



EXECUTIVE SUMMARY

Name of the Project: Solid Waste Transfer Station & Recycling of Construction & Demolition Waste at Thokar Niaz Baig, Lahore

Proponent: Lahore Waste Management Company (LWMC)

Consultants: Engineering Consultancy Services, Punjab (ECSP) (Pvt.) Limited

1. INTRODUCTION

LWMC aims to develop an integrated solid waste management system to ensure efficient collection, transportation, recovery, treatment and disposal of the waste generated in the city of Lahore. To provide efficient and affordable municipal waste management services to turn Lahore into one of the cleanest cities, LWMC could successfully complete first and foremost step, i.e. establishment of scientific landfill site at Lakhudair, around 20 km north of Lahore urban center.

To synchronize the relief operations of Lakhudair landfill site, the proponent has planned to build a solid waste transfer station and construction and demolition (C&D) recycling unit at Thokar Niaz Baig, Lahore. This transfer station will collect and transfer solid waste and recycle C&D waste to save the landfill site from heavy and recyclable demolition waste. It will be used as a facility point where waste collection vehicles will deposit their waste cargo prior to loading into larger vehicles. These larger vehicles will transport the waste to the end point of disposal i.e., Landfill Site. In this way, the proposed transfer station will increase the life and operations of landfill site. Moreover, C&D waste will be collected and recycled at this site while remaining non-recyclable C&D and SW is dumped at Lakhudair Landfill Site.

Engineering Consultancy Services Punjab (Pvt.) Limited (ECSP) has been engaged to carry out the Environmental Impact Assessment (EIA) process as a part of above mentioned services to fulfill the environmental regulatory requirements.

2. LEGAL AND ADMINISTRATIVE FRAMEWORK

The National Conservation Strategy (NCS) is the principal document which addresses the environmental issues of the country. The Pakistan Environmental Protection Act (PEPA), 1997 is the key regulation authorizing the government to frame regulations for the protection and safeguard of the environment. Pakistan is signatory to the convention on Biodiversity and thereby obliged to develop a national strategy for the conservation of biodiversity. Current Punjab Environmental Policy (2015) as well as administrative and legal framework of PEPA, 2000 has been reviewed comprehensively which provide an overview of the regulations related to the EIA. Environmental related documents have been reviewed including National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), Punjab Environmental Protection Act (1997), amended in 2000, National Environmental Quality Standards (NEQs), Land Acquisition Act (1894), Cutting of Trees (Prohibition) Act (1975), Punjab Wildlife Act (1974), Punjab Plantation and Maintenance of Trees Act (1974), Antiquities Act (1975), Pakistan Clean Air Program (2008), etc.

Submission of environmental assessment study report to obtain environmental approval was made mandatory by the Pakistan Environmental Protection Ordinance (PEPO), 1983 which was later on became Pakistan Environmental Protection Act (1997). Section 12(1) of the PEPA (1997) stipulates that no project involving construction or any change in the physical environment can be undertaken unless an IEE or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

3. PROJECT DESCRIPTION

The proposed Project is located in Lahore 5km away from left bank of River Ravi near Katar Bund Road, Thokar Niaz Baig and is at UTM 0314031 and 3608733 (Main Project Site), and 3614468. It is at 220m above the MSL.

The Project comprises the following key elements:

- The proposed Project is a transfer station and recycling unit for the effective management of the SW and C&D waste. The total area of the Project is 248.16

kanals (approximately 31 acres). The land is currently being used for agricultural purposes and it has been already purchased by the LWMC. This Project falls into environmental category B; which reflects that this Project has no significant adverse environmental impact on the surrounding community.

- The Project consists of two sections; transfer station for SW collection and recycling unit of C&D waste.
- C&D waste from the city of Lahore will be collected by 10 trucks, 25 compactors and 4-7 semi-trailers and transported to the recycling unit located at Katar Bund Road, Thokar Niaz Baig Lahore.
- From the transfer station 40-45 dumpers will transfer the organic waste to Lakhdair landfill site.
- A heavy duty crusher will be used to recycle the C&D waste.

4. APPROACH AND METHODOLOGY

The Environmental Impact Assessment (EIA) document is presented for the purpose of enabling decision makers to assess the anticipated impacts on the social and physical environment arising from SW Transfer Station & Recycling of C&D waste.

