 km</b></p>	
<p>3.Bridge / Underpass Dimensions (L x W x H): <b>Overhead and pedestrian bridges</b></p>	
<p>4.Road Condition: <b>Good</b></p>	
<p>5.Obstacles / Toll Plaza / Other Road Blockage: <b>Toll Plaza, Safety signages and over-head bridges</b></p>	
<p>6.KESC / Electrical Wires / Other Overhead Wirings: <b>None</b></p>	
<p>7.Barriers / Sign Boards / Road Guide Boards: <b>None</b></p>	

## 4.5 Project Site

Travelling on Northern Bypass road, at the distance of 28KM the site is located across the road. The road condition is safer for the heavy transportation. The road details are as under with the pictorial view and road map. The entrance of site is unpaved and surrounded by the wild bushes and shrubs, which needs to be cleared before the start of project transportation and construction. In below picture site entrance can be seen easily.

M-10 Hill cut near Project Vicinity	Rough Road in Project premises
	
<ol style="list-style-type: none"> <li><a href="#">Area / City / Location</a> <b>Hazaratabad Hill cut stop/Project Site</b></li> <li><a href="#">KM from Last Location to Current Place</a> <b>6 km from M-10 Hamdard Pakistan Custom Check Post Turn</b></li> <li><a href="#">Bridge / Underpass Dimensions (L x W x H)</a> <b>None</b></li> <li><a href="#">Road Condition</a> <b>Paved Road, (Ok Condition)</b></li> <li><a href="#">Obstacles / Tol Plaza / Other Road Blockage</a> <b>Drains and temporary water channels</b></li> <li><a href="#">KESC / Electrical Wires / Other Overhead Wirings</a> <b>None</b></li> </ol>	<p style="text-align: center;"><b>Road Map</b></p> 

## 5 Conclusion and Recommendations

- The routes are safe for transportation depending on the size of trailer truck.
- Contractor shall make itself comfortable regarding requirement of trailer selection based on allowed weight limit per axel, length regulations, and height criteria of regulatory bodies.
- The internal road inside the project also needs to be levelled and plane to make movement easier inside the project boundary.
- For the transportation of the equipment and movement of long vehicles, better coordination with the traffic police/Motorway Police is required.
- The transportation company will apply for the approvals/NOCs from the Government authorities, which are applicable for the heavy transportation before the start of the Project transportation and must obtain those NOC to ensure the insurance authorities compliance.
- Security of the equipment for the safely transportation is the solely responsibility of the transportation company.

## 6 Picture Gallery



Hill Cut Stop near Project vicinity



Rough Road in Project premises



South view



North view





East view



West view



Drone view	Drone view
	
Drone view	Drone view


Panoramic view West to East

Panoramic view South to North