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LIST OF ACRONYMS

API	American Petroleum Institute
EA	Environmental Approval
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPC	Environmental Protection Council
GoP	Government of Pakistan
HSE	Health Safety & Environment
IEE	Initial Environmental Examination
LAA	Land Acquisition Act
MSW	Municipal Solid Wastes
NOC	No Objection Certificate
O&M	Operation and Maintenance
OGRA	Oil & Gas Regulatory Authority
OHS	Occupational Health and Safety
PEPC	Pakistan Environment Protection Council
PEQS	Punjab Environment Quality Standards
PKR	Pak Rupees
PM	Project Manager
PPC	Pakistan Penal Code
PPE	Personal Protective Equipment
PTCL	Pakistan Telecommunication Limited

Executive Summary

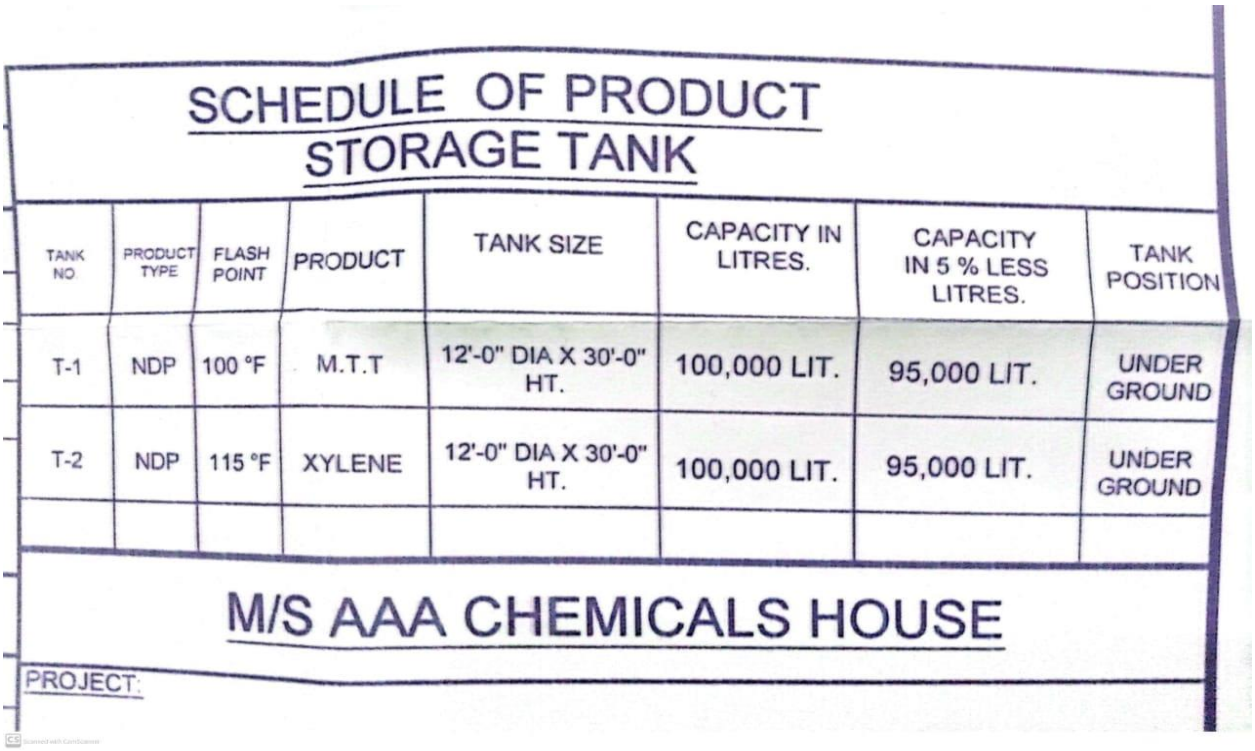
EXECUTIVE SUMMARY

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore. The total area of the proposed project is 35475 Sft.

The main goal of the Proposed Project is to provide facility for the storage of petroleum products, from which these products are usually transported to end users or further storage facilities. According to the Environmental Protection Agency,Government of the Punjab, Lahore-"List of Projects", the project under consideration categories in the category of the projects requiring Environmental Impact Assessment (EIA). Therefore, in 2013 to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act-2012, the client has submitted the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore of subjected project activity for Environmental Approval (EA). Thus the Environmental Approval for the subjected project having an area of 35475 Sft needs to be obtained.

INTRODUCTION

The DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore. The total area of the proposed project is 35475 Sft. The land is already owned by the project proponent as it. The proposed unit involves the storage of petroleum products such as MTT (Mineral Turpentine) and Xylene. The capacity of MTT (Mineral Turpentine) 100,000 liters and Xylene tank capacity will also be 100,000 liters. The number of sand buckets present in the proposed project is 12. Two trolleys mounted fire Extinguishers will also be installed in the project.



SCHEDULE OF PRODUCT STORAGE TANK

TANK NO.	PRODUCT TYPE	FLASH POINT	PRODUCT	TANK SIZE	CAPACITY IN LITRES.	CAPACITY IN 5 % LESS LITRES.	TANK POSITION
T-1	NDP	100 °F	M.T.T	12'-0" DIA X 30'-0" HT.	100,000 LIT.	95,000 LIT.	UNDER GROUND
T-2	NDP	115 °F	XYLENE	12'-0" DIA X 30'-0" HT.	100,000 LIT.	95,000 LIT.	UNDER GROUND

M/S AAA CHEMICALS HOUSE

PROJECT:

TITLE AND LOCATION OF THE PROJECT

Installation of DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore.

I. NAME OF THE PROPONENT

Waheed Sohail S/O Sohail Akhter

Address: House No. 143/L, TIP Society, Phase-2, Defence Road, Lahore.

II. NAME OF THE ORGANIZATION PREPARING REPORT

EcoRise Consults

99/Burj Al-Saeed Plaza Room #110, Main Ferozepur Road, Ichra, Lahore

Phone: +92 3287570417

Email: ecoriseconsults25@gmail.com

PROJECT IMPACTS AND THEIR MITIGATION

Table given below shows the project impacts; related with construction and operation of the Project. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development.

TABLE —E-1: IMPACTS AND THEIR MITIGATION MEASURES DURING CONSTRUCTION PHASE

Impacts	Magnitude	Recommendation Measure	Responsible Authority
CONSTRUCTION PHASE			
Air Pollution Dust Generation, Gases emissions from vehicles	Minor	• Sprinkling of water on regular basis especially during dry climatic conditions • Periodic maintenance and management of all the construction machinery and vehicles	Contractor
Solid waste Construction waste and domestic waste from worker camps	Minor	• Conduct separate collection of construction and domestic waste to promote recycling and re-use • Dispose non-recyclable and hazardous waste material properly according to waste management rules	Contractor
Water Quality Run-off water from construction area. Wastewater from campsite Leakage of petroleum products	Minor	□ Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater/surface water □ septic tanks will be constructed with cemented wall to prevent the groundwater contamination	Contractor

and chemical materials from construction activity			
Noise - Noise caused by construction machinery. - Vehicles used for mobilization of construction equipment and workers	Minor	• Control noise through control of working hours and selection of less noisy equipment. • Proper maintenance of vehicles and construction equipment	Contractor

