

LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
ALGAS	Asia Least Cost Greenhouse Gases Abatement Strategy
ASR	Air Sensitive Receivers
BDL	Below Detection Limit
BOD	Bio-chemical Oxygen Demand
CC	Construction Contractor
CDM	Clean Development Mechanism
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
DCO	District Co-ordination Officer
DD	Deputy Director
DG	Directorate General
DRR	Disaster Risk Reduction
DWQS	Drinking Water Quality Standards
EE	Environmental Engineer
EIA	Environmental Impact Assessment
EMMP Plan	Environmental Management and Monitoring
EPA	Environment Protection Agency
EPC	Engineering Procurement Construction
EPD	Environment Protection Department
EPHE	Environmental & Public Health Engineering
FGDs	Focused Group Discussion
GDP	Gross Domestic Product

gm	Gram
GoP	Government of Pakistan
IEE	Initial Environmental Examination
LGO	Local Government Ordinance
LDA	Lahore Development Authority
LDL	Lowest Detection Limit
mg/l	Milligrams per liter
MSL	Mean Sea Level
NCS	National Conservation Strategy
NEQS	National Environmental Quality Standards
NEP	National Environmental Policy
NO2	Nitrogen Dioxide
NOC	No Objection Certificate
OH & S	Occupational Health and Safety
PAPs	Project Affected Persons
PEPA	Pakistan Environmental Protection Act
PEPC	Pakistan Environmental Protection Council
PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
SO2	Sulfur Dioxide
SOP	Standard Operating Procedures
SWM	Solid Waste Management
TA	Technical Assistance
TORs	Terms of Reference
TSS	Total Suspended Solids

UNDP	United Nation Development Pro
WASA	Water and Sanitation Agency

GLOSSARY

Aesthetic	Concerned with beauty or appreciation of beauty.
Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Aquifer	An aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials (gravel, sand or silt) from which groundwater can be extracted using water well.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Convention	An agreement between states covering particular matters, especially one less formal than a treaty.
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Ecology	The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Endangered species	A species of animal or plant that is seriously at risk of extinction.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specific is being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Framework	A framework is a real or conceptual structure intended to serve as a support or guide for the

building of something that expands the structure into something useful.

Hazardous Waste

Hazardous Waste is waste that poses substantial or potential threats to public health or environment.

Impact

The action of one object coming forcibly into contact with another.

Livelihood

A set of activities involving Securing the basic necessities –food, water, shelter and clothing of life.

Municipal Waste

Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses.

Nature

The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.

Ordinance

An ordinance is a law enacted by a municipal body, such as a city council or county commission (sometimes called county council or county board of supervisors).

Preservation

Preservation is the strict setting aside of natural resources to prevent the use or contact by humans or by human intervention. In terms of policy making this often means setting aside areas as nature reserves (otherwise known as wildlife reserves), parks, or other conservation areas.

Proponent

A person who advocates a theory, proposal, or course of action.

Policy

A policy is a deliberate system of principles to guide decision and achieve rational outcomes.

Rehabilitation

To restore to a condition of good health, ability to work, or the like.

Resettlement

The settlement of people in a different place.

Resource

A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.

Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
Seismic Hazards	A seismic hazard is the probability that an earthquake will occur in a given geographic area, within a given window of time, and with ground motion intensity exceeding a given threshold.
Stakeholder	A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees and customers.
Stage digging	Stage digging is a process by which portions of the root ball are dug over a period of time in order to allow the tree to acclimate to the stresses gradually.
Topography	Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.
Vegetation	Plants considered collectively, especially those found in a particular area or habitat.
Valued Environmental Components	Valued environmental components (VECs) are defined as fundamental elements of the physical, biological or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds and land use that may be affected by a proposed project.

EXECUTIVE SUMMARY

INTRODUCTION

This executive summary presents an overview of the main findings of Environmental Impact Assessment (EIA) report for the proposed project i.e. **MANZOOR H & SONS PVT. LTD** for Lead Resource Recovery Unit in the area. Environmental Impact Assessment (EIA) of this proposed project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act 2012 and IEE/EIA Regulations 2022. The process for conducting environmental assessment and the results of IEE are described in this document.

SALIENT FEATURE OF PROJECT

Proponent Name: Mr. Haji Manzoor Hussain

Name of Project: **MANZOOR H & SONS PVT. LTD** (Lead Resource Recovery Unit)

Area: 5 Kanals

Cost: 80 Million

Storage Material: Scrap Lead acid batteries

Project Location: Mouza Karool, off Ring Road, Lahore.

Current Status of Project: Project site is a Self Development Industrial Area.

Area of Green Belt: Area is reserved for green belt/plantation mentioned on map attached as Annexure.

Environmental Status of the Study Area

The base line environmental status was assessed bases on primary and secondary data collected through in-site field observation and obtained from agencies such as Environment Protection Department, Town Municipal Administration, Public Health Engineering Punjab, and District Design Committee. The following environmental components were focused for this study:

- Air Environment (Meteorology, Ambient Air Quality, etc)
- Water Environment (Quality, and Quantity of potential water sources: Groundwater)
- Land Environment (Land use, Solid Waste generation and characteristics)
- Ecological Environment (Terrestrial and Aquatic Flora & Fauna)
- Socio-Economic Environment (Demographic profile, Occupational structure, Educational status, literacy status, etc)

The baseline status collected from analysis of secondary and primary data is summarized below.

Meteorology:

Data was collected from meteorology department during study period of this proposed project. The climate of the district is hot and dry. The summer season starts in April and continues until October. May, June, and July are the hottest months. The mean maximum and minimum temperatures for these months are about 47 and 28 degree Celsius. Dry, hot, and dusty winds are common during summer. The winter seasons last from November to March. December, January and February are the coldest months. The mean maximum and minimum temperatures for this period are about 22 and 4 degree Celsius. Fog is very common during winter. Most of the area's rain falls during

the monsoon season from July to September. During winter season there are very little rain, however, deluges and floods can occur in some area of the district.

Biological Environment:

The project site is a constructed building and there is no fauna and flora. This area is within the premises of small industries. No protected area (PA) or any ecological sensitive area is located along the proposed site.

Environmental Consultant

An Environmental Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts of proposed project along with environmental impact statement followed by delineation of appropriate Environmental Management Plan are included in the EIA of **MANZOOR H & SONS PVT. LTD** for (Lead Resource Recovery) has decided to conduct EIA study for the proposed project through Environmental Consultant, M/S TETRATECH Environmental Consultancy and to get Environmental Approval from Environmental Protection Agency (EPA) Punjab.

Objective of the Project

The objectives of the project is to establish Lead Resource Recovery for the area in an environment friendly manner.

The Punjab Environmental Protection (Amendment) Act 2012

As per directions of PEPA Act 2012, the Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 **MANZOOR H & SONS PVT. LTD** (Lead Resource Recovery) require to fulfil the legal requirements of the section-12 of the Punjab Environmental Protection (Amendment) Act 2012.

Baseline Study

The EIA Report of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the operational phase of the Project along with proposing suitable mitigation measures and formulation of Environmental Management & Monitoring Plan (EMMP) for implementation of the project in environment friendly manner. A review of the legislation / regulatory regime applicable to the project has been undertaken. The Project will need to take into account a number of relevant laws, environmental protection agency's environmental guidelines, and various international treaties and conventions on the conservation of the environment to which our country is a signatory.

Environmental mitigation

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary. Weather describes an impact as having both spatial and temporal impacts, which can be described as the change in an environmental parameter over a specified period and within a defined area, resulting from a particular activity compared with the situation which would have occurred had the activity not been initiated. Environmental issues associated with operation of the

project could include water consumption, safety hazards, public health and nuisances, and increase in noise and vehicular activity. However, the magnitude of these impacts shall be much less than those related to impacts during the construction.

Environmental Management & Monitoring Plans:

Environmental Management Plan (EMP) is formulated for both construction and operation phases to frame a chart of how the suggested mitigation measures will be implemented and who will be the persons responsible for their implementation. Environmental Monitoring Plan is formulated to check the compliance of EMPs for both construction and operation phases

Ambient air quality, vehicle and equipment exhaust and noise level (tests), and soil contamination, solid waste management and community and workers' safety and employments are the aspects that require monitoring during construction phase. Monitoring requirements during operation phase include air quality and noise level (tests), and solid waste management and safety and security. Detailed Management and Monitoring Plans have been presented in Chapter 6 of the Report.

Conclusion

The Environmental Impact Assessment (EIA) report contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits.

It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. The objective of preparation of an environmental study is to identify how the environment is impacted and to suggest mitigating measures to reduce if not totally eliminate adverse effects of a project.

Necessary mitigation measures are recommended in the report to make this project Environment Friendly. Environmental Management Plan identifies monitoring needs and implementation on Environmental Management Plan is also recommended. The EIA concludes that the proposed project have indicated that there are no significant environmental impacts associated with the construction and operation phase of the project, if the anticipated impacts are properly mitigated; therefore, no further EIA study is required.

M/S TETRATECH Environmental Consultancy has been engaged to conduct EIA report for the proposed project. EIA study of the project is conducted according to the prescribed procedures and guidelines envisaged under the Punjab Environmental Protection Agency (EPA, Punjab) and the Punjab Environmental Protection (Amendment) Act, 2012, the IEE / EIA Regulations, 2022 etc.

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CHAPTER-1 INTRODUCTION

1.1 Introduction

Approximately 85% of the total global consumption of lead is for the production of lead-acid batteries. This represents a fast-growing market, especially in Asia. The main uses of these batteries are in motorized vehicles, for storage of energy generated by photovoltaic cells and wind turbines, and for back-up power supplies (for both the consumer market and for critical systems such as telecommunications and hospitals). In developing countries where power supplies are unreliable, lead-acid batteries are used domestically for lighting and electrical appliances (UNEP, 2004). The growth in the use of renewable energy sources and the concomitant need for storage batteries, as well as the increasing demand for motor vehicles as countries undergo economic development, mean that the demand for lead-acid batteries will continue to increase. This is reflected in the increased global demand for refined lead metal, which was estimated at 10.83 million tons in 2016 (International Metals Study Groups, 2016). The demand is being met by increases in both primary lead production from mines and recycling. Indeed, currently over half of the global production of lead is from lead recycling.

