Sindh
Solid Waste Management Board

CONSULTANCY SERVICES FOR TECHNO-ECONOMIC FEASIBILITY STUDY, INCLUDING PREPARATION OF PRELIMINARY DESIGN, COST ESTIMATION, PC-I DOCUMENT, RFP DOCUMENT ETC. OF SIX GARBAGE TRANSFER STATIONS IN KARACHI

BRIEF SCOPE / TERMS OF REFERENCE FOR THE ASSIGNMENT

(Note: This is outline of ToR – Detailed ToRs, deliverables etc. shall be provided to shortlisted firms in RFP document)

The brief scope of work of the consultancy assignment is as follows:

Background:

Karachi is the biggest city of Pakistan having population of around 20 million. Solid Waste Management is the biggest problem in the city at the moment. Total waste generation of the city is about 12,000 tons/day. Out of 12,000 tons the 9,000 tons of waste is generated within the administrative jurisdiction of Karachi Metropolitan Corporation (KMC) / District Municipal Corporation (DMC) and District Council Karachi (DCK). The remaining 3,000 tons of waste is generated in areas of other civic administrative bodies e.g. Cantonment boards, SITE, KPT, Pakistan Railways etc. Presently, two landfill sites are available for proper disposal of the solid waste being produced in the city. Currently the transportation costs regarding solid waste management service are very high as the landfill sites are at a distance of above 35 Kms form the city center and 70 Kms up and down. This distance is even +50 KMs (+100 Kms up down) from remote areas of Karachi. On other hand present fleet of garbage collection vehicles currently available to DMC is not only inefficient but is also outdated, hence it is next to impossible to load and transfer all waste generated in the city to current landfill sites.

In fact the dilapidated and outdated fleet of garbage vehicles coupled with long hauling distance and inefficient monitoring has rendered the Solid Waste Transport and Disposal System in Karachi incapable to deal with this important Public Health and Environmental issue. Keeping in view the location of existing two landfills and proposed new land fill site, the type of vehicles in use and the prevailing mode of operation of SWM System, it is apprehended that transport and disposal of solid waste directly to the landfill sites shall not be financially

viable. Therefore, a transfer station will be required where smaller capacity trucks will unload and the waste will be transported onwards to the landfill sites through larger capacity trucks/ containers.

Most cities of the world and especially those with long hauling distance have established Garbage Transfer Stations (GTS) to solve the problem of Solid Waste Transport and Disposal System. These intermediate sites serve as the backbone of overall efficiency of the system as garbage generated in the residential and commercial localities is swiftly transferred from community / area dustbin to GTS by means of small vehicles. Due to short distance, the garbage vehicles are able to make more trips hence transport much more garbage from the localities in short time. At GTS, the garbage is either sorted out and compacted or simply compacted and transported in long vehicles / containers to the Landfill sites. Even if not compacted, long vehicles / containers are capable of transporting 25-40 Tons of garbage per trip as compared to 2-5 Tons capacity of garbage vans.

In order to improve the current situation of the Solid Waste Management, Sindh Solid Waste Management Board (SSWMB) plans to establish 06 (Six) Garbage Transfer Stations in the city. As a part of 'Integrated Solid Waste Management Strategy' the SSWMB intends to hire the services of reputed and experienced National Consulting Firms for conducting Techno-economic Feasibility Study to suggest most appropriate, technologically sustainable, economically feasible and environmentally safe option of GTS for Karachi. The consultant shall also be responsible for reparation of Preliminary Design, Cost Estimation, preparation of PC-I Document, RFP document, etc., for the proposed six garbage transfer stations in the city.

Scope of Consultancy Works:

- Analysis and Waste characterization & Composition;
- Conduct new and review existing studies relating to different types of waste commonly handled at Garbage Transfer Stations (GTSs), segregation and management of specific materials, etc.;
- Identify suitable sites for GTSs or conduct feasibility of the proposed GTS sites based on scientific methodologies/criteria while taking into account technical, environmental and community related aspects and to prepare layout and maps;
- Carry out comparative study of different options for management of Solid Waste at GTS viz. Segregation of garbage with Material Recovery Facility (MRF) & Refuse Derived Fuel (RDF) followed by compaction option, simple compaction and transport in long vehicles / containers or just transfer and transport of garbage through long vehicles / containers without nay compaction. Based on this comparative study suggest most appropriate option for Karachi;
- Preliminary Engineering Design of GTS (Equipment specification and preliminary designs of civil works, utilities and electrical installations etc.);

- Rough Cost Estimates on the basis of Preliminary design;
- **Foreign Consultants Inputs (Minimum 100 hours):** Foreign consultants'/experts' inputs shall be taken for design criteria, specifications and engineering designs/ functionality requirements by local consultants and same should be documented and integrated into the considering the ground realities;
- Co-ordination with Sindh Environmental Protection Agency (SEPA) for conducting Environmental Impact Assessment (EIA)/IEE if required;
- Acquisition of Environmental, Topographical, Geographical, Hydrological (surface & ground water), Metrological data and identification of all underground facilities (i.e. cables, drains, gas line, telephone and electric line);
- Prepare and submit all required surveys soil investigations, design related reports, GIS based maps and progress reports;
- Preparation of minimum three alternative layouts and processed design schemes for each of GTS;
- Preparation of Feasibility Report;
- Preparation of Project PC-I, incorporating all the Project Costs on the basis of Preliminary design;
- The total services shall also include any other extra work assignment relating to the project by competent authority of SSWMB not covered in contract. This should be carried out on mutually agreed terms and conditions;
- Preparation of Bidding Documents as per SSPRA Rules 2010 (Amended 2013);
- Pre-qualification of Contractors as per SSPRA Rules 2010 (Amended 2013), if required.

The consultants shall adequately address the following objectives within their engineering analysis and designs:

- Safe and efficient flow of traffic for collection and transfer trucks into and out of, as well as within, the facilities;
- Safe and efficient unloading of collection trucks and loading of transfer trucks;
- Adequate storage capacity of Solid Waste to enable accommodation of peak periods of unloading by collection trucks;
- Adequate enclosure and ventilation for control of noise, odour and dust and to meet aesthetic needs;
- Office facilities for site supervisor and supporting staff;
- The fencing and gate control facilities, including weighbridges, to secure the site;
- Provision for parking space, workshop facilities and washing facilities;
- Drainage and sanitation facilities to fully meet the projected flow of twenty-year storm water;
- Ancillary services.

Note: 6 Copies of each report shall be submitted by the Consultants.