TABLE E-2: IMPACTS AND THEIR MITIGATION MEASURES DURING OPERATIONAL PHASE

Possible Impact	Magnitude	Recommendation Measures	Responsible Authority
OPERATION PHASE			
Waste Water	Moderate/Long Term	• Treatment of water through septic Tank where oil interceptors are installed prior to septic tank before discharge into the environment • Discharge effluents should meet the effluent standards as per PEQS.	Proponent
Air and Noise pollution	Minor/Short Term	• Proper maintenance of facility equipments • Proper maintenance of transporting vehicles. • Operations should only be carried out only during0800hrs-1700hrs.	Proponent
Solid waste generation	Moderate/Long Term	• Sale of recyclables and reusable materials to minimize waste for disposal; Establishing a waste generation and collection register for tracking the disposal of waste. • Adequate collection and storage of waste on site and safe	Proponent

		transportation to the disposal sites and disposal methods at designated area shall be provided. • Installation of receptacles that enhance segregation of waste at source as provided for Legal Notice	
Storage Tank & Pipeline Leakage	Minor / Short Term	• Design of pipeline to ANSI Code, which includes the safety and loss prevention features. • Pipeline material to be manufactured to API standard, which specifies yield strength and pressure testing. • Pressure testing of tanks and pipelines will be conducted.	Proponent

Possible Impact	**Magnitude**	**Recommendation Measures**	**Responsible Authority**
OPERATION PHASE			
		• Welding of Tanks to be performed to API standard with specific inspection procedures. • Spill prevention plan will be implemented in case of any Spillages	

Occupation accidents and hazards	Minor/Long Term	• Necessary health and safety rules shall be enforced by the management to ensure that all staff members adhere to these standards and are thus safe. • Fire Safety shall provide to project to protect flammable products. • Covers for refuse containers and appropriate personal protective equipments to be used by workers shall also be provided by the proponent. • First Aid kits will be provided and staff members trained in first aid administration. • Clear signage will be posted alerting of possible danger situations.	Proponent

III. PROPOSED MONITORING

The monitoring program is designed to ensure that the requirements of the environmental approval awarded by the EPA are met. Monitoring Program (MP) provides important information that allows for more effective planning and an adaptive response based on the assessment of the effectiveness of mitigation measures. The monitoring of various parameters will help to determine the extent to which project construction/operation activities will cause environmental disturbance.

Table E-3: Environmental Monitoring Plan

Sr. No.	Monitoring Parameters	Monitoring Mechanism	Responsibility
1.	Water Quality	Discrete grab sampling and laboratory testing of water samples.	Proponent
2.	Dust Emissions	Ambient Particulate Matter Monitoring System.	Proponent
3.	Noise Levels	Noise meter	Proponent
4.	Emissions	Emissions monitoring system. Monitoring of ambient air quality.	Proponent
5.	Security	Security arrangements will be made	Proponent
6.	HSE Plan	Health, safety and Environmental will be monitored on daily basis	EHS officer of Project Proponent

IV. ENVIRONMENTAL MANAGEMENT COST

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively. However, a lump sum amount of Rs. 1 million will be allocated by the project proponent as cost for environmental training and monitoring for a period of two years during construction and operation of the project.

V. STAKEHOLDER CONSULTATIONS

Public Discussions were held with the inhabitant of the surrounding area. They are quite positive to the project and see the project as growing business and accomplishing towards the positive development in the area at local and in country as whole. The people observe strong positive impacts regarding employment, business and structural development due tothis project. IEE findings depict that people perceive overall positive social and economic impacts by the project.

Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility.

VI. CONCLUSION AND RECOMMENDATION

The report provides conclusion based on the impacts assessed and mitigation measures suggested. The report recommends that EMP will be made a part of all contract documents. The design of the scheme should meet the Punjab Environmental Quality Standard (PEQS), parameters in all aspects. The contractor will be bound to completely implement relevant mitigation measures set out in the EMP during construction phase while during regular operation of the project. Proponent will be responsible to ensure all the compliance of PEQS. If there are any changes in the design/ layout, or any other changes in project description then changes should be carried out through amendments in environmental assessment report and EMP of the EIA.

Introduction of the Project

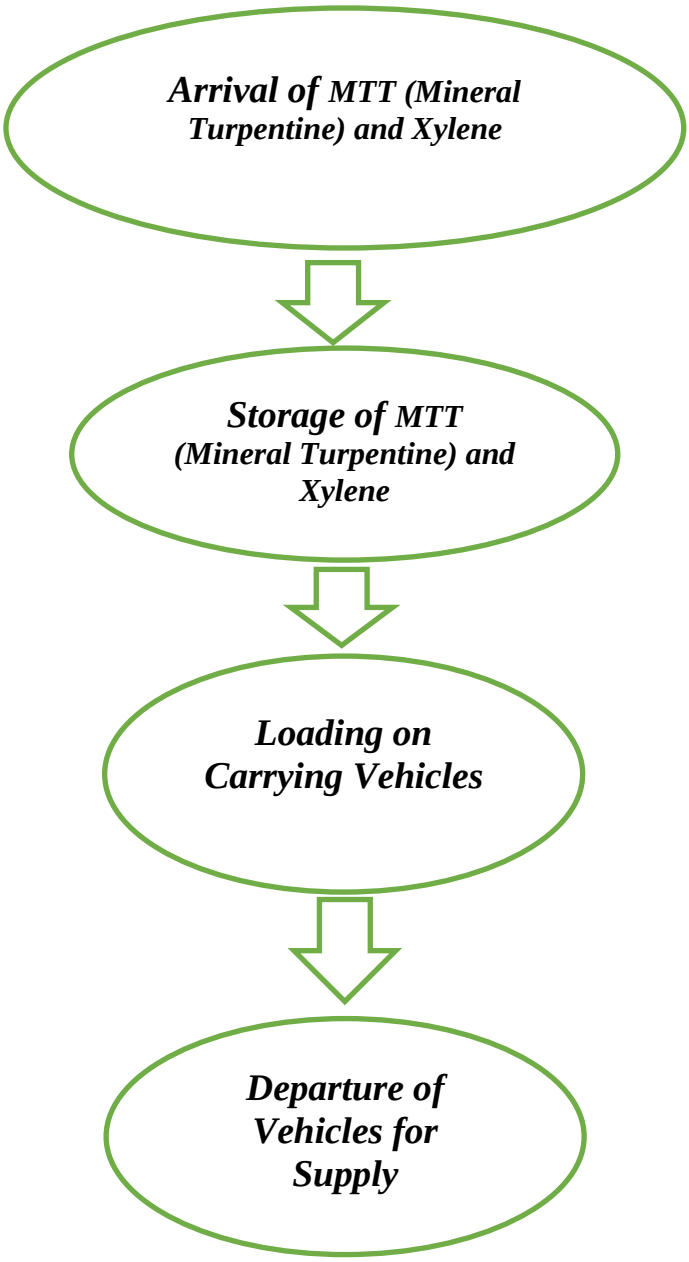
INTRODUCTION

Pakistan is an energy deficient country. To fulfill the demand of energy in industrial and domestic uses other sources of energy are being explored. In this regards petroleum products are of keen interest. Petroleum Products are stored in bulk in strategic depots scattered over the country. These facilities which are provided for storing large volumes of liquids and gases can be classified as closed-storage vessels or open-storage vessels. Closed-storage vessels include fixed roof tanks, pressure tanks, floating roof tanks and conservation tanks while open-storage vessels include open tanks, reservoirs, pits and ponds.

The main goal of the Proposed Project is to provide facility for the storage of petroleum products, from which these products will be usually transported to end users or further storage facilities. According to the Environmental Protection Agency, Government of the Punjab, Lahore- "List of Projects", the project under consideration categories in the category of the projects requiring Environmental Impact Assessment (EIA). Therefore, in 2013 to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act-2012, the client has submitted the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore of subjected project activity for Environmental Approval (EA). Thus the Environmental Approval for the subjected project having an area of 304661 Sft needs to be obtained. The **M/S AAA Chemical House** is the installation of Proposed Petroleum products for storage and sale at Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore. The total cost of the project is estimated 45 million rupees. The total area of the proposed project is 35475 Sft. The land is already owned by the project proponent as it.

The DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore. The total area of the proposed project is 35475 Sft. The land is already owned by the project proponent as it. The proposed unit involves the storage of petroleum products such as MTT (Mineral Turpentine) and Xylene. The capacity of MTT (Mineral Turpentine) 100,000 liters and Xylene tank capacity will also be 100,000 liters. The number of sand buckets present in the proposed project is 12. Two trolleys mounted fire Extinguishers will also be installed in the project.

The process of working of this project is described below in the form of process flow diagram:



The state of the arttechnology will be used for storage and sale of products.

1.1 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, Lahore in compliance with the legal requirement for Punjab Environment Protection Act-2012 (amended act), and Section-12 for obtaining the Environmental Approval (EA) before commencement of the work or operation of the project activity at the project site. The other relevant regulations and guidelines considered while preparing this EIA report include are given as following:

- Policy and procedures for filing, review and approval of environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectoral guidelines

Different environmental aspects like social, physical, biological and other related features of the project both during construction and its regular occupancy are highlighted in this EIA report. Measures necessary to be adopted to mitigate negative environmental impacts on any part of the environment around are also described. All the important information is also provided as described under present format used to help decision makers, EPAPunjab in the present case, before issuing the desired Environmental Approval (EA).

1.2 IDENTIFICATION OF PROJECT AND PROPONENT

Installation of DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House.

Location: Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore.

In accordance to the Environmental Protection Agency, Government of the Punjab,IEE/EIA Review & Regulations 2022 Subject project falls under Schedule II, category Energy A Clause (5) - “List of Projects Requiring an EIA

NAME OF THE PROPONENT

Waheed Sohail S/O Sohail Akhter (Owner)

M/S AAA Chemical House

Address: House No. 143/L, TIP Society, Phase-2, Defence Road, Lahore.

1.3 DETAILS OF CONSULTANTS

EcoRise Consults

Office: 99/Burj Al-Saeed Plaza Room #110, Main Ferozepur Road, Ichra, Lahore

Phone: +92 3287570417

Email: **ecoriseonsults25@gmail.com**

1.3.1 PERSONS PERFORMING THE STUDY (Team Members)

The proponent has assigned the task of preparing EIA report to EcoRise Consults, Lahore. The EIA study of the proposed project has been conducted according to Environmental Assessment Procedures, 1997, Review of IEE and EIA Regulation 2022 as prescribed by the Federal Environmental Protection Agency (Pak EPA), Government of Pakistan. The study team of EcoRise Consults which completed the EIA report consists of following experts as mentioned in table 1.1.

Table 1.1: Members Completed EIA Process

Name	Qualification	Position in the EIA/IEE Team
Shahid Iqbal	MSc (Environmental Science) PU Lahore	Project Incharge And Supervisor
Ali Naeem	MSc (Environmental Engineering) UET-Lahore	Team Leader and Coordinator (Author of the Report)
Muhammad Gulzaib Afzal	B.sc Environmental Engineering (UET Lahore)	Environmental Engineer
Sadaqat Ali	LLB (Islamia University Bahawalpur)	Research Associate (Author of the

		Report)

Only the main roles of the team members are given. However, their role was not restricted to these, rather it alsoincludes many other studies in their respective fields in the context of this EIA studies.

1.4 BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

The proposed project is Installation of DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore. The project is commercial in nature. The project in its vicinity has infrastructure like roads, transport, electricity, telephone, land and even the environment is of ideal condition for storage of petroleum products and their sale.

Total area of land is 35475 sft.

1.5 METHODOLOGY

The methodology adopted to carry out the EIA study of the proposed project was as follow:

a) Orientation

b) Planning of Data Collection

c) Data Collection

d) Site Reconnaissance

e) Analysis of Maps and Plats

f) Literature Review

g) Desk Top Research

h) Public Consultations

i) Field Studies

j) Laboratory Analysis

k) Evaluation of Impacts and their analysis

l) Categorization of impacts based on their potential environmental significance and prescription of preventive / mitigation measures

In addition to the evaluation and review of the available records, data and the facts for the previous project, detailed discussions were held with the concerned members of theproject management as well as other project stakeholders.

Notes and proposals for measures to be taken to mitigate and compensate for any determined/detrimental environmental impacts are contained in the Environmental Management Plan (EMP) as well as a Monitoring Plan, including all parameters that need to be measured, and the frequency of monitoring actions.

A comprehensive qualitative and quantitative methodology was adopted to conduct this study inter-alia in due compliance with the EIA requirements. The study included collection of both primary and secondary data regarding environmental status and other relevant factors. This EIA report has been accomplished after carrying out thorough visit to the proposed site and detailed investigation to identify the following Environmental areas of concern:

1) To achieve the desired environmental compliance standards; as per the provisional environmental regulatory requirements; as applicable to the project.
2) Plans and activities to prevent/mitigate any potential impacts and the gaps that could probably remain after implementation.
3) Any other points/steps to be taken which could be beneficial to mitigate environmental adverse impacts that may accrue both during construction and regular operation of the project.

A view of methodology for environmental assessment is given in following table 1.2:

Table 1.2: Environmental and Social Assessment Process

Phase	Activities	Status	Responsibility
Screening and Scoping	Reconnaissance and initial site visit and consultations, identification of environmental and social issues & applicable	Carried out during the present EIA	Project proponent

	safeguard environment policy, categorization and working out an action plan.		
Impact Assessment	Identification of potential environmental and social impacts through site visits, stakeholders consultations, review of drawings, alternatives etc	during the present EIA	Project proponent
Impact categorization	The significant potential impacts were tabulated and mitigation/preventive measures were prescribed	during the present EIA	Project proponent
EMP Preparation	Stakeholders/Women consultation EMP Social Framework Agreement (SFA)	Carried out during/prepared as part of the present EIA	Project proponent

Phase	**Activities**	**Status**	**Responsibility**
Disclosure and Consultant SFA Agreement	Disclosure of Draft EMP and SFA	Draft SFA ready	Project proponent
Final EMP	Final version of EMP produced	Included in the present EIA	Project proponent

Description of the Project

1 DESCRIPTION OF THE PROJECT

This section deals with category of the project, availability of construction materials, construction time and cost of the project, construction and operation equipment's etc. The information presented in this section is based on project site survey, preliminary design report, and construction drawings provided by the client.

2.1 TYPE AND CATEGORY OF THE PROJECT

The project envisages at establishment of the petroleum products storage and sale facility to full fill the demand and supply gap of the energy as fuel. The project is commercial in nature. **In accordance to the Environmental Protection Agency, Government of the Punjab,IEE/EIA Review & Regulations 2022 Subject project falls under Schedule II, category Energy A Clause (5) - "List of Projects Requiring an EIA",** Therefore, to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act (amended 2012), the client is required to submit the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore to obtain the required Environmental Approval (EA).

2.2 OBJECTIVES OF PROJECT

Intend of this project is to Provide facility for the storage of petrochemical products and from which these products are usually transported to end users or further storage facilities. The main objective is to fulfill the demand and supply gap of the energy as fuel.

2.3 ALTERNATIVES CONSIDERED, AND REASONS FOR THEIR REJECTION

The establishment of proposed project is an industrial speculation in the rural area. To fulfill the industrial aspects of the project under reference of this EIA Report, it is to be sited at a place having industrial/commercial processing activity is either already going on or there are bright prospects of the same. Concurrently,it must also meet the legal requirements of the Punjab Environmental Protection Act, 1997(amended 2012). Availability of land at the best convenient place is equally important among other considerations for the site selection. Availability of access roads,communication facilities, electricity, basic infrastructure, sewerage etc is yet the other necessary requirements. Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment and others related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements are also available at the selected site. Accordingly, the selected site ispreferable for establishment of proposed unit.