The development of any project leads to positive and adverse changes in environmental and change in social settings of the project area. The intensity and level of change, however, depends upon the nature of the project and the baseline environmental and socio-economic conditions of the area.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states “No proponent of a project shall commence construction or operation unless he has filed with the Federal Agency an Initial Environmental Examination (IEE) or where the project

is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Federal Agency in respect thereof.” Later, Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022 provided the guidelines for categorizing the Projects. According to Schedule-II of PEPA (Review of IEE and EIA) Regulations, 2022; the development of the Lead Resource Recovery Unit under Category B (12). i.e., the project requires an EIA Study.

This document presents the Environmental Impact Assessment (EIA) report of establishment for Lead Recovery Unit named **MANZOOR H & SONS PVT. LTD (LEAD RECOVERY UNIT)**. The project site is located at Karol Ghatti, Mouza Baghbanura, off Ring Road, Lahore. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during operation phase of the Project along with proposing suitable mitigation measures and formulation of Environmental Management Plan (EMP) for implementation of the project in environment friendly manner. The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing the Environmental Approval. The anticipated project will comply with regulation of Pak-EPA 1997, Punjab Environmental Protection (Amendment) Act 2012 and Punjab Development of Cities Act 1976. The land of the project area is owned by the Client. The land ownership documents are attached.

This report is prepared by critical examine of the environmental factors which might be affected due to construction and operation of the project. The purpose of this report is to analyze impacts of the project. This EIA provides the basis for a determination of the degree of the environmental impacts of the project.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing for the Environmental Approval.

The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.2. Identification of Project and Project Proponent

1.2.1 Project

The proposed project is the establishment of “**MANZOOR H & SONS PVT. LTD** (Lead Resource Recovery Unit)” on 5 Kanals. This will be a lead recycling unit where scrap lead batteries will be cracked to get lead plates for further recycling process.

1.2.2 Project Proponent

Name of Proponent: Mr. Haji Manzoor Hussain

Residential Address: Mohallah Taj Park, Amir Road Shad Bagh, Lahore.

Contact Number: 0321-4989420

1.3 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of this Proposed Project, the proponent has hired the services of the environmental consultants; **M/S TETRATech Environmental Consultancy**. Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report

1.4 NATURE, SIZE AND LOCATION OF THE PROJECT

The proposed project is to recycle lead from lead acid batteries transmitted on the area of 5 Kanals. The land is a self-Developed Industrial Area land leased by the proponent situated at Mouza Karool, off Ring Road, Lahore. Project coordinates are **31°36'53.97"N 74°22'12.47"E**



1.4.1 Importance of the Project

Lead is always among one of the most recycled materials in terms of recovery rate. It can be re-melted infinitely to remove impurities. Its fundamental properties make it easily identifiable and cost-effective to collect and recycle. More than 50 percent of lead used in the production of new lead products around the world is sourced from recycled lead. As the quality of the recycled lead is almost identical to primary lead collected directly from mining, its value and demand as a recycled material are very high. Recovering and recycling lead has great environmental advantages. Lead recycling reduces the release of lead to the environment and conserves natural resources. The lead battery is a hazardous waste. Its disposal poses both health and environmental threats. The use of recycled lead in the production of new products is highly energy efficient. Recycled lead production takes only 35 to 40 percent of the energy necessary to produce primary lead from ore.

Unlike most other materials, Lead can be re-melted and recycled indefinitely without slightest of diminution in quality, making it the perfect material for the circular economy.

1.5 AIMS AND OBJECTIVES OF THE STUDY

This report serves two purposes. Firstly, it provides necessary information to the Punjab Environmental Protection Agency to determine whether the project poses any environmental threat. Secondly, it would serve as a ready-reckoned for the proponents to manage the project during the operation in an environment-friendly manner and abide especially by recommendations of the Environmental Management Plan and the Environmental Monitoring Program.

The main aims and objectives of this Environmental Impact Assessment (EIA) study are to identify baseline environmental, physical and socio-economic conditions pertaining to the project, examine project alternatives, and discuss potential impact, along with formulation of suitable mitigation measures for environment-friendly implementation of the project. These are summarized as follows:

Identification and assessment of all environmental impacts or social sensitivity, whether major or minor, caused during operational stage in order to formulate an effective Environmental Management Plan;

- Suggest measures required to mitigate any possible adverse environmental impact through minimization, elimination, reversal or compensation of such impact;
- Pinpoint and assess all possible impacts of project operation on the natural, physical, biological and socio-economic environment of the project area and evaluate these both qualitatively and quantitatively, wherever possible,
- Prepare an Environmental Impact Assessment (EIA) report presenting recommendations for effective implementation of the project in a manner that

it does not compromise the environment existing at the project site or pose any environmental threat in the immediate foreseeable future.

In order to ascertain possible environmental impacts posed by the project, the study has been divided into the following sub-tasks:

- Identification of various legal and statutory requirements as set forth by the Punjab Environmental Protection (Amendment) Act 2012, guidelines for preparation and review of environmental studies;
- Collection and scrutiny of data related to physical, ecological and socio-economic aspects of the project site and surrounding areas;
- Identification and evaluation of salient environmental impacts;
- Identification of mitigation measures required to minimize negative externalities of the project, and
- Preparation of an Environmental Management Plan and an Environmental Monitoring Program.

1.6 SCOPE OF THE STUDY

Laws, rules, regulations and guidelines that were considered while formulating this Environmental Impact Assessment (EIA) report include:

- Punjab Environmental Protection (Amendment) Act 2012
- Guidelines for preparation and review of environmental reports;
- Guidelines for public participation;
- Guidelines for sensitive and critical areas;

This study assesses environmental, social, physical and other aspects of the project, during construction and operation, and identifies measures necessary to be adopted to mitigate any environmental impact on any segment of the local and surrounding environment.

1.7 STUDY TEAM

To prepare EIA Report of the respective project the company engaged the following experts. The details of the experts are given below:

Table 1: EIA STUDY TEAM

Sr. No.	Team Member	Designation	Qualifications
1	Dr. Mateen Shafqat	Chief Advisor	PhD Environmental Sciences PMAS, Arid Agriculture University M.phil Environmental Sciences PMAS, Arid Agriculture University M.Sc Environmental Sciences PMAS, Arid Agriculture University
2	Kamal Ahmed Cheema	Chief Environmentalist	M.Phil Environmental Economics PIDE, Islamabad Diploma in Environmental Law Punjab University, Lahore

			BS Environmental Sciences University of Gujrat
3	Miss Maham Ayesha	Senior Environmentalist	Ms Environmental Sciences, Nust Bs Environmental Sciences University of Gujrat
4	Fareeha Maryam	Zoologist	Bs Zoology University of Gujrat
5	Mr. Shazaib Ahmed	Social Scientist	M. Phil Development Studies, PIDE, Islamabad M. Sc. Development Sciences Islamic International University, Islamabad
6	Jawad Shafiq	Environmental Safe Guard Specialist	BS Environmental Sciences University of Gujrat
7	Abdul Jabbar	Environmentalist-1	BS Environmental Sciences University of Gujrat
8	Amna Hafeez	Environmentalist-2	M.Sc. Mountain Conservation and Watershed Management University of Punjab

1.8 DOCUMENT STRUCTURE

The report comprises of following chapters;

Chapter 1: **Introduction** (Briefly presents the project introduction, objectives and need of the Study).

Chapter 2: **Policy, Legal and Administrative Framework** (Comprises the policy, guidelines and statutory obligations concerning IEE study of the project).

Chapter 3: **Project Description** (Presents relevant information about the project and its major components).

Chapter 4: **Description of the Environment** (Establishes baseline conditions for physical, biological and socio-economic conditions of the Project area).

Chapter 5: **Environmental Impacts and Mitigation Measures** (Deals with the potential environmental impacts and mitigation measures, which have been proposed to mitigate the environmental impacts of the Project).

Chapter 6: **Environmental Management Plan** (Outlines institutional structure for the implementation of the Environmental Management Plan).

Chapter 7: **Recommendations and Conclusion** (This chapter gives recommendations for elements of special interests and concludes the whole report).

Chapter 2: STATUTORY REQUIREMENT & STANDARDS

2.1 GENERAL

Sustainable development and green economy are a concept that has emerged over the past decades to describe a new framework aimed at economic and social development while maintaining the long-term integrity of the ecological system. The principal of sustainable development is in the process of being incorporated in to the national policy and legislation through various statutory instruments. This chapter describes the current legal responsibilities of the proponent in context of environmental and sustainable development, and the institutions that exist in the country that may influence the environmental management of the project.

This section deals with the current policy as well as legal and administrative framework related to carrying out of Initial Environmental Examination (IEE) of the project. An efficient and effective organization structure is essential for successful implementation of the mitigation measures identified for the project. Like other projects, the project, before its implementation, is required to go through an Environmental Assessment, in accordance with the provisions of the Punjab Environmental Protection (Amendment) Act, 2012.

2.2 EXISTING REGULATION AND FRAMEWORK

The Federal Ministry of Environment was responsible authority for policy making on environmental protection in Pakistan but after 18th Amendment in the Constitution, the Provincial Governments have taken over the subject of Environment. This IEE study has been carried out in the light of the policy guidelines of the Preparation of IEE/EIA Reports under the procedures and practices formulated by the Pak EPA and adopted by the Punjab Environmental Protection Agency (EPA).

2.3.1 ENVIRONMENTAL PROTECTION COUNCILS

The Punjab Environmental Protection Council (PEPC) is the apex decision-making body of Punjab. It has been developed under the provision of PEPA, 2012. It is headed by Chief Minister of Punjab with other members.

2.3.2 ENVIRONMENTAL PROTECTION AGENCIES

Pak EPA has been established at the federal level and EPAs are established at Provincial level also. In Punjab an independent Environmental Protection Agency is constituted headed by the Director General.

2.3.3 ENVIRONMENTAL PROTECTION DEPARTMENT, PUNJAB

The Punjab Government has established Environment Protection Department (EPD) administratively headed by Secretary, Government of Punjab. The EPD has its independent Minister. According to the provisions of the Punjab Environmental Protection (Amendment) Act, 2012, EPD has a significant role in policy making and implementation of the environmental laws in the province.

2.4 POLICY FRAMEWORK

The Ministry of Environment is the responsible authority for policy making on environmental protection in Pakistan.