A conventional approach was followed to conduct EIA for the proposed Project to meet the minimum requirements of Punjab-EPA for social and environmental sustainability standards and policies. The EIA process, however, has undergone the following steps mandatory for any environmental assessment:

- Consultation with experienced environmental experts to discuss and examine the potential environmental impacts and major environmental issues in the light of Project scheme and present environmental settings. They could also predict the potential environmental impacts caused by the Project upon special study and simulation incorporating expert's opinion.
- Desk studies to understand Project designing drawings and other Public material as secondary information.
- Collected baseline information to identify the present environmental conditions in the Study Area on the basis of available data, field investigation and monitoring.

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- Public Consultation and Project disclosure to the affected community was done explicitly. A solid liaison with the public sector departments/agencies to involve them in administrative and responsibility hierarchy.
 - Evaluated the environmental impacts envisaged to be caused by the Project according to relevant laws, regulations, standards and the predicted results.
 - Suggested doable remedial measures, assessed the residual impacts and evaluated whether they meet the relevant policies and environmental guidelines or not.
 - Devised an environmental management and monitoring plan to evaluate the actual environmental impacts and the implementation of the remedial measures/mitigations.

5. SOCIO-ENVIRONMENTAL BASELINE CONDITIONS

The primary and secondary information was collected and analyzed. The data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting the site and collecting supportive secondary data.

The existing environment in and around the project area has been studied with respect to the physical, biological and socio-economic conditions. The topography of the Project Area is flat. The average height of the project area is approximately 208 meters above the Mean Sea Level (MSL) and is located 74°13'35.86"E; 31°28'36.01"N. Project Area lies in arid zone having less fluctuation in temperature and more humidity. There is no such large surface water body passing within the boundary of the study area. There is no existing tube well in the Project Area Land use of the project area is mainly commercial and industrial.

Ecological Environment on account of the proposed project, some of the principal trees, shrubs (plants) and herbs (ground covering plants) in project are; Sheesham, Berri, Kikar, Shahtoot, Jaman, Neem, Murrayaexotica and Plumosis etc. Common mammals found in the area are dogs, cats, house rats and bats. Small Indian Mongoose and Indian Palm Squirrel have also been reported. Snakes such as cobra, etc. were once common in the tract, but now cases of snake bites are very rare, as these reptiles have

been either killed by expanding urbanization or they have moved away. Amphibians frequently seen in and around the Project Area, especially during rainy season, include common Frog (*Rana tigrina*) and Indus valley toad, while the birds species include House Sparrow (*Passer domesticus*), House Crow (*Corvus splendens*) and Mynah (*Acridotheres tristis*) etc.

A detailed socioeconomic survey was carried out in and around the project area. The purpose of the survey was to enumerate, evaluate and assess the existing social, cultural and economic conditions and to determine the community's requirements. The majority of the population belongs to working class and few of them are industrialist. Punjabi is the predominant language being spoken by majority of the population of the study area. The main castes and groups of the study area are Arain, Jat, Rajput, Pathan, Mughal, Sheikh, Malik, Komboh and Gujjar. People of this area have not basic amenities like gas, sewerage and health facilities.

6. PUBLIC CONSULTATION

Extensive public consultations were conducted with all the stakeholders including LWMC authorities, NGOs, private industries and local residents. Most of the people expressed their concerns about potential adverse impacts on nearby population and environment of the project. The public generally supports the development of the Project and their views have been considered in the planning and design process.

Major socio-economic concerns and problems, quoted by the indirect affected communities of Project Area, are both positive and negative. The positive impacts of the proposed Project, as envisaged by the indirect affected persons, are in terms of their employment, infrastructure development, increase in commercial activities and improvement in the general economic condition of the community. Similarly, negative impacts were forecasted as there will be emission of gases and their odor, vector production, leakage of leachate from compactor, hazards of accidents due to heavy transport etc.

7. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table: Summary of the Impact Matrix and Severity of Environmental Impacts¹

Sr. #	Environmental Parameters	Impacts Level by Project at Construction		
		Before	During	After
A. Physical Environment				
<u>Natural Calamities/Risk Factor</u>				
1	Climate change	NA	0	+1p
2	Flood hitting	NA	NA	-1t
<u>Land Resources</u>				
1	Sub-soil chemistry	NA	NA	NA
2	Widening/repair of roads	+2p	+2p	+2p
3	Soil erosion/contamination	NA	-3t	-1t
4	Natural drainage	NA	-2t	NA
<u>Water Resources</u>				
1	Ground water quality	NA	NA	NA
2	Surface water quality	NA	-1t	-2p
3	Wastewater quality	NA	-1t	-3p
4	Water requirement	NA	-1t	-1p
<u>Air Resources</u>				
1	Dust emissions	NA	-2t	-2p
2	Obnoxious gases/GHG emissions	NA	-2t	-2p
3	Noise levels	NA	-1t	-1p
<u>Other pollutants</u>				
1	Solid waste dumping	NA	-1t	-1p
B. Biological Environment				
<u>Terrestrial Ecology</u>				
1	Tree cutting	-2t	NA	NA
2	General vegetation	-1t	NA	-1t
3	Migratory birds w.r.t. river	NA	-1t	-2p
4	Other wild animals	NA	-1t	-1p
C. Social Environment				
1	Land acquisition	-3p	NA	NA
2	Property value	-2t	-3t	+3t
3	Livelihoods through agriculture	NA	-3p	-3p
4	Norms	NA	NA	NA
5	Health & safety	NA	-2t	-2p
6	Aesthetics	NA	-2p	-2p
7	Traffic congestion	NA	-2t	-3p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible				

¹ All adverse environmental impacts except natural calamities are manageable easily by implementing EMP as proposed in Chapter 7 of this EIA Report.

Recommended Mitigation Measures

A: Physical

- Top soil reclamation; re-establish the original grades up to the extent practicable and possible.
- Construction material may get reused/ land-filled.
- Appropriate sanitary and SWM practices.
- The vehicles that are transferring the waste must be covered properly.
- Installation of mufflers on the equipment. Buffer zone management and reduction of traffic through community areas.
- Collect leachate in the leachate pond and then treat in treatment plant.

B: Ecological

- Re-plantation through tree plantation plan.
- Establishment of green belts around the project boundary.

C: Socio-Economical

- Health and safety plan.
- Implementation of traffic management plan.
- Appropriate signs at facility entrance and exits.
- Shock absorber at the base of the heavy machinery to mitigate vibration.
- Site restoration after the construction of the Project.

8. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN (EMMP)

This report contains a comprehensive EMMP in order to facilitate the implementation of mitigation measures suggested during the present study. This plan includes various components, for instance, institutional arrangements for the implementation of EMMP which covers the roles and responsibilities of the client, consultant and the contractors during the construction and operation phases and up to some extent after decommissioning stage. EMMP has also been sub-divided in a few important plans; like environment monitoring plan; waste management framework; health, safety and

environment framework; site restoration plan; odor management plan; traffic management plan; socio-environmental training plan; noise management plan; tree plantation plan, etc. This section will end up with an estimation of environmental cost to meet the expenses of all afore mentioned plans.

9. CONCLUSION AND RECOMMENDATIONS

Conclusion

It is, however, concluded that the proposed Project will not pose significant permanent and irreversible adverse impacts on the prevailing environment of the area/region. Rather it will have many beneficial impacts, where chief benefit is to turn Lahore into comparatively cleaner city of Pakistan, as well as overall socio-economic uplift of the Study Area.

Recommendations

There are certain recommendations to cater for the aforesaid issues and impacts of the proposed project. This will not only help the present project but also to the future developments in proper waste management.

- It must be made sure that EMMP is implemented to full effect for the correction of EIA process. The findings of this EIA study must be incorporated in the planning and design of similar projects, planned in future.
- Open dumping; burning or disposing of waste in the water bodies must be avoided.
- An independent solid waste characterization, quantification and economic viability study is also desired.
- Use modern mobile crusher plant for the recycling of the C&D waste material.
- An alternative transportation route must be planned in order to access the project site to reduce the traffic load on the local roads.
- Incineration plant must be installed at some appropriate location to manage hazardous or hospital waste.



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- Composting plant must be installed at some suitable position to manage solid waste.
 - Segregation of solid waste at source should be introduced (separate bins system) as well as separate collection system for each category.
 - Proponent must apply for Environmental Approval (NOC) to EPA, Punjab after proceeding further into project implementation.