2.4 LOCATION AND SITE LAYOUT OF THE PROJECT

The proposed project Installation of Proposed DP and NDP (Dangerous and Non-dangerous Products i.e. MTT, Xylene) at M/S AAA Chemical House, located Khewat No. 533, 635, Khatooni No. 809, 951, Qita No.74, 6, Mouza Lakhodair Bhani Road (1.5 km from Bhani Interchange), Tehsil Wagha & District Lahore.

The project is surrounded by the following

North	Open Area
South	Access Road
East	Open Area
West	Bhaini Road

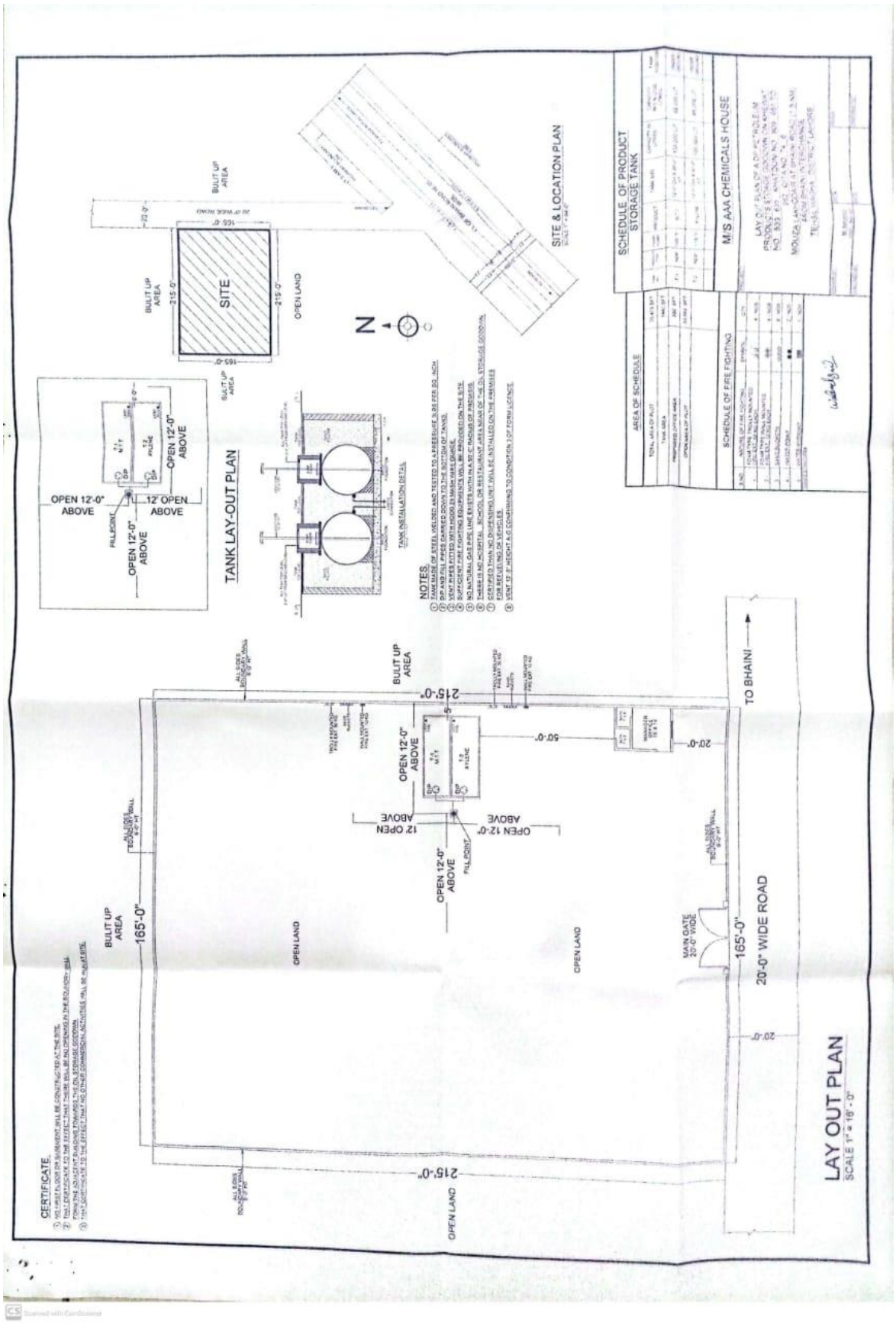

LAY OUT PLAN
SCALE 1" = 16' - 0"
TO BHAINI
20'-0" WIDE ROAD
MAIN GATE 20'-0" WIDE
165'-0"
215'-0"
BUILT UP AREA
OPEN LAND
OPEN 12'-0" ABOVE
TANK LAY-OUT PLAN
SITE & LOCATION PLAN
SITE
N
SCHEDULE OF PRODUCT STORAGE TANK
M/S AAA CHEMICALS HOUSE
SCHEDULE OF FIRE FIGHTING
AREA OF SCHEDULE
NOTES
CERTIFICATE

Figure 2.1: Google of Project site

2.5 LAND USE

Currently the proposed land is open land and already owned by the proponent. Total area of land is 35475 Sft.

2.6 VEGETATION AROUND THE SITE

The project site and its vicinity are open & many industrial facilities are operating nearby; however, no species of significant ecological importance exist at or near the project site.

2.7 ACCESS ROAD

The project site is located at a position where vast road network is present. Project site is easily accessible through Bhani Road.

2.8 COST AND MAGNITUDE OF OPERATION

The project cost has been estimated about 40 million rupees. The project is commercial in nature. The quantities have been worked out from the design drawings and project feasibility. The rates for cost estimates are based on construction work, contractor

cost,and cost of the raw materials. The activities to be carried out within a period of four to eight months from the starting date.

2.9 SCHEDULE OF IMPLEMENTATION

It is planned that the following schedule of project implementation will be adhered to, this is subject to the conditions that everything goes according to planning and no serious bottlenecks are encountered. The implementation stages of the project activity include:

1st Stage

The stage –1 comprises the onsite contouring studies and soil investigations.

2nd Stage

The stage –2 comprises the following task:

i- Lying of foundations excavation and commencement of erection work.

ii- Start of civil, electrical and mechanical work.

iii- Development of basic infrastructure.

iv- Fitting of instrumentation.

3rd Stage

The stage –3 comprises the following task:

v- Equipment erection completion.

vi- Completion of the basic infrastructures water supply system, electricity supplyetc.

4th Stage

The last stage will be Commencement of regular operations.

2.10 DESCRIPTION OF THE PROJECT

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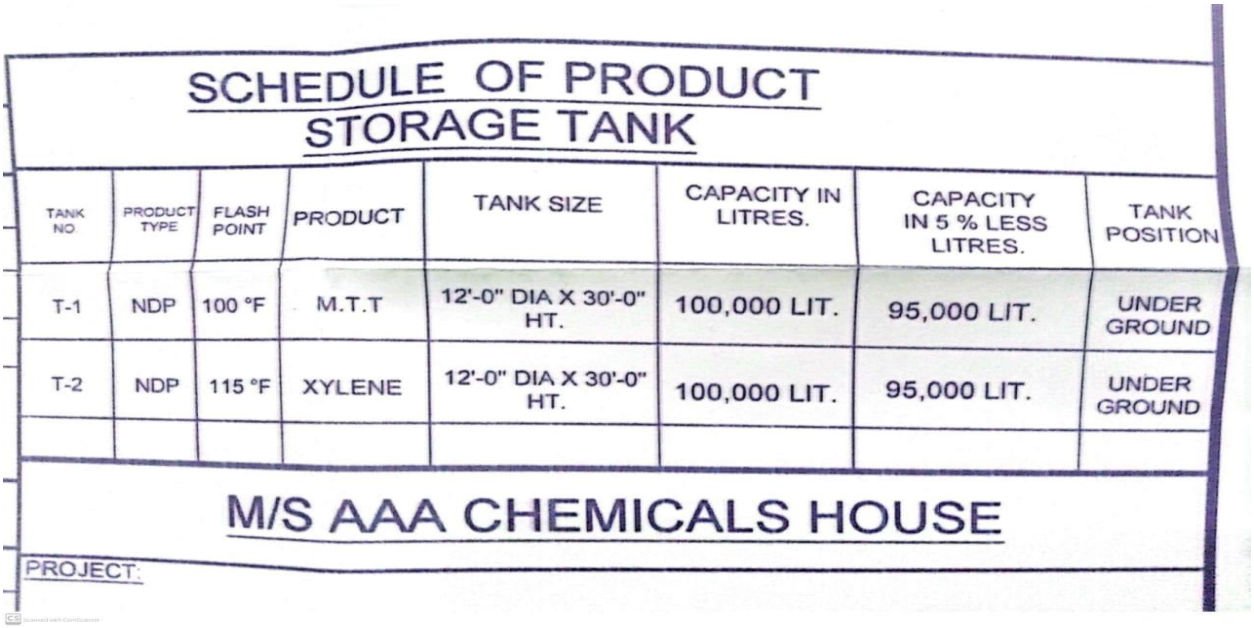
The petroleum products which will be stored and sold at project site. Tank age Schedule isas follows;