2.4.1 NATIONAL CONSERVATION STRATEGY

The National Conservation Strategy was the primary policy pledging to balance Pakistan's economic development with conservation of natural resources. The Strategy was put together following a nine-year consultative process with all stakeholders, including government organisations, environmental experts, interested individuals, communities, non-governmental organisations and multilateral and bilateral agencies. The Strategy was approved at the level of the Federal Cabinet in 1992 as the principal policy document for the country's environmental management. The underlying goal of this document is that all economic and statutory development in the country should be such that it does not conflict with the interests of conservation of nature. The three overriding objectives of the National Conservation Strategy are conservation of natural resources and sustainable development and improved efficiency in the use and management of resources.

2.4.2 NATIONAL ENVIRONMENTAL POLICY, 2005

Govt. of Pakistan has notified national Environmental Policy 2005, for different projects/aspects in which guidelines/priorities have been given to undertake/commence the projects having significant environmental impacts.

The National Environmental Policy (2005) provides a framework for addressing the environmental issues (particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of bio diversity, desertification etc.) confronting Pakistan. It recognizes the goals and objectives of the Pakistan National Conservation Strategy (PNCS, 1992), National Environmental Action Plans, and other existing environment related national policies, strategies, and action plans. It also provides broad guidelines to the federal government, provincial governments, federally administrated territories and local governments to address their

environmental concerns and to ensure effective management of their environmental resources.

2.5 RELEVANT LEGAL FRAMEWORK

The applicable laws for the environmental study of the project are briefly given below. The proponent of the project will abide by the applicable laws and regulations.

A number of laws have been promulgated by the Government of the Pakistan (GOP) to deal with the environmental and social aspects related to the implementation of various development projects in the country. In 1983, the GOP issued an Environmental Protection Ordinance (EPO) that was replaced by the PEPA, 1997, through an Act of Parliament. The PEPA 1997 has been confined to Federal Area and provinces have been allowed to formulate their own environmental legislation.

Under the Act, it is mandatory to carry out IEE or EIA for all development projects. The GOP has also frame guidelines for environmental assessment of projects in various developmental sectors, According to PEPA 1997, the National Environmental Quality Standards (NEQS) were established for effluents emitting from various Municipal and Industrial sources. The latest revision of NEQS as carried out in year 2001.

Provincial Environment Protection Departments are also working on the formulation and enforcement of environmental statutes and by-laws. The GOP has issued several policies guidelines and adopted measures for streamlining the environmental assessment including the transportation sector. Though, the need for environmental screening and assessment has received some weight age during the recent past, strict implementation of the NEQS is still a dream to be realized. The applicable laws for the environmental study of the Project are briefly described below:

2.5.1 PAKISTAN ENVIRONMENTAL PROTECTION ORDER (PEPO) 1983

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) 1983. It was the first legislation promulgated for the protection of environment. According to PEPO, 1983 was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

2.5.2 PUNJAB ENVIRONMENTAL PROTECTION (AMENDMENT) ACT 2012

Section 12 of the Punjab Environmental Protection Act (PEPA) 2012 makes it mandatory for the proponent of a project to file with the Environmental Protection Agency either an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA), as the case may be, in respect of the project.

As per definition given in the Punjab Environmental Protection (Amendment) Act 2012," Environmental Impact Assessment (EIA) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory, and compensatory measures, formulation of environmental management & training plans & monitoring arrangements, and framing of recommendations and such other components as may be prescribed. The provision of Section 12 has been incorporated "as it is" in the new Punjab Environmental Protection (Amendment) Act, 2012.

2.5.3 PAKISTAN ENVIRONMENTAL ASSESSMENT PROCEDURES, 1997

Pakistan Environmental Assessment Procedures (1997) is, in fact, a package, which contains the following, sets of information relevant to the Project.

2.5.3.1 POLICY & PROCEDURES FOR FILING, REVIEW & APPROVAL OF ENVIRONMENTAL ASSESSMENT REPORTS

It describes environmental policy and administrative procedures to be followed for filing of IEE/EIA reports by the proponents and their review and approval by the concerned environmental protection agencies.

2.5.3.2 GUIDELINES FOR THE PREPARATION & REVIEW OF ENVIRONMENTAL REPORTS

These guidelines are developed to facilitate both the proponents and decision makers to prepare reports (inclusive of all the information contained therein) and carry out their review so as to take informed decisions.

2.5.4 EPA's ENVIRONMENTAL GUIDELINES

The EPA Punjab has prepared a set of guidelines for conducting environmental assessments. The package of regulations, of which the guidelines form a part, includes the Punjab Environmental Protection (Amendment) Act 2012 and the NEQS. The guidelines which are related to the Project are listed below:

- Guidelines for the Preparation and Review of Environmental Reports
- Environmental Protection Agency (Review of IEE & EIA) Regulations 2000
- Guidelines for public consultation

It is stated in the Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000 that the EIA or IEE report must be prepared, to the extent practicable, in accordance with the Pakistan Environmental Protection Agency guidelines.

2.5.4.1 ENVIRONMENTAL PROTECTION AGENCY (REVIEW of IEE & EIA) REGULATIONS 2000

The Govt. of Pakistan has issued Review of the Initial Environmental Examination and Environmental Impact Assessment Regulations 2000, to review the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) reports. Categorization of the projects for IEE and EIA is one of the main components of the Regulations. Projects have been classified on the basis of expected degree of adverse environmental impacts. Projects type listed in Schedule II are designated as potentially less adverse effect, schedule I projects require an IEE to be conducted, rather than EIA, provided they are not located in environmentally sensitive area. Salient features of the regulations are listed below:

- Categories of project requiring IEE and EIA are issued through two schedules attached with the regulations
- A fee depending on the cost of the project has been imposed for the review of IEE and EIA.
- The submittal is to be accompanied by an application in prescribed format included as Schedule IV of the Regulation.
- The EPA is required to issue conformation of compliance within 15 days of receipt of request and complete documentation.
- The Environmental Approval for construction of the project will be valid for three years from date of accord

2.5.4.2 GUIDELINES FOR PUBLIC CONSULTATION, 1997

These guidelines are part of a package of regulations and guidelines.

2.5.5 OTHER RELEVANT LAWS

2.5.5.1 PAKISTAN PENAL CODE, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in section 268, which defines and recognizes noise as a public nuisance. "A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right".

2.5.5.3 LABOUR LAWS

The labour laws apply on child labour and measuring instruments.

2.5.5.4 THE PUNJAB LOCAL GOVERNMENT ORDINANCE, 2001

Schedules 4 and 8 of these ordinances pertain to environmental pollution. Notwithstanding any specific provisions, every local government may perform functions conferred by or under the Punjab Local Government Ordinance, 2001, and in performance of such functions may exercise such powers, which are necessary and appropriate. Under the ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

2.5.5.5 FACTORIES ACT, 1934

The clauses relevant to the project are those that concern the health, safety, and welfare of workers, disposal of solid waste and effluent and damage to private and public property. The Factories Act also provides regulations for handling and disposal of toxic and hazardous materials. Given that construction activity is classified as 'industry', these regulations will be applicable to the project contractors.

2.5.5.6 THE LAND ACQUISITION ACT, 1894

The land Acquisition Act (1894) deals with the acquisition of private properties for public purposes. There are 55 sections in this Act mainly dealing with area notification, surveys, acquisition, compensation, apportionment awards, disputes resolution, penalties and exemptions.

Although quite old, this act laid out the legal basis for any property affected by a project and for compensating the effected owners of the land.

2.5.5.7 LABOR LAWS

Construction and operational activities during the course of construction may affect occupational health of workers. Employers are required to abide by labor laws in respect of their own employees and also to ensure that contractors to follow the relevant labor laws and rules relating to safety of the workforce and creating a healthy working environment. The proponents shall ensure that the labor force engaged at the project site is not exposed to any danger by monitoring the contractor's work frequently.

2.5.6 OCCUPATIONAL HEALTH

Operational activities could affect the occupational health of the workers. Quantitative national standards with respect to the above aspect are yet to be developed in Pakistan. However, guidance in qualitative terms can be obtained from the Pakistan Factories Rules, 1962 (based on the Factories Act, 1934) and the Labor Laws (Amended) Ordinance, 1972.

CHAPTER 3 PROJECT DESCRIPTION

This section of the study concentrates on details of the project and its salient features; such as its location, site layout, objectives, selection of alternative sites and technology, cost and magnitude of operation at various phases and process employed for the processing of the recycling of lead

3.1 TYPE OF PROJECT.

The proposed project is the installation of Lead Recovery Unit. The raw material of the project is scrap Batteries, with the total cost of 80 million. The total production capacity of project is 30 tons/day.

3.2 LOCATION OF THE PROJECT

The project is located at Karol Ghatti, Mouza Baghbanura, off Ring Road, Lahore, which is easily accessible for heavy vehicles, and have uninterrupted power supply



Figure 1 Location Map

3.2.1 PROJECT COORDINATES

The project area is surrounded by factories from all the sides.

Table 2 Project Coordinates

Latitude	Longitude
31°36'53.97"N	74°22'12.47"E

3.3 AREA OF THE PROJECT

The total area of the project is 5 Kanals which is Self-developed Industrial area.

3.4 PROJECT DESCRIPTION

The whole line for lead battery recycling



Figure 2 Lead Recycling Process

3.4.1 Lead Battery Acid Recycling

Lead is one of the most vital nonferrous metal having multiple uses like in lead acid batteries, cable covering, alloying elements in solders, nuclear shield etc, and in terms of its chemical it is used in glass, paint and as an important stabilizer in PVC as lead striae etc.

Almost 70 to 80 % of lead productions come from recycling and balance 20 to 30% from virgin sources that is lead concentrates. The requirement of lead is going up at the rate of 15 to 20 % annually. Its requirement is going up more in developing countries like Pakistan, India and China. Further almost 70% of the lead goes in to the production of lead acid batteries. Demand for lead acid batteries is going up almost at the rate of 20 to 25% in developing countries

3.4.2 Components of a lead-acid battery

A lead-acid battery is made up of the following components, enclosed within a

plastic or ebonite box or casing. There are positive and negative terminals made of lead, which provide the connection points to external devices. There are sets of positive and negative plates kept apart by plate separators - porous sheets of PVC or polyethylene plastic, glass microfiber, or phenolic resins that allow the free movement of the ions in the electrolyte solution. The positive plates are grids made of lead or lead alloy coated with porous metallic lead paste, and the negative plates are lead grids coated with lead dioxide paste. A series of negative and positive plates plus separators makes up a battery element, and the battery elements are separated by plates of the same material as the battery box. The elements are bathed in a sulfuric acid electrolyte solution, which can be topped up via the plugs. In sealed batteries the electrolyte is either a gel or is soaked onto glass microfiber separators.

