

MPW Interchange and KWER Exit Ramp Summary

This report on environmental influence applies to the construction of MPW Interchange and KWER Exit Ramp in Beirut, where project location aerial view and general topographic plan (Scale 1/20000) are presented in Annex B.

MPW and KWER project is located in Greater Beirut Area, at the boundaries of Beirut Municipality.

Investment task consists in construction of overpass 1, overpass 2 and exit ramp with total length of 0.7km where the bridges are respectively around 180m, 165m and 120m length. The project run in consistent with UTD program within Greater Beirut Area.

A traffic mapping was carried out for the whole area, as well as relevant traffic counts in order to ascertain the **interrelation** of the MPW Interchange and the KWER Ramp that are located in two different areas but includes the exit and entrance respectively from Beirut City of traffic flow of same origin.

This Environmental Impact Report includes variants analysis in the following range: No Action variant (Zero variant), overpass alternative and underpass alternative.

Investment start is located on the West-East corridor from Adlieh to Bourj Hammoud at around 100m after Achrafieh left turn (Yerevan flyover) intersection, ending 100m after MPW Building for overpass 1.

As for KWER Ramp the start is on the Northern Highway (Tripoli- Beirut) and the end downwards on Karantina area, where the project includes the ramp and the rehabilitation of the intersection connecting the project ramp with other highways.

The project would allow a better circulation for the main corridor traffic, and consequently alleviate the traffic congestion on the other intersections and roads exiting or entering Beirut City (from the North and Bekaa).

Terrains around the investment were mostly agricultural fifty years ago but were seized by a frenetic urban development later on. The area is flat, but fully constructed, which did not easy allow land acquisition for the project.

The project collides with various elements of the technical infrastructure namely:

- Power and Water lines (with various sizes diameter)
- Storm Water Culvert
- Waste water Culvert

The projects following components are planned:

- The construction of overpass 1 consisting of two lanes (Bridge length 180m) for Adlieh – Burj Hammud traffic.
- The construction of overpass 2 consisting of 1 lane (Bridge length 165m) for the Adlieh – Dora (Northern) Highway traffic.
- The construction of a ramp at grade consisting of 1 lane for the traffic going to Adlieh from Emile Lahoud Highway.
- The direction of the traffic at grade (New Islands under the bridge, right turn movements, U-turn movements, etc...).
- The construction of Karantina Westbound Exit Ramp consisting of 1 lane (Bridge length 120m) for the traffic exiting Northern Highway.
- Pavement, Sidewalks, Signing and Marking, Traffic Signals and Lighting Works.
- Utilities deviation and upgrading as required.
- Expropriation relevant works.

- Pedestrian concrete bridges, on Corniche Pierre Gemayel before and after the overpass 1.
- Execution of relevant noise barriers all along the overpass 1.

Once the entire project becomes operational, it is expected to (i) significantly reduce transport costs and improve the efficiency of vehicular and passenger movement; (ii) promote tourism; and (iii) enhance economic and industrial activities. In the start and end of the project, the existing roundway has 3 lanes in each direction, 3.5m wide. The overpass is planned to absorb 2 of the 3 lanes.

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Basic technical parameters of the project segment:

Technical Class: International

Design Speed: VP 60 to 80km/h

Traffic Category: Heavy traffic

Load: Below 60-10⁶ ESAL (18 kips AASHTO 1993)

Pavement: Bituminous

Vertical Gauge: 5m

Road Existing width: 10.5m (Dual carriageway)

Transverse inclination: 2%

The terrain occupied by the project is generally located on the existing motorway, except for the ramps that require land acquisition (1,000m² for MPW acquired by Lebanese Government and 1500m² for KWER not acquired yet).

The traffic intensity in 2011 is around 25,000 vehicles / day for the MPW Interchange.

In 2031 the traffic intensity is around 37,500 veh/day.

As for KWER Ramp the expected traffic is 16,000 veh/day in 2011 and 24,000 veh/day in 2031.

Geological conditions and soil and water environment

Groundwater is not the major source of drinking in the project area. Moreover, groundwater will not be affected by the construction and operation of the proposed project since the underground works necessary for the construction (excavations, foundations of constructive works) do not reach the principal underground water of the area.

The construction of the project will not interfere with the drainage patterns in the project area. Therefore no significant impact is expected to occur along these waterways during construction.

Moreover, major sources of potential water pollution were identified as wastewater pollution caused by overpass construction; overpass foundations with bored piles; and pollution caused by surface runoff and

sewage generated by workforce. In addition, wastewater and hazardous materials (fuel, oil, acids, caustics, etc.) may drain into roadway drainage area causing pollution where this drainage area would be disrupted during construction. In general, wastewater pollution is not considered to be a significant environmental constraint as the duration will be short-term.

Rain water removing, floating from motorway sealed areas, will be performed directly (gravitationally) to adjacent ditches, or indirectly through segments of rain sewage system, which are designed for removing water from roadway arcs and engineering objects. Removing water from motorway auxiliary objects will be also performed through rain sewage system.

Water Quality

Site runoff is expected to be the only water quality impact from construction site for this land-based project. The potential sources of site runoff may include water from dust suppression sprays and wastewater from erosion of temporarily stockpile by rainfall. Depending on the design of the project, effluents from the construction will be disposed according to their composition. Water quality impact however would be readily mitigated with the adoption of good site management practices such as the following:

- Temporary drainage systems with interceptor manholes and appropriate sediment settlement measures will be required to trap debris prior to discharge into the storm drains.
- Wastewater generated from concreting, cleaning of machinery and similar activities would not be discharged into the storm water drains.
- Open stockpiles would be covered with tarpaulin to avoid erosion which may wash solid waste into storm water drainage systems
- Construction materials at cross drainage structures will be removed in time so as not to block the water flow.
- Chemical usage such as lubricants, solvents, petroleum products would be minimized
- Any disposal of oily and petroleum products (by the equipment) will be prevented from flowing on the ground
- Suitable measures will be taken to prevent earthworks and stone works from impeding drainage system.

Environment

Ecological Impacts (flora and fauna)

The project area is not located within a recognized site of conservation importance. It is predominantly busy highway in an urban setting and the project works concern only the existing roads which are already integrated in their natural environment. They do not influence or affect important habitats, and no species of fauna and flora are present in the area. The project has no negative ecological impacts.