Table 2.1 Tank Schedule



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M/S AAA CHEMICALS HOUSE

PROJECT:

2.11 PROJECT FACILITIES

2.11.1 Facility Layout

A boundary wall of about 10 feet plus 3 feet barbed wire with 9 inches thickness will surround all installations and/or depots to prevent the entry of all unauthorized persons.

Safe distances is maintained which varies from 40 to 420 feet among positioning of storage tanks, product reception and loading facilities in a depot to ensure safety and effective control in case of spillages, accidents and other emergencies.

a) Dyke wall

A Dyke wall is built to regulate the flow of liquid in case of any spillage; it surrounds all tanks and

storage area.

2.11.2 Layout of Storage Tanks

Petroleum Storage tanks should be placed such that any hydrocarbon vapor will have diffused into the atmosphere to a concentration well below the lower flammable limit before reaching any area which may be designated as hazardous.

The layout of the tanks should take cognizance of accessibility for fire fighting.A recommended distance will be kept between the tanks to avoid any hazard.

SCHEDULE OF FIRE FIGHTING REQUIREMENT

S.NO.	NATURE OF FIRE FIGHTING	SYMBOL	QTY.
1 -	FOAM TYPE TROLLY MOUNTED FIRE EXT. 50 KG		2 - NOS.
2 -	FOAM TYPE WALL MOUNTED FIRE EXT. 10 KG		2 - NOS.
3 -	SAND BUCKETS		4 - NOS.

2.11.3 Layout of Key Facilities

a) Tank Compound

All storage tanks are inside the dyke area which is inside the boundary wall. The net capacity of a suitable depression should be 110% of the capacity of the largest tank so leakage may be covered. If the leakage or spillage is anticipated in petroleum products storage tanks that could cause damage to third party property, drainage systems, rivers or waterways, slop tanks should be able to minimize the lose.

b) Roadway and Parking Areas

The roadways and packing areas are planned in such a way that the main roads will be suitably surfaced and drained. A road of about 10 ft width is proposed along the boundary wall. A separate parking area is provided for petroleum tankers in order that road-waysand loading areas should not be used for parking. There is a separate car parking outside the dyke wall. Apart from that road near loading or unloading facilities for petroleum should be at a safe distance from boundary. This distance should normally be at least 15m but in small depots, it may be reduced to 10m.

c) Environmental Control

Provision should be made for drainage channels from the tank drain valves. These drainage channels should run to one or more oil interceptor should be cited away from the boundaries and hazardous areas and within easy access for inspection, cleaning andmaintenance.

Adequate lighting should be provided for night operations. This should enhance safety of personnel and provide for operations to be carried out in a safe manner for the maintenance of security.

d) Pumps

These are generally grouped together in one area or individual sited to suit operational and constructional convenience. They should preferably be installed above ground level and in the open air outside the tank compound except severe climatic conditions are experienced. Pump for petroleum should be located not less than 15m from the boundary but in the caseof small depots, this distance may be reduced to 10m.

Pumps driven by gasoline and diesel engine shall not be operated in a hazardous area. Diesel engines should be installed above ground level to avoid their operation in an accumulation of flammable vapor. There should be a means of rapid shutdown of the unit in event of emergency. All pumps shall be explosion prove.

e) Loading and Unloading Facilities

Over-filling, splash loading and free fall of product shall be avoided during loading operations. The layout of road loading or unloading facilities should incorporate ease of tank vehicle access and exit without the need for reversing. Suitable barriers which may include clamps, locks or other means of control shall be employed to prevent unauthorizedtrain movement, or access by locomotives. Materials used in the construction of the

loading and unloading structures shall be noncombustible. Boundaries should consist of an approved form of secure fence. It could be of chain link fencing, steel paling, brick, and mass concrete post and slap concrete construction.

f) Equipment's and Supplier

State of the art and imported technology will be employed for storage of products.

2.12 CONSTRUCTION ASPECTS

2.12.1 Construction Materials

Comparatively normal quantities of storage structure and other facility construction materials will be required for construction of the proposed facility. The materials mainly required are listed below:

- Coarse and fine aggregate for concrete works
- Sandy gravel for backfilling, embankment raising, etc.
- Cement
- Steel
- Bitumen
- Other materials

2.12.2 Construction Camps

The proponents hired as Project Contractors. The Contractor has constructed a camp with in the project area. Location of the camp has been selected in a way that there should not be any disturbance to the surrounding community etc, and it also is close to the site of work. Camp has been properly fenced and guarded. This camp has been constructed mainly for construction staff and to accommodate Contractors machinery. The area of thecamp has been kept sufficiently large to accommodate parking areas for machinery,construction materials and workshops. For the drinking water and other domestic uses of the camp, ground water is being used.

2.12.3 Work Force and Work Machinery

The details of the construction staff has been shown below in Table 2.2. The labor will work in one shift of nine (9) hours. The construction machinery which will be utilized for construction is shown in Table 2.3 below.

Table 2.2: List of Construction Staff

Sr. No.	Category of Staff	Tentative Number
1	Engineer	2
2	Construction Manager	1
3	Planning Engineer	2
4	Material Engineer	1
5	Site Engineer	1
6	Supervisor	3
7	Foreman	2
8	Skilled Worker	8
9	Semi Skilled Worker	20
10	Machinery Operator	5
11	Admin.	1

Table 2.3: List of Construction Machinery to be used for Construction

Sr. No.	Type of Machinery	Quantity
1	Excavator	1
2	Dumper & Loader	2
3	Tractor & Trolley	3
4	Water Bowser	1
5	Lift/Crane	1
6	Generator	2
7	Concrete Pump	3
8	Vibrator	3
9	Water Pump	3
10	Welding Plant	1
11	Roller	1
12	Concrete Mixing Plant	1

2.13 Restoration/Rehabilitation at the End of Project Life

There will be no any matter of rehabilitation as the proposed site is already owned by the project proponent. There will not be any let regarding safety factors as applicable from time to time for such structures on all accounts. However, at the end of the life of the building, it will be duly dismantled with special precautions to avoid/minimize pollution and at the same time taking all safety precautions to protect human life and property around the project site. Debris or any other wastes resulting from demolishing will be disposed off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling all Government rules and regulations as applicable to such activities will be strictly adhered to. During entire construction period, necessary precautions will be taken to ensure that no damage is done to the basic infrastructures like sewer system, power transmission lines roads, private or public property and daily human life as well. Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Dustto be generated will be minimized by constant sprinkling of water. After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spill over of these materials will be cleared adequately. The land, if and where pitted will be adequately leveled. On the whole, the project site and the area in its near vicinity will be made neat and clean.