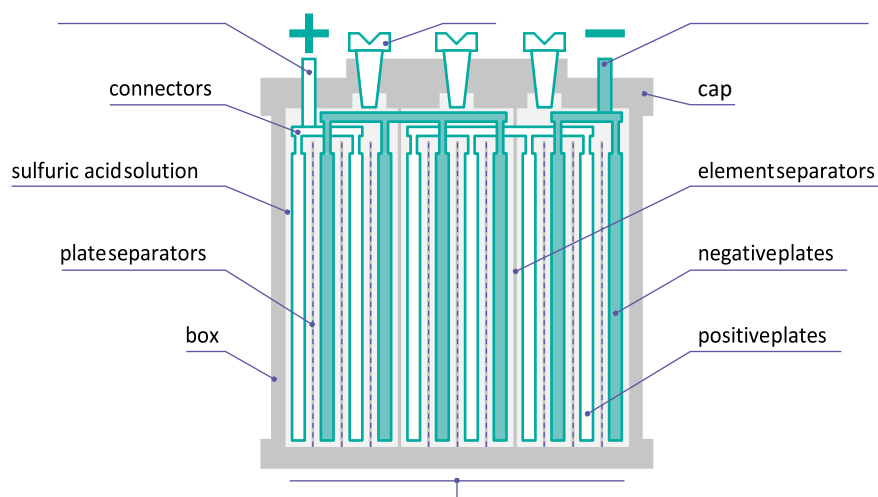


Figure 3 Battery Parts

The average amount of lead in automotive batteries can range from 2 to 13 kg, depending on the size of the vehicle

3.5 STEPS IN THE RECYCLING PROCESS

Almost all parts of lead-acid battery can be recycled. The main steps in the recycling process are as follows:

- collection and transportation of the batteries to a recycling facility
- separation of the component parts of the batteries
- smelting and refining of the lead components
- washing then shredding or melting of the plastic components
- purification and treatment of the sulfuric acid electrolyte
- treatment and disposal of waste

The batteries are mechanically or manually broken up to separate out the acid and component parts. The lead components are conveyed to the furnace for smelting. After smelting the slag is removed and the molten unrefined lead may be poured into molds and cooled or it may immediately be directed to a holding kettle (cast-iron pot) to keep it molten prior to refining. The aim of the refining process is to produce lead of high purity or to produce alloys (requiring the addition of specific trace elements to the refining kettle) that can be used to make a new lead battery. The molten lead is then cast into molds and allowed to cool.

In a typical automated enclosed process, the lead batteries are broken up in a hammer mill or shredder and the pieces are fed into tanks filled with water. Here gravity is used to separate the components: the lead and heavy materials sink to the bottom and the plastics rise to the top. The plastic materials are skimmed away and the liquid, including the sulfuric acid electrolyte is drawn off. The metallic components are channeled to closed furnaces for smelting and refining and then piped into casting moulds. Waste from recycling is collected, treated and disposed of at a designated waste disposal site.

In a manual process the batteries are drained then broken up with electric saws, machetes or axes. The components are separated by hand into piles. The lead components are carried to the furnace or taken on an open conveyor belt. The furnace may, in the worst case, be no more than an open pot on a fire. The molten lead then pours into the casting moulds.

3.6 AMENITIES

The following social amenities are present at site and the management of the waste (solid waste and effluents) is explained in sub-sections below:

3.6.1 Electricity

Electricity will be purchased from WAPDA. And the requirement of power is **0.1 MW**

3.6.2 Ground Water Resource

During operational phase ground water will be consumed. The water will be pumped from ground from the depth of 250ft. will be loss as the result of evaporation and 5m³/day will be used for the municipal consumption.

3.7 STAFF/MANPOWER

Around 20 workers will be required during process related activity.

3.7.1. Emergency Preparedness

Emergency response preparedness committee will be formulated consisted of heads of all departments and nominated members. Project Manager will be the head of the team who will chair the Committee. In the case of emergency, he will immediately inform the concerned authorities. HSE Manager will be responsible for on-site HSE management.

First aid facilities will be available at facility which will include; blankets, hot water bottles, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

- ❖ Health and Safety Management at site
- ❖ Transportation of raw-material and final product
- ❖ Plantation of trees

3.8 RELOCATION AND REHABILITATION PLAN

There exists no human settlement within 1.0 km radius of the selected project site to be displaced owing to the commencement of the proposed project. Moreover, no structure of any significance stands at the site is proposed to be relocated or dismantled. The project area is owned by the proponent. So, no restoration and rehabilitation is required

3.9 LAND OWNERSHIP DOCUMENTS

Land of 5 Kanals is leased by the Propopnet.

3.10 GOVERNMENT APPROVALS

Will dispose off their wastewater by following the area management practices. NOCs, they have applied for environmental approval from EPA Punjab.

CHAPTER-4 DESCRIPTION OF ENVIRONMENT

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Project Area as well as the Study Area. The project site is situated in Karol Ghatti, Mouza Baghbanura, off Ring Road, Lahore and the land acquired for the project is Self-developed Industrial in nature. The surface area of the land is plain and does not require any activity to it done plain for construction purpose. The water for construction activities will be arranged through self-turbine from the deep groundwater origin. In addition to the secondary data, the field survey was carried out and the environmental baseline conditions were established based on socioeconomic interviews, impact location profiles; environmental profile questionnaires and public consultations. A social survey was carried out through consultation with various communities. Interviews were conducted from the locals near the project area. The main intention of these interviews was to acquire feedback associated with the project as well as its impacts on their daily life on short term as well as long term basis.

4.1 PHYSICAL RESOURCES

4.1.1 TOPOGRAPHY AND SOIL

Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhpura District. The original physiographic features like channels remnants and levees have been destroyed or changed by the construction of urban infrastructure. Flood plains have been confined by construction of embankments (bunds) and spurs. Sub-recent flood plain is 4 to 8

meters higher than the recent flood plain and can be identified at number of places i.e. Shalimar Garden, Moghalpura and Multan Road.

Terrain of the proposed project site is predominantly flat. Lahore district is situated at an average elevation of 210 meters above mean sea level. The alluvial subsoil's are of late Pleistocene and were formed by the flood plains of river Ravi. These consist of clay, silt and sand. The thickness of clay increases with distance from the river bed.

4.1.2 CLIMATE AND RAINFALL

The climate of the Lahore district can see extremes, with a summer maximum temperature 45 °C (113 °F) and a winter temperature of 12 °C (54 °F). The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season starts from November and continues until March. December, January and February are the coldest months.

Detail description of the seasons is as under:

- Winter (October to February): Moderate to extreme and dry
- Spring (March & April): Pleasant and moderately cold
- Summer (May to September): Very hot to humid

Monsoons (June to August): Wet. Although the temperatures are milder but due to appreciable humidity, the heat is oppressive; and

Post-Monsoon Summer (September & October): Moderate and slightly humid

Given below are the maximum and minimum temperatures of city. The average yearly rainfall lies only at about 388 mm (15.3 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

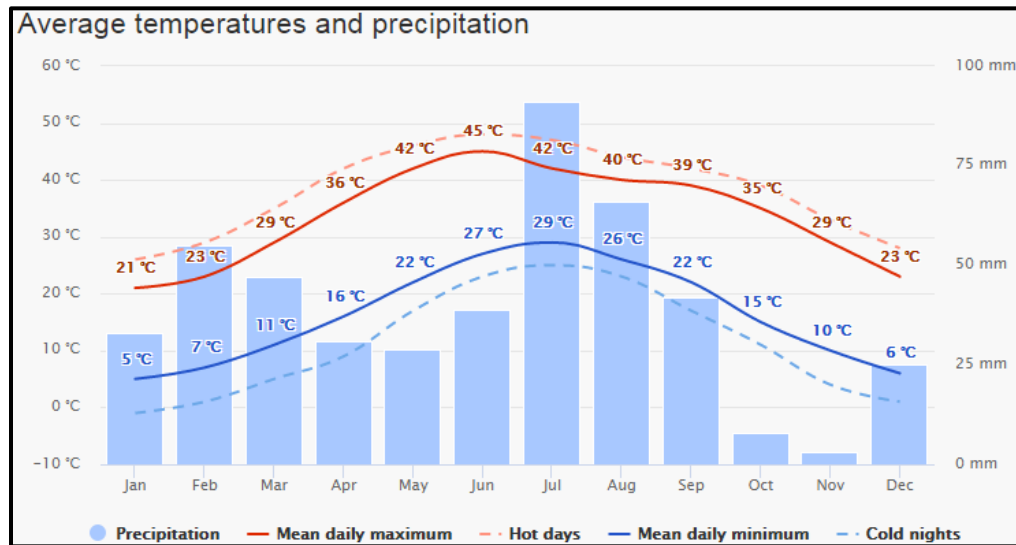


Figure 4 Average Annual Temperatures and precipitation

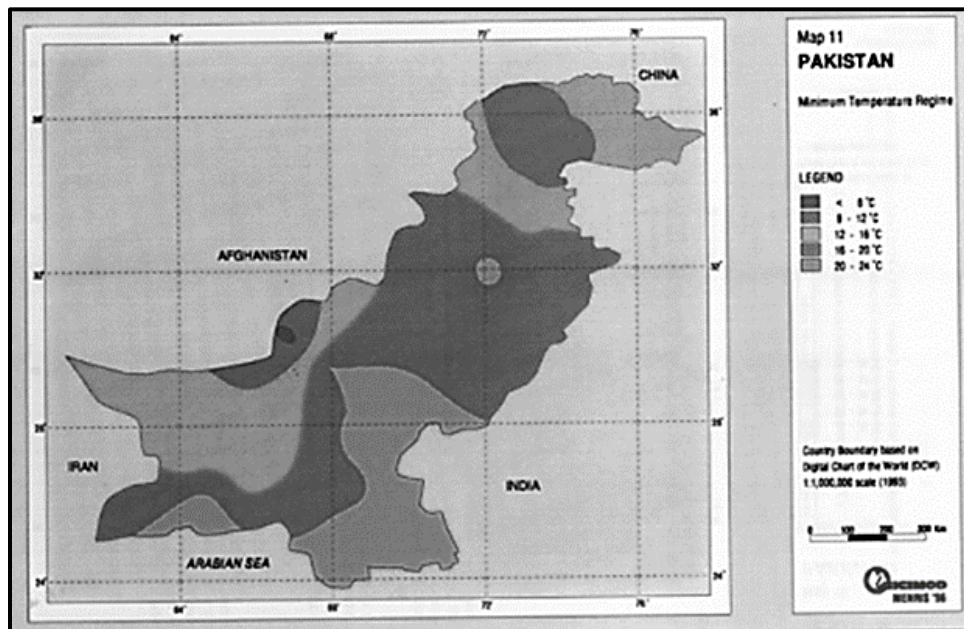


Figure 5 Climate of Pakistan, regions of minimum temperature

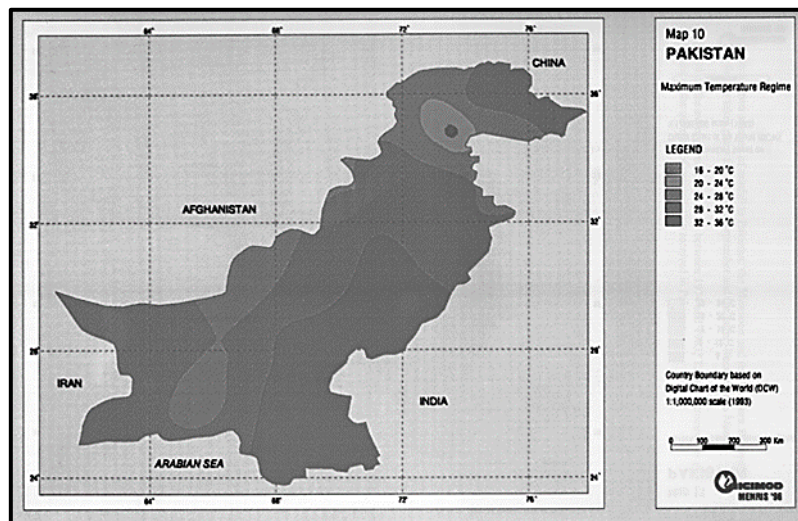


Figure 6 Climate of Pakistan, Regions of Maximum Temperature

4.1.3 Temperature

The mean maximum and minimum temperature in summer are 39 °C (102 °F) and 27 °C (81 °F) respectively. In winter it peaks at around 17 °C (63 °F) and 12 °C (54 °F) respectively. The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Lahore. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. For vacation planning, you can expect the mean temperatures, and be prepared for hotter and colder days. Wind speeds are not displayed per default but can be enabled at the bottom of the graph. Monthly precipitations above 150mm are mostly wet, below 30mm mostly dry.

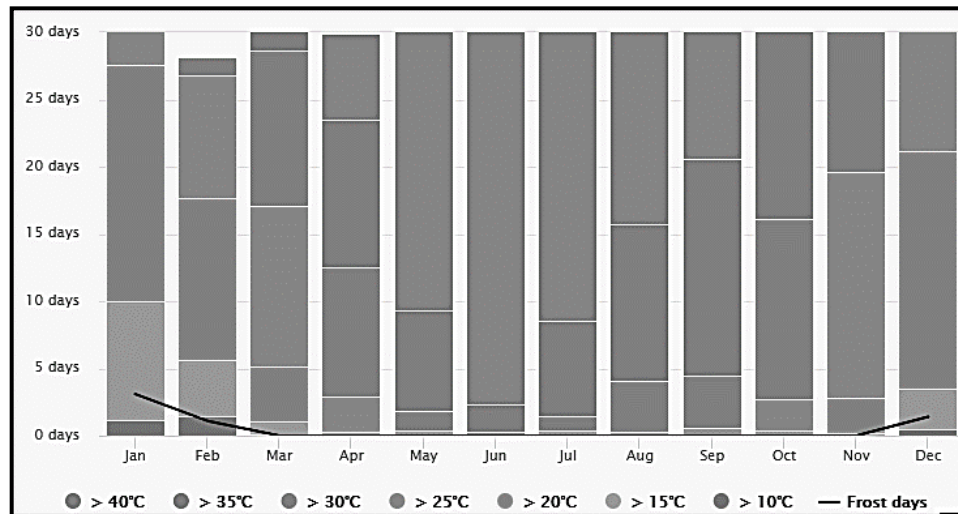


Figure 7 Maximum temperature ranges in Lahore

4.1.4 Rainfall

The average yearly rainfall lies only at about 388 mm (15.3 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

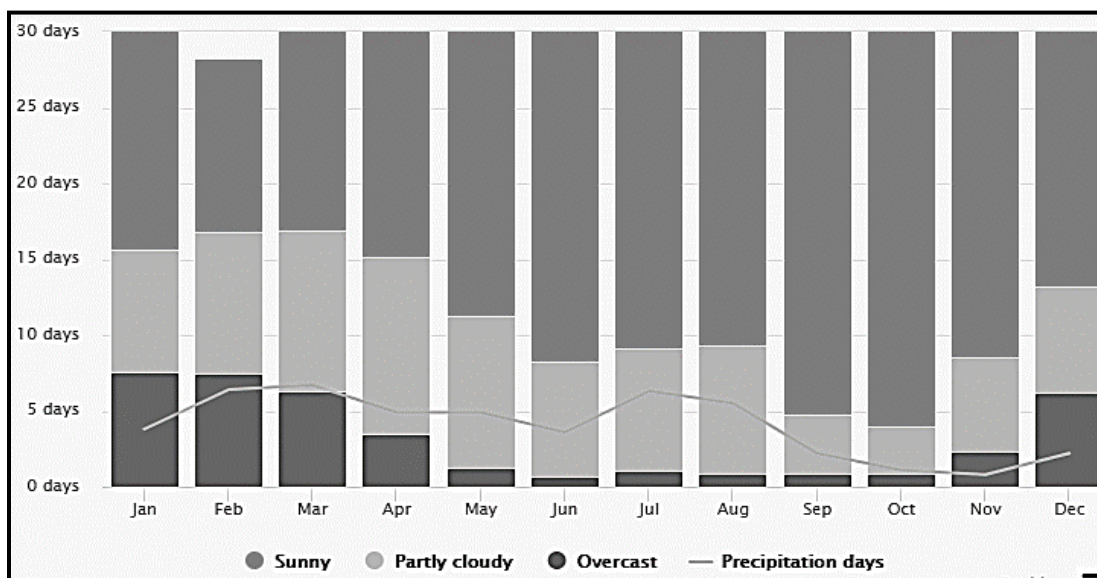


Figure 8 Annual cloudy, sunny and precipitation days in Lahore

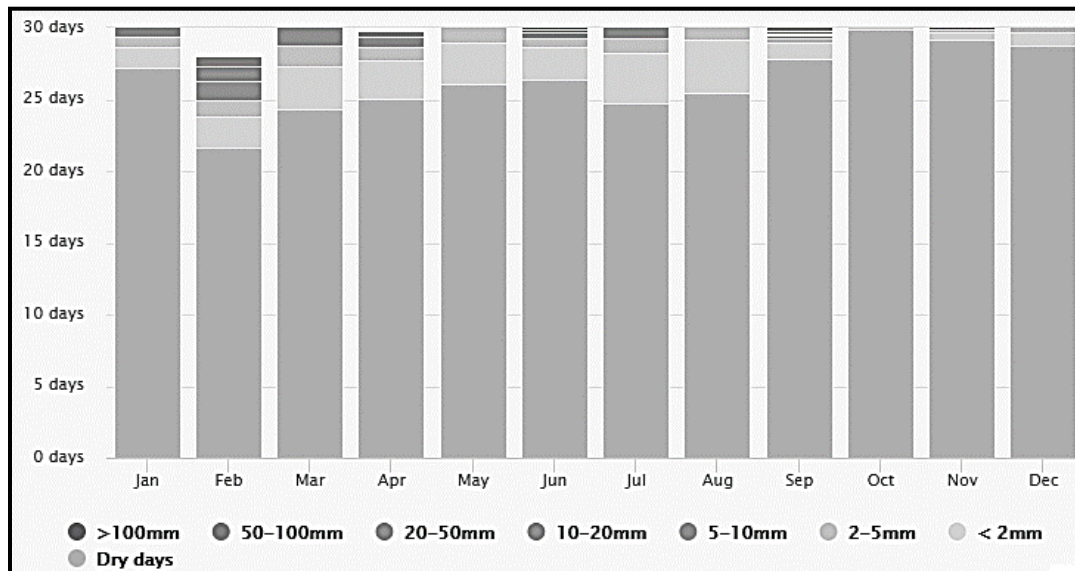


Figure 9 Annual Precipitation amounts in Lahore

4.1.5 Wind

The region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months. The prevalent wind speed ranges from 10-25 km/h, however on some days, there appear storms of 60 km/h.