2.14 Government Approvals and Leases Required by Project

The environmental approval according to the Section 12 of Punjab Environmental Protection Act-2012 is the mandatory requirement of the project.

DESCRIPTION OF THE ENVIRONMENT

4.1 General

For any development project, the prevailing environmental conditions need to be assessed prior to the preliminary stages of planning, designing and execution of the project. Identification of physical, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures which forms the basis of the Initial Environmental Impact Examination exercise.

The existing environmental conditions of the said project have been considered with respect to physical, biological and socio-economic aspects. Information has been collected from variety of sources, including published literature, field observations and surveys conducted specifically for this project have been analyzed for this study.

4.2 Methodology

For baseline data collection, following sequences of various techniques has been adopted. These techniques were chosen because of their pragmatic application in very short span of time.

1. Reconnaissance survey;
2. Field investigations/ Surveys;
3. Meteorological analysis;
4. Environmental analysis (air, noise and water quality surveys);
5. Collection and review of secondary environmental and social data; and
6. Basic parameters collection from published sources.

4.2.1 Reconnaissance Survey

Reconnaissance survey of the project site was conducted on May, 2025 for the collection of preliminary information about the flora, fauna and existing human intervention along with ecological characteristics. Reconnaissance survey helped us to delineate the ecological habitats and to explore the diversified ecological rich environment.

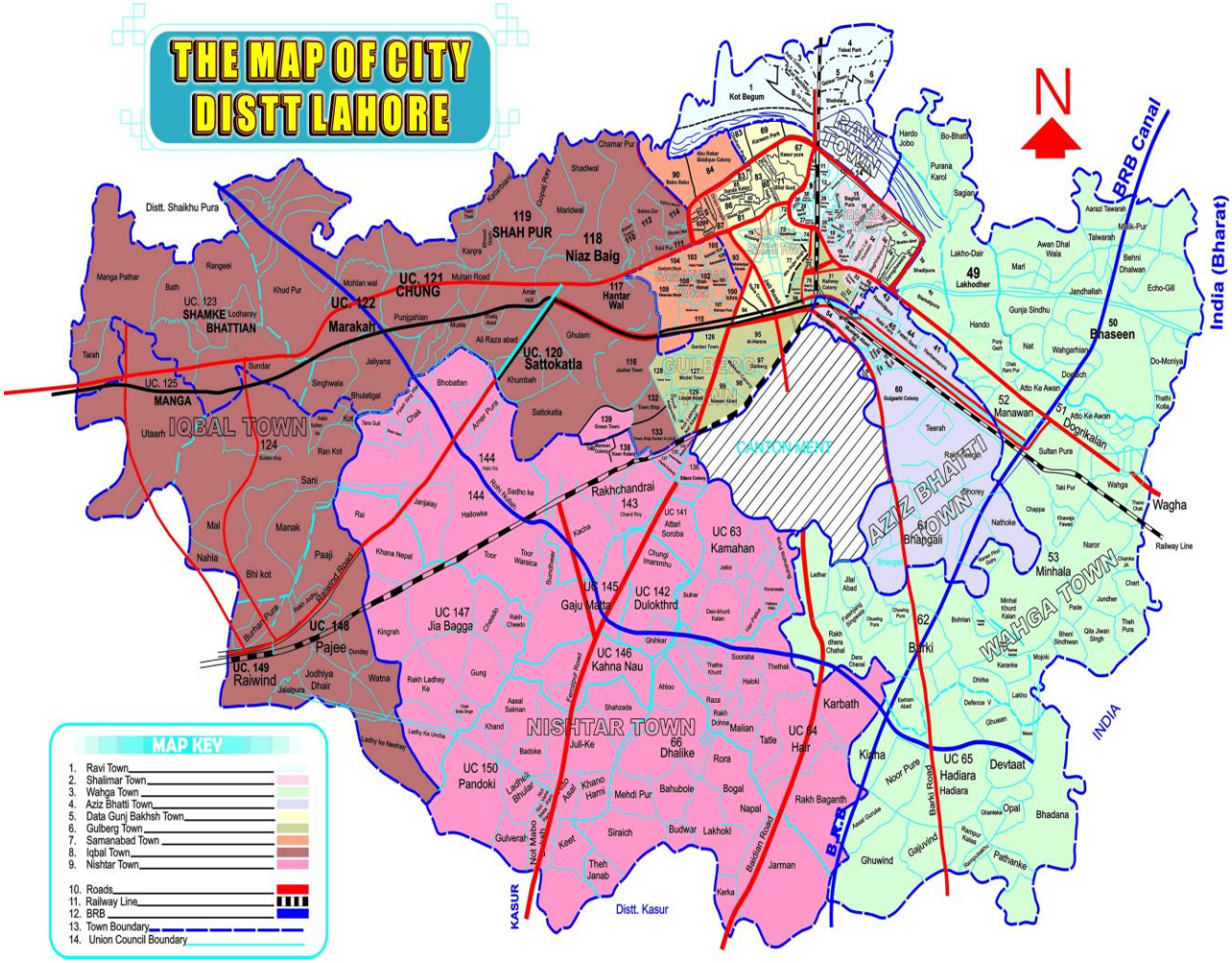
This information has become the baseline information for the detailed survey that specifically targets those areas which are going to be affected by the implementation of the said project. As a result of this survey, basic plants and animals' families were identified that actually

prevailing in the associated habitats.

4.3 Physical Environment

Topography

An account of different components of the physical environment of the area is given hereunder:



- **Physical resources topography, soils, climate, surface water, ground water, geology;**

  This chapter contains a brief description of the prevailing environmental state of the area. The main components of the environment include physical resources, ecological resources, cultural resources and socio-economic conditions of the area. A comprehensive detail of each is given below:

Topography

Lahore city is lying between 31°15′—31°45′ N and 74°01′—74°39′ E, Lahore is bounded on the north and west by the Sheikhupura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 1014 km² and is still growing. 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 Sheikhupura 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, Mughalpura and Multan Road. Lahore city is situated at an average elevation of 210 meters above mean sea level.

Soil

The soil is different in color and generally inclined to be dry. The alluvial complex consists principally of fine to medium sand, silt and clay. Beds of gravel or coarse sand are uncommon. However pebbles of siltstone or mudstone may be found embedded in silty or clayey sand in many places. Except for a few local lenses, few feet thick beds of hard compacted clay are rare in the area. However it is rich in potential plant nutrients. The soil is of alluvial type and deposited by Ravi River. Alluvium is soil or sediments deposited by a river or other running water. A river length. Where the river flow is fast, more particles are picked up than dropped. Where the river flow is slow, more particles are dropped than picked up. Areas where more particles are dropped are called alluvial or flood plains and the dropped particles are called alluvium.

Climate

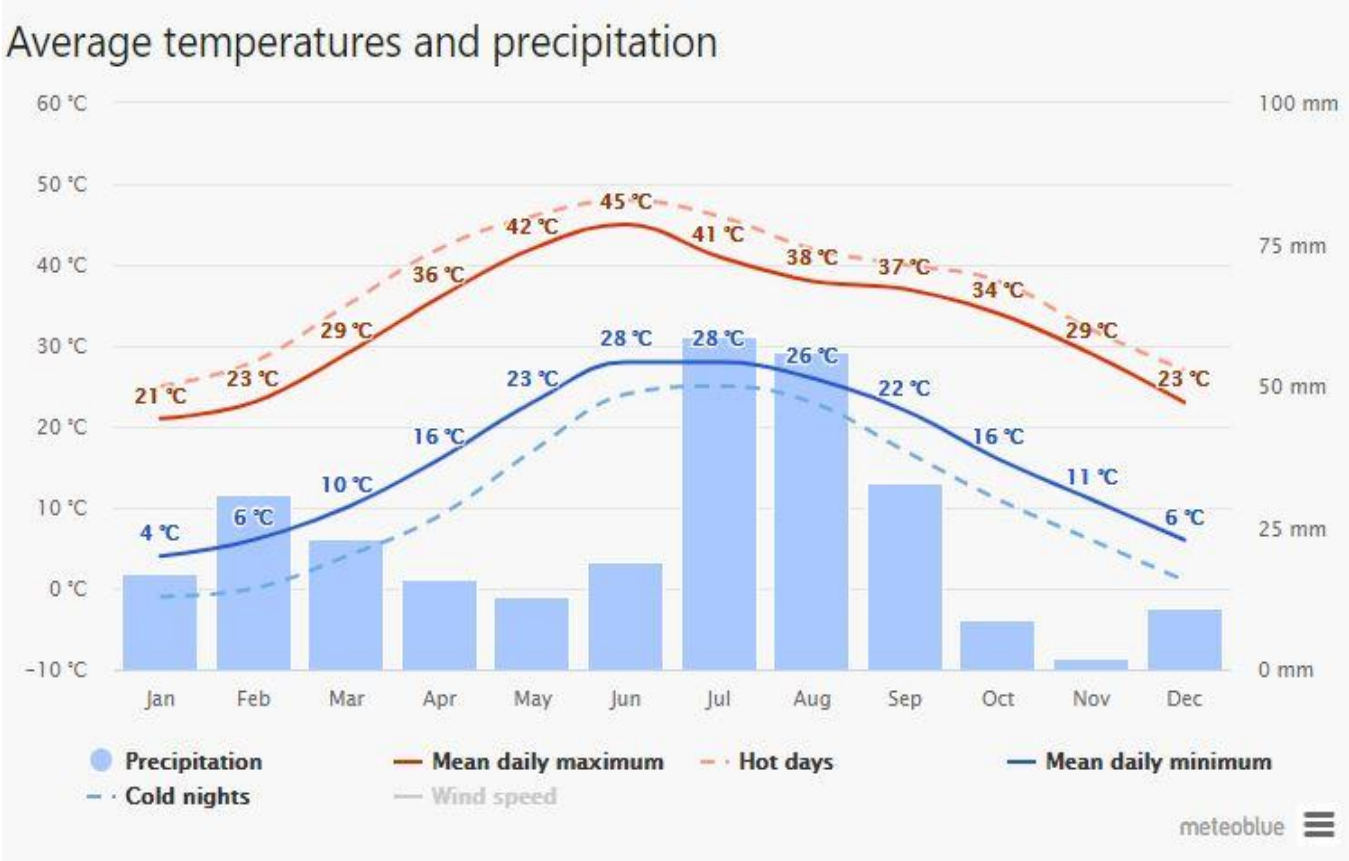
Lahore features a five season semi-arid climate and the seasons are winter, summer, spring, autumn and monsoon. The hottest month of the year is June when temperatures routinely exceed 40 ^{0}C. The wettest month is July, with heavy rain falls and evening thunderstorms with the possibility of cloudbursts. The coolest month is January with dense fog.

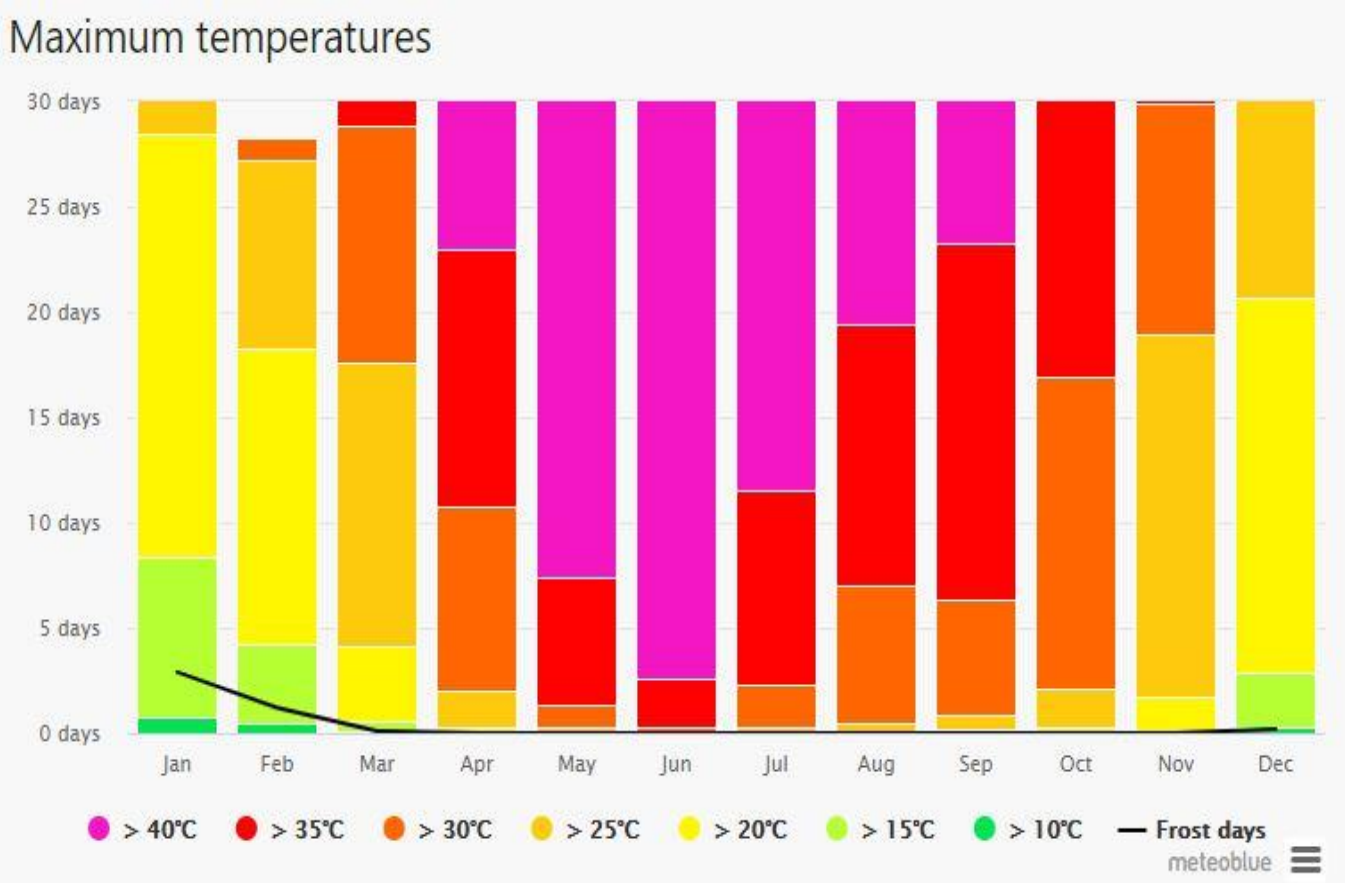
A short description is given hereunder to present the climatic conditions of the area.