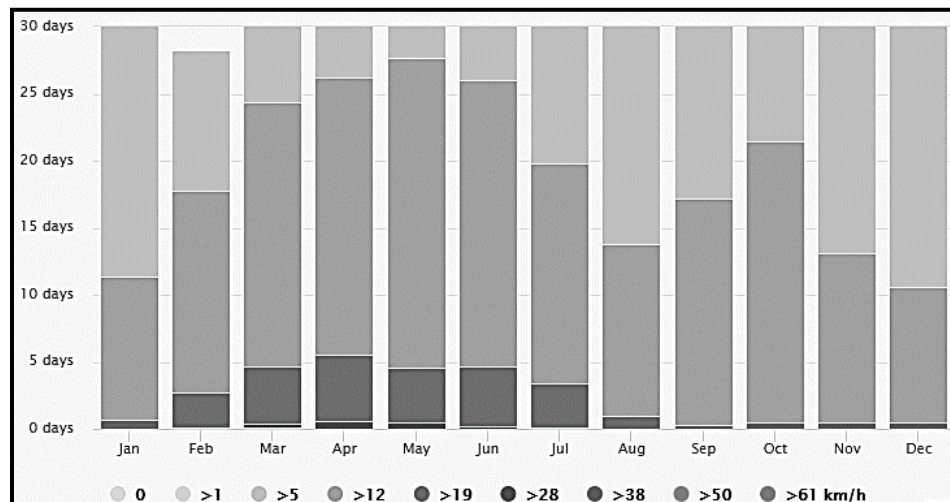


Figure 10 Annual average wind speed in Lahore

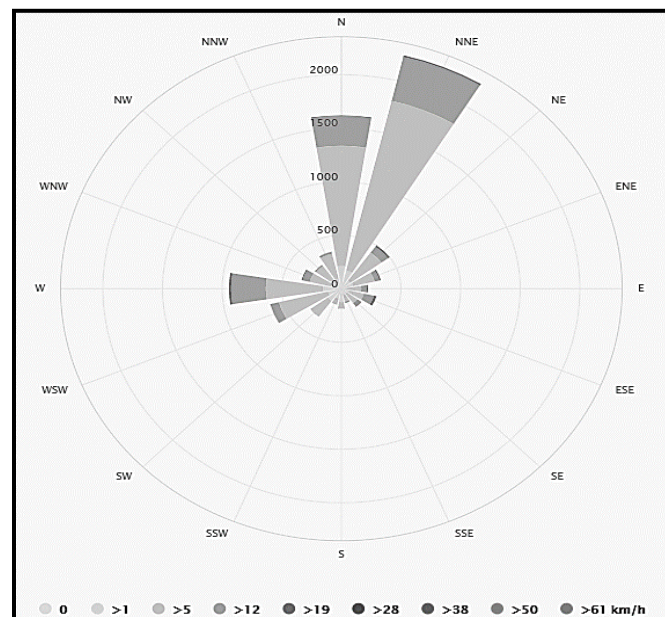


Figure 11 Wind Rose diagram of Lahore

4.2 SURFACE WATER

Canal surface water body is present near the proposed site. River Ravi flows 4.45 Km away from this project.

4.2.1 GROUNDWATER

The water requirements for the site for construction work will be extracted from groundwater aquifer by the help of turbines. Groundwater in Lahore can be found at various depths ranging from 50 feet in depth in various villages and goes up to hundreds of feet in depth. The water table in the ground varies in depth according to the climatic conditions as water table surface is high in rainy season lowers in hot and dry season. The groundwater at proposed site area is extracted from 70 feet down.

4.2.3 GEOLOGY / SEISMOLOGY

Pakistan is basically divided into 5 earthquake zones, four of them ranging from zero to four (0-4) and one zone i.e. five which is intensively dangerous ranges from five to ten (5-10). Zone zero describes least earthquake chances and destruction while 5-10 shows most chances of earthquake origination with extensive destruction like 08 October 2005 earthquake across the country. According to the map, district Lahore comes under zone 2A and no tectonic or thrust fault line is passing underneath the district Lahore thus making it less vulnerable to the destruction due to less seismic activity in the area.

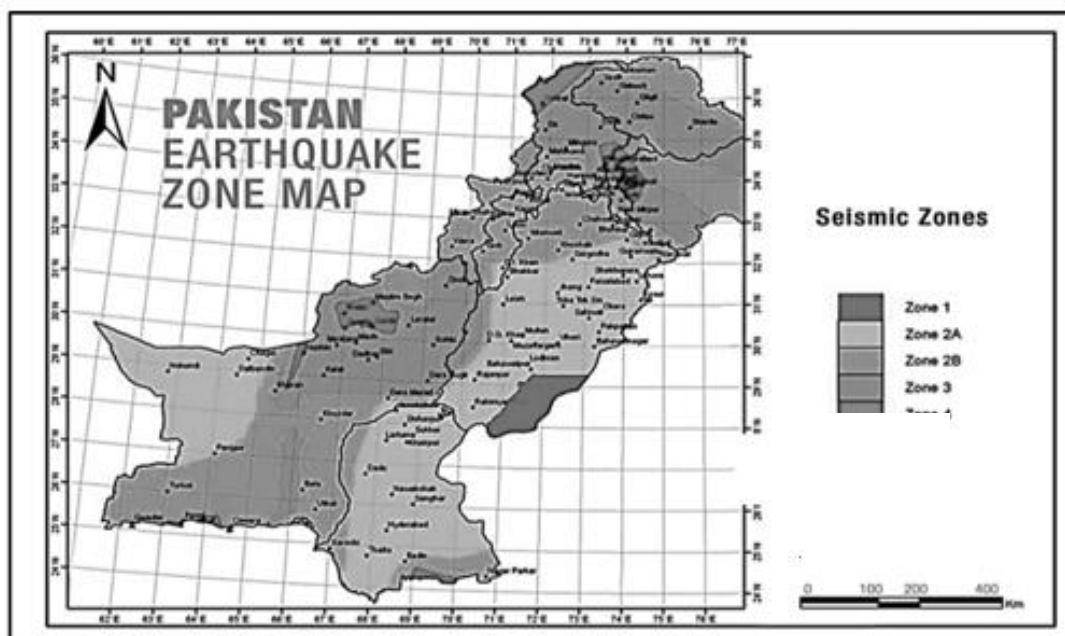


Figure 12 Seismic Zone Map of Pakistan

4.3 DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT

The project area neither contain any forest nor falls in protected area or archaeological site and so no jurisdiction on the proposed sire area of the relevant legislations.

4.3.1 FLORA

The proposed project is present on the agriculture land and there was no tree present on the site.

4.3.2 FAUNA

There are only few animals like dogs, crows and birds are present.

4.5 SOCIOECONOMIC RESOURCES AND QUALITY OF LIFE VALUES

This section describes the key socioeconomic features of the study area like administrative setup, population and communities, education, health, transportation, infrastructure and archaeological sites etc.

4.5.1 POPULATION AND COMMUNITIES

The field survey (including interviews, focus group discussions, census, and area profile) was carried out to collect the socioeconomic data from the project affected people as well as other general population to accomplish the baseline information, which will provide the basis for subsequent monitoring and evaluation studies.

The demographic features include the information on household's profile, gender composition, occupations, and literacy status of the population residing in the project area. The information relating to the demographic profile of the people in the project area are described below.

4.5.2 EDUCATIONAL INSTITUTIONS

Government primary school for girls and boys are present near site some private school are present.

4.5.3 POWER SOURCES AND TRANSMISSION

Electricity services are provided by LESCO electric power company to the area and it shall provide same services to the proposed project as it is the only authority which deals with the electric power sources and their availability to the expected area.

4.5.4 AGRICULTURE

The project site area is agriculture in nature and various types of agricultural lands are present in nearby villages and many cash-crops are cultivated like wheat, rice, zeamays and seasonal vegetables along with fodder for the cattle. No major livestock activities are present in the area except farmers of the area manage some domestic animals for their daily routine needs. The animals are buffalo, clown, goats, sheep, donkeys and dogs. Except donkeys and dogs, other animals mentioned above are used for their milk and meat requirements while donkeys are used for labor purposes and dogs for the sake of safety. Few poultry farms are situated in the local surrounding thus fulfilling the requirements of eggs and chicken meat in the area.

4.5.5 PUBLIC HEALTH

The medical facilities are available within city as basic health unit (BHU) and some private hospitals and Clinics which are providing good medical facilities in the area.

4.6 ARCHAEOLOGICAL AND CULTURAL SITES

No archaeological sites are observed in the vicinity of proposed project during the field survey

4.6.1 GENDER ANALYSIS

The section describes the importance of role of women in the project area. Responsibilities of women in the area belongs to their household activities like cooking the daily meal, dishwashing, feeding and milking the cattle, cloths washing, bringing up the children as well as working in the fields. In the area, awareness regarding formal

education is prescient and approximately every child in the area especially girls are getting education from the educational institutions. This is also because govt. of Punjab has made formal education totally free and provides free of cost course books to the students till their matriculation. Majority of the working-class women are teachers in govt. school as well as in private institutions while remaining are doctors and nurses in the hospitals. The female population is found to be 48% of the total population of Lahore district. Violence against women is very less reported and tries to be sorted out domestically by the help of elders of the village.

4.7 SOCIOECONOMIC SURVEY AND PUBLIC CONSULTATION

For ascertaining the perceptions of different stakeholders about the project, meetings were held with them. These meetings were held in an open atmosphere, in which participants expressed their views freely. Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders.

4.7.1 METHODS OF PUBLIC CONSULTATION

Public Consultation was carried out for a day. Socio-economic survey forms are attached as Annexure with EIA report. The following methods were used for public consultation with project stakeholders in order to ascertain their stakes regarding project implementation.

- Focused Group Discussion
- Scoping Sessions
- Formal Group Meetings
- Informal Group Meetings

4.8 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

The environmental analysis reports are attached in Annexure. The Environmental sampling is done by certified environmental laboratory (SEAL), while summary of Environmental Analysis of area is given as under:

4.8.2 AMBIENT AIR QUALITY

At present, major sources of air pollution are mobile sources and generators in commercial areas. Ambient air quality was monitored at the location center for the period of 24 hour.

The monitored parameters included Carbon mono-oxide (CO), Nitrogen oxides (NO_x), Sulphur oxides (SO_x), Particulate Matter (PM₁₀). The monitoring was carried out for a period of 24 hours.

4.8.3 NOISE

Major source of noise generation is vehicular traffic.

CHAPTER-5 ANTICIPATED IMPACTS AND MITIGATION MEASURES

5.1 Identification of Impacts

Any developmental activity in its wake will bring about some impacts associated with its origin, which can be broadly classified as reversible, irreversible, long and short-term impacts. In this chapter, an endeavor has been made to identify various environmental impacts associated with the operation of facility and other activities wherein, there may be a chance of pollution. Based on the possible worst case emissions and waste generation from the proposed project and also taking into consideration the baseline environmental status at the proposed project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed. Both instrumental (positive) and detrimental (negative) impacts are accounted for this purpose. The prediction of impacts helps in the preparation of a sound environmental management plan which has to be executed during the on-going activities for the proposed project to minimize the adverse impacts on the environmental quality.

A large number of adverse impacts occur from facility operations. These impacts can be fatal accidents (e.g., scavengers buried under waste piles) infrastructure damage (e.g., damage to access roads by heavy vehicles) pollution of the local environment (such as contamination of groundwater and/or aquifers by leakage and residual soil contamination during landfill usage, as well as after landfill closure) off-gassing of methane generated by decaying organic wastes (methane is a greenhouse gas many times more potent than carbon dioxide, and can itself be a danger to inhabitants of an area); harboring of disease vectors such as rats and flies, particularly from improperly operated landfills.

5.2 Methodology

The potential impacts on the environment from the proposed project are

identified based on the nature of the various activities associated not only with the project implementation and operation, but also on the current status of the environmental quality at the project site.

5.3 Potential Impacts

The potential significant environmental impacts associated with the project are grouped as below.

5.3.1 Air Environment

- Impacts on ambient air quality
- Impacts on ambient odor
- Impacts on ambient noise

5.3.2 Water Environment

- Impacts on surface & ground water quality
- Impacts on aquatic life

5.3.3 Land Environment

- Impacts on land use
- Impacts on soil fertility
- Impacts on agriculture

5.3.4 Socio Economics

- Impacts on infrastructure
- Impacts on employment

5.3.5 Indirect Impacts

- Impacts on public health and safety
- Impacts on aesthetics

5.4 Prediction of Impacts

The impact assessment is carried out for the following phases and presented in the following paragraphs.

- Impacts during construction phase
- Impacts during operation phase

5.4.1 Impacts during constructional Phase

Construction phase works include site clearance, site formation, building works, infrastructure provision and any other infrastructure activities. The impacts due to construction activities are short term and are limited to the construction phase. The impacts will be mainly on-air quality, water quality, soil quality and socio-economics.

5.4.1.1 Impact on Air Quality

The principal potential source of air quality impact arising from the construction of the proposed project is fugitive dust generation. The dust, measurable as Suspended Particulate Matter and Respirable Suspended Particulates would be generated as a result of construction activities. The construction program of the projects shall commence immediately after obtaining statutory clearances.

The potential dust sources associated with construction activities are loading and unloading of the materials, top soil removal, travel over unpaved roads and wind erosion etc. The construction works associated with the proposed

development are broadly given below.

1. Site development and foundation works
2. Dust generation due to vehicles bringing raw materials
3. Un loading of raw materials, removal of un wanted waste material from site
4. Civil constructions and provision of infrastructure required for various activities proposed

Among all the construction activities, site formation has the highest potential for causing dust nuisance to the nearby air sensitive locations. During the construction of the project, existing houses nearby may be subject to the potential dust impacts.

Exhaust emissions from vehicles and equipment deployed during the construction phase is also likely to result in marginal increase in the levels of SO₂, NO_x, PM, CO and un-burnt hydrocarbons. The impact of such activities would be temporary and restricted to the construction phase. The impact is generally confined to the project area and is expected to be negligible outside the plant boundaries.

Mitigation Measures Proposed – Air Quality

For the proposed project site levelling and grading will be carried out, where ever possible to maintain the natural elevations they will not be disturbed, only levelling activity will be carried out for providing roads, sewage network, storm water system, and places required for providing buildings for administrative and plant shed erection. According to the engineering assessment; most of the excavated material shall be reused within the project boundary. The movement of cut and fill material will be limited.

Most of the construction dust will be generated from the movement of construction vehicles on unpaved roads. Unloading and removal of soil material shall also act as a potential source for dust nuisance. The control measures proposed to be taken up are

given below.

- i. The important dust suppression measures proposed will be regular water sprinkling on main haul roads in the project area, this activity will be carried out at least twice a day, if need arises frequency will be increased on windy days, in this way around 50% reduction on the dust contribution from the exposed surface will be achieved.
- ii. The duration of stockpiling will be as short as possible as most of the material will be used as backfill material for the open cut trenches for road development.
- iii. Temporary tin sheets of sufficient height (3m) will be erected around the site of dust generation or all around the project site as barrier for dust control.
- iv. Tree plantations around the project boundary will be initiated at the early stages by
- v. Plantation of 2 to 3 years old saplings, regular watering will be done, so that the area will be moist for most part of the day.

Given the implementation of proper control measures for dust suppression, no adverse impacts are expected and compliance with the Ambient Air Quality is achieved all time.

5.4.1.2 Impact on Water Quality

The proposed project will involve various construction activities. The following section summarizes the activities likely to be undertaken during the proposed development and describes the potential impacts on water quality from each activity.

i) Site formation

Preparation of designated area of land for subsequent development activities involves levelling of the ground surface, removal of vegetation, stockpiling and generation of construction waste. Construction of temporary infrastructure such as drainage culverts may be required. The site formation may produce large quantities of run-off with high suspended solids loading in the absence of appropriate mitigation measures. This

potential problem may be aggravated during rainy season.

ii) Construction of Buildings

In rainy season during the construction phase due to construction of various civil structures site runoff results significant pollution in the receiving water bodies and washing of various construction equipment's will also result in water pollution.

iii) Site workshop

The used engine oil and lubricants, and their storage as waste materials as the potential to create impacts if spillage occurs. Waste oil may infiltrate into the surface soil layers, or runoff into local Water courses, increasing hydrocarbon levels. Proper precautionary measures should be taken to prevent any spillage of the above materials and their subsequent runoff into the water bodies.

iv) Presence of workers

During construction, impacts from the workers include waste and wastewater generated from eating areas, and sewage from temporary sanitary facilities. Sewage is characterized by high levels of BOD, ammonia and E.Coli. Significant water quality impact will happen only if the sewage is discharged directly into the receiving waters without any prior treatment.

Mitigation Measures – Water Quality

During site development necessary precautions will be taken, so that the runoff water from the site gets collected to working pit and if any over flow is, will be diverted to nearby greenbelt/ plantation area. During construction activity all the equipments washed water will be diverted to working pit to arrest the suspended solids if any and the settled water will be reused for construction purposes, and for sprinkling on roads to control the dust emission, etc. The domestic sewage generated will be sent to septic tank.

5.4.1.3 Impact of Noise Levels

The major activities, which produce periodic noise, during construction phase, are as follows:

- Foundation works
- Fabrication of structures
- Plant erection
- Operation of construction equipment
- Movement of vehicles etc

Mitigation Measures

All noise generating equipment will be used during day time for brief period of its requirement. Proper enclosures will be used for reduction in noise levels, where ever possible the noise generating equipment will be kept away from the human habitation. Therefore, impact on noise environment due to proposed project would be insignificant. All vehicles entering into the project will be informed to maintain speed limits, and not blow horns unless it is required.

5.4.1.4 Impact Due to Solid Waste Generation

This category of waste generation in the proposed project is due to different types of raw materials being used during construction stage in general may comprise the following

- Cement concrete
- Bricks, tiles,
- Cement plaster
- Steel (RCC, door/ window frames, roofing support, railings of staircase etc)

- Rubble, sand, Stone (Marble, granite, sand stone)
- Timber/wood
- Paints/varnishes

Besides above there are some major and minor components namely conduits, pipes, electrical fixtures, panels, etc. all the above items will be segregated and stored at the site and once the facility established will be process the same in respective treatment facilities within the site.

Mitigation Measures for Solid Waste

The solid waste generated during this period being predominantly inert in nature. Hence maximum effort would be made to reuse and recycle them. The most of the solid waste material can be used for filing/ levelling of low-laying areas within the site. All attempts should be made to stick to the following measures.

- i. All construction waste shall be stored within the site itself. A proper screen will be provided so that the waste does not get scattered.
- ii. Attempts will be made to keep the waste segregated into different heaps as far as possible so that their further gradation and reuse is facilitated.
- iii. Materials, which can be reused for purpose of construction, levelling, making roads/ pavement will also be kept in separate heaps from those which are to be sold or land filled.
- iv. The local body or a private company may be arranged to provide appropriate number of skip containers/ trolleys on hire.

The use of the construction material basically depends on their separation and conditions of the separated material. A majority of these materials are durable and therefore, have a high potential for reuse. It would, however, be desirable to have quality standards for the recycled materials. Construction waste can be used in the

following manner.

- i Reuse of bricks, tiles, stone slabs, timber, piping railings etc to the extent possible and depending upon their conditions.
- ii Plastics, broken glass, scrap metal etc will be stored and processed within the site premises.
- iii Rubble/ brick bats can be used for building activity, such as levelling, under coat of lanes where the traffic does not constitute heavy moving loads.
- iv Larger unusable pieces can be sent for filling up low laying areas.
- v Fine material such as sand, dust, etc can be used as cover material
- vi The unearthed soil can be used for levelling as well as for lawn development
- vii The broken pieces of the flooring material can be used for levelling in the building or can be disposed off
- viii The unused or remaining paints/varnishes/wood can either be reused or can be disposed off.

5.4.1.5 Impact on Land Use

Due to the development of Recycling Facility providing necessary air pollution control measures, wastewater treatment and disposal measures, noise pollution control measures, etc, the impacts on the land use will be envisaged as sufficient greenbelt will be provided around the boundary to enhance the aesthetics of the project area.

5.4.1.6 Demographic and Socio Economic

The impact of the proposed unit on demography and socio economic conditions of the study area would be as follows.

- 1) Additional strain on civic amenities like road, transport, communication, drinking water, sanitation & other facilities to meet the work force requirement

- 2) Increase in demand for services like hotels, lodges, public transport etc.
- 3) Employment opportunities for construction laborers, skilled and unskilled workers etc.,
- 4) Economic upliftment of the area.
- 5) Increase in Labour rates.
- 6) More work to the civil construction and transportation companies

5.4.2 Impact during Operation

During the operation phase of the proposed project there would be impacts on the air environment, water environment, Land environment and socio-economic aspects.

5.4.2.1 Prediction of Impacts on the Air Environment

Prediction of impacts from the proposed project on the ambient air quality was carried out using air quality simulation models. The main sources of air pollution are as follows.

1. Area source emissions from Landfill operations
2. Line source emissions from Vehicular movement
3. Point source emissions from Incinerator, Power plant, DG set.

Mitigation

The emissions from the DG sets are minimal since they will be operated only during power failures. Daily waste will be discharged by tipping at the working area on a landfill, within the area demarcated for the cell. Daily/Weekly cover (optional) is primarily used for prevention windblown dust, litter and odours, deterrence to scavengers, birds, reduction of infiltration (during unseasonal rain) and in improving the sites visual appearance. Soil used as daily /weekly cover shall give a pleasing uniform appearance from the site boundary. To achieve this thickness of about 150mm

is usually adequate and shall be adopted.

5.4.2.2 Impact on Water Quality

The water demand of the project will be met through groundwater. To minimize the water consumption; water saving options will be planned.

- Improve energy efficiency of operations
- Installation of flow restrictors on water supply line
- Dry sweeping of all areas before mopping/washing
- Eliminate leaks of the pipelines
- Recycling of water etc

5.2.2.3 Noise Environment

The Major source of noise in proposed project will be from unloading of Hazardous waste, Bio- Medical Waste and E-Waste, Boiler/power plant, Incinerator, DG set, Stabilization of Hazardous waste, etc.

Mitigation

Adequate measures for noise control, at the design stage shall be taken such as keeping high noise generating equipment's like pumps, motors, etc., on anti-vibration pads, closed rooms and regular maintenance as suggested by the manufacturer. Some of the mitigation measures proposed is

- Providing suitable enclosures (adequate insulation) to minimize the impact of high noise generating sources.
- Employees will be provided with PPE like ear plugs, helmets, safety shoes, etc.
- Development of greenbelt all along the boundary and along the roads within the project

5.4.2.4 Prediction of Impacts on Land Environment

Environmental Impacts on land environment have been classified primarily into two broad aspects, i.e. direct impacts on the soil and land in the area and impacts on the flora and fauna of the area. Land environment in the area has potential for contamination arising out of solid waste stored on to the landfill area hence the impacts due to the proposed facility on the land environment are negligible.

To address the impacts on flora and fauna, it has been observed that there are no endangered species in the project area and green belt will be developed along the boundary and adjacent to roads.

5.4.2.5 Impacts on the Community

Public Safety: A number of activities those are likely to be carried out in the facility that has significant adverse impacts on the public safety. With the implementation of a strong environmental management plan, the communities residing near the project site are unlikely to be exposed to any long-term hazards.

Aesthetics: The project site is located away from the settlements and proposed greenbelt around the site, as a part of the environmental management plan will help in improving the aesthetics of the environment.

5.4.2.6 Impact on Ecology

There is no ecological and otherwise sensitive areas viz. wildlife sanctuary, national parks, archeological important areas along the project site. There are no known rare, endangered or ecologically significant animal and plant species. Except for a few wild species of plants and grasses and a few animals that are very commonly spotted in any

rural environment, the study area does not have any endangered or endemic species of animals. Due to the development of green belt at the project vicinity the impact on the ecology will be minimal.

5.4.2.7 Impact on Socio Economics

The proposed facility is likely to provide direct and indirect employment and likely to increase the socio-economic status of the nearby villages in the study area. Due to proposed project the facilities for public transport, water supply telecommunications, education, public wealth etc., are likely to improve.

CHAPTER-6 ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

6.1 GENERAL

This part of the study discusses the Environmental Management Plan and describes institutional arrangements required for its effective implementation. An Environmental Management Plan renders a delivery mechanism to reduce adverse environmental impacts of a project during its execution, enhance project benefits, and introduce standards of good practices to be adopted for all project works.

6.2 PURPOSE AND OBJECTIVES OF THE EMP

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the IEE.
- Define the responsibilities of the project proponent and staff.
- Means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures.
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

6.3 MANAGEMENT APPROACH

The organizational roles and responsibilities of the key players are summarized below:

Proponent: The project proponent will undertake overall responsibility for compliance with the EMP. Proponent will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

Contractors: The contractors will implement the majority of environmental and social mitigations. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

Table 3 Environmental Management Plan (EMP)

Sr. No.	Environmental Settings	Environmental Impacts of the Activity	Proposed mitigation measures	Responsibility
OPERATIONAL PHASE				
1	Noise	In the project of storage, during		Project Manager

		loading and unloading noise may be generated.	_ Workers should be told and encouraged to use PPE's (ear plugs or ear muffs).	
2	Water Pollution	At the project site, there will be no wastewater generation during operational activity; there will be only domestic wastewater.	- There will be no any industrial activity so no wastewater will be generated only the domesticated waste water which will treated by passing through septic tanks. _ Efforts should be made to ensure that water is conserved and that environment-friendly techniques are adopted too.	Project Manager
3	Air Emissions	Source of air pollution during operation phase would only be dust generated in the storage area of material.	_ Proper ventilation can limit the amount of indoor pollutants. _ The use of air filters can trap most of the air pollutants.	Project Manager

			_ Water spraying should be practiced where required. Regular monitoring _ No waste should be burnt at the premises.	
4	Solid Waste	Solid waste comprise of a domestic waste and waste scrap mainly which would be sold to their respective dealers.	_ No waste should be burnt within the premises _ Small waste storage bins should be installed	Project Manager
5	Health & safety	Operation of the project may cause some concerns for safety, public health and nuisances within the project area.	_ Providing Personal Protection Equipments (PPEs) such as gloves to the workers. _ Basic medical training should be provided to the specified work staff and basic medical service and supplies to workers.	Project Manager
6	Emergency Response	Fire hazard		Project Manager

			_ Fire extinguishers should be properly maintained and checked periodically. _ Prohibiting flammable materials in the premises. _ Maintaining fire alarm systems for detection and warning of fire. _ Adequate training of workers on use of fire fighting system to deal with the situation.	
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6.4 ENVIRONMENTAL MONITORING

Two aspects of this Initial Environmental examination require attention of the proponents. Firstly, proponents should ensure effective and complete implementation of the Environmental Management Plan, which provides appropriate mitigation measures during the operational phases of the project. Secondly, proponents should monitor environment at the project, at least once every two months, in order to fathom whether colonisation is in any way impacting adversely on the local environment.

Mitigation: Accordingly, the proponents shall have to evolve a protocol so that monitoring is regular, meaningful and consistent. The proponents shall assign the duty of carrying out environmental monitoring to a nominee(s) of the staff, who shall be entrusted the following charter of duties:

- Implementation of all conditions contained in the Environmental Approval to be issued by the Punjab Environmental Protection Agency;
- Environmental monitoring within the project site;
- Maintaining security of the premises;
- Checking disposal of liquid and solid waste, and
- Submission of requisite information and reports to the Punjab Environmental Protection Agency.

As explained in earlier parts of this report, there has not been any environmental degradation during the operational phase of the project so far and any remedial measures do not need to be/ taken, no expenses need to be incurred in this regard.

Table 4 Environmental Monitoring Program

Sr. #	Action	Objective	Responsibility
1.	Prepare an Environmental Monitoring Programme	Environmental Monitoring of the project during operational stage: ▪ Environmental monitoring within the unit; ▪ Maintaining security of the premises; ▪ Checking security and safety at the premises; ▪ Implementation of all conditions contained	Proponents

Sr. #	Action	Objective	Responsibility
		in the environmental approval to be issued by the Punjab Environmental Protection Agency, and ▪ Submission of requisite information and reports to the proponents and the Punjab Environmental Protection Agency	
2.	Assemble a team comprising representatives of the residents and a responsible officer	▪ Establish an institutional framework for implementation of the Environmental Monitoring Programme	Proponents/ Project Manager
3.	Provision of funds	▪ To finance expenses involved in the implementation of the Environmental Monitoring Programme	
4.	Implementation of the Environmental Monitoring Programme	▪ Appropriate conservation of water resources and rendering advice on water conservation methods to workers;	Proponents/ Project Manager

Sr. #	Action	Objective	Responsibility
5.	Reporting	Submit periodic reports to: ▪ The Punjab Environmental Protection Agency with reference to conditions, if any, contained in the environmental approval to be issued for the project	Proponents/ Project Manager

Institutional Capacity

The institutional capacity of the Environment Management Plan is outlined below:

Primary Responsibilities:

The administration is primary responsible for implementing EMP within Baig's International.

Operational Management and Control:

Conducting the operational activities in the environmentally sound manner is the responsibility of the concerned administration.

Supervision and Monitoring:

Senior Supervisor will be responsible for all environmental issues and for the implementation of EMP.

Environmental Budget

Approximately 30000 PKR has been allocated for environmental measures.

Equipment Maintenance

PPEs and other required machinery of latest technology with high efficiency will be purchased by the Proponent. Maintenance of Equipment will be done twice year for the smooth operation

Training Schedules

. Environmental training will help to ensure that the requirements of the IEE and EMP are clearly understood and followed by all project personnel in the course of the project.

Target audience	Trainers	Contents	Schedule
Selected management staff	Contractors	Key finding of mitigation measure	After every five months
All personnel	HSE Officer	Mitigation measures	Monthly
Technical Staff	HSE Officer	Waste disposal or sale out status, vehicle movement restriction and other mitigation measures	After every three month
Other staff	HSE Officer	Waste disposal, resource conservation and other mitigation workers	Monthly

Chapter 7: CONCLUSION & RECOMMENDATIONS

7.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the unit of named **"MANZOOR H & SONS PVT. LTD** (Lead Resource Recovery Unit)". The objective of the project is Recycle Unit of used Lead acid battery in an environment friendly manner. The project site is located at Mouza Karool, off Ring Road, Lahore. The performed EIA showed all identified possible impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study shall reduce, if not eliminate, these impacts so that these are within acceptable limits. The study also shows that there will be no exploitation and consequential depletion of the local natural resources. Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented. This Environmental Impact Assessment (EIA) has been conducted, to the extent possible, in line with relevant guidelines provided by the Government of Pakistan. The objective of such study is to identify and assess potential environmental and social impacts of the project. The Environmental Impact Assessment (EIA) contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the Figure project.

Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits. It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. The objective of preparation of an environmental study is to identify how the environment is impacted and to suggest mitigating measures to reduce if not totally eliminate adverse effects of a project.

7.2 RECOMMENDATIONS

Following are some recommendations to improve the environmental status of the project:

- Efforts should be made to ensure that water is conserved during domestic activities and that environment-friendly techniques are adopted too.
- Proper ventilation can limit the amount of indoor pollutants.
- Water spraying should be practiced where required.
- No waste should be burnt at the premises.
- No waste should be burnt within the premises
- Small waste storage bins should be installed
- Basic medical training should be provided to the specified work staff and basic medical service and supplies to workers.
- Fire extinguishers should be properly maintained and checked periodically.
- Prohibiting flammable materials in the premises.
- Adequate training of workers on use of firefighting system to deal with the situation.

ANNEXURE-1

Socio-economic Performa