Month	Mean Temperature		Precipitation (mm)	Relative Humidity AT 0500 HRS (%)	Relative Humidity AT 2000 HRS (%)
	Maximum	Minimum			
January	19.8	5.9	28.92	80.4	51.9
February	22.0	8.9	37.14	79.0	52.4
March	27.1	14.0	34.3	68.6	42.2
April	33.9	19.6	44.32	50.2	25.3
May	38.6	23.7	24.38	45.7	27.2
June	40.4	27.3	91.62	59.1	40.9
July	36.1	26.8	150.52	76.7	60
August	35.0	26.4	161.42	78.8	65.9
September	35.0	24.4	67.28	74.4	56.4
October	32.9	18.2	11.74	70.6	44.2
November	27.4	11.6	4.44	77.1	48.8
December	21.6	6.8	9.94	82.9	53.73
Annual	30.8	17.8	666	70.34	47.4

Temperature

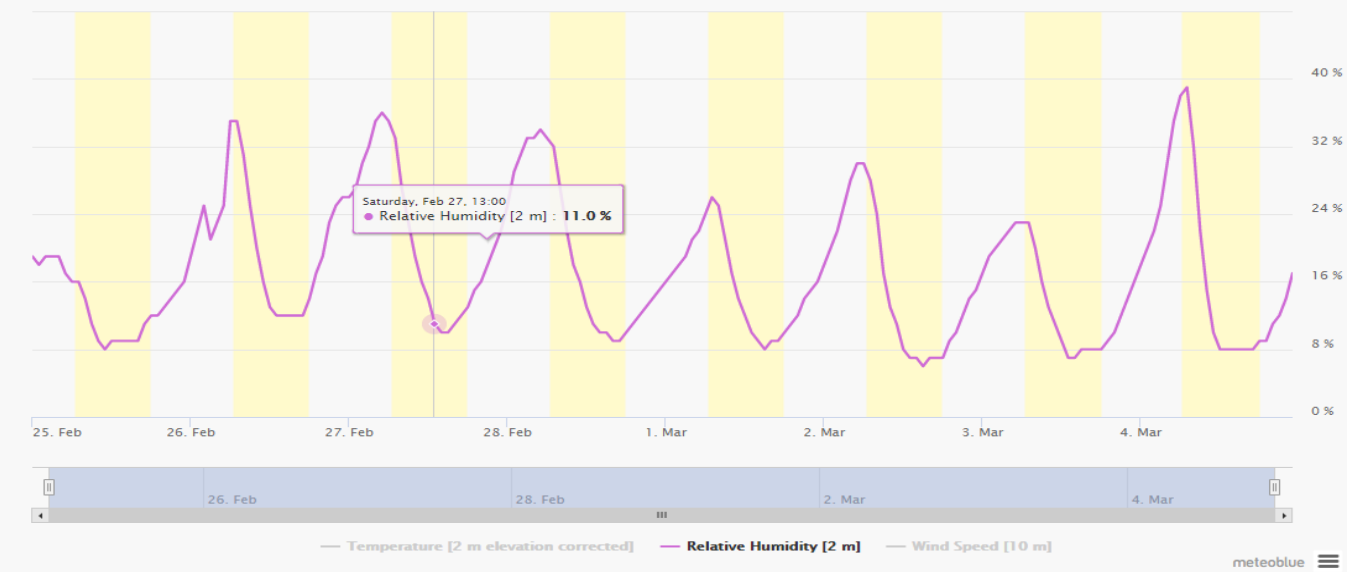
The climate of the project area is hot in summer and cold in winter. May and June are the hottest months with maximum temperature reaching 40.4°C. January is the coldest month with minimum temperature falling to 5.9°C. The summer season starts towards the end of April and continues till September. The winter begins in November and lasts till February. The spring season exists during March and April and is pleasant.


Average temperatures and precipitation
60 °C
50 °C
40 °C
30 °C
20 °C
10 °C
0 °C
-10 °C
100 mm
75 mm
50 mm
25 mm
0 mm
21 °C
23 °C
29 °C
36 °C
42 °C
45 °C
41 °C
38 °C
37 °C
34 °C
29 °C
23 °C
4 °C
6 °C
10 °C
16 °C
23 °C
28 °C
28 °C
26 °C
22 °C
16 °C
11 °C
6 °C
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Precipitation
Mean daily maximum
Hot days
Mean daily minimum
Cold nights
Wind speed
meteoblue



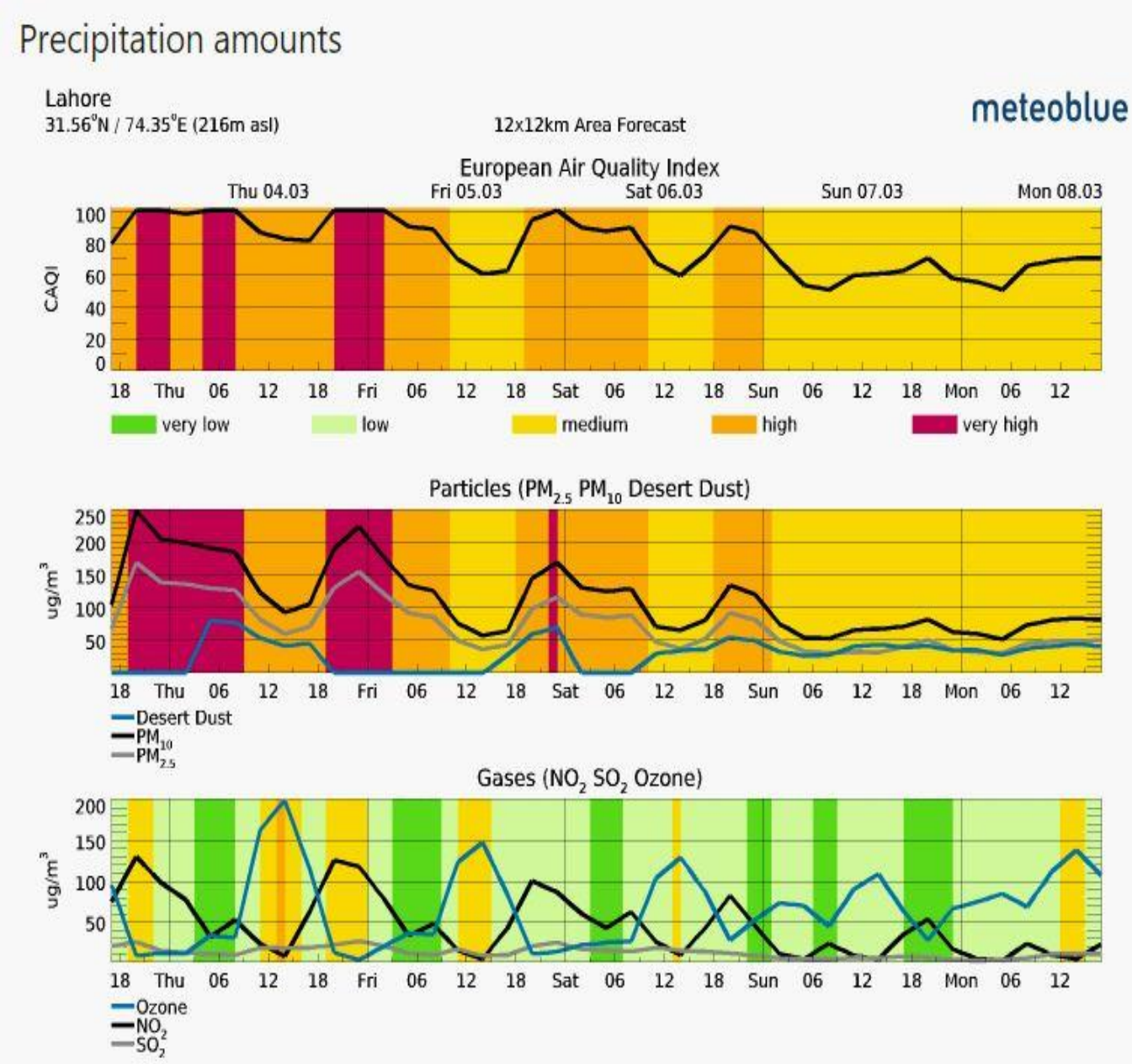
Humidity

Annually relative humidity for this area has been worked out as 70.34%. The maximum recorded humidity for the district is 82.9% in December while the minimum humidity is 45.7% in May.



Precipitation

The average annual rainfall is 666 mm. Most of the rain occurs during monsoon in summer which often results in flooding of the nearby water drain and canal. The groundwater level is improved toward the end of the season in September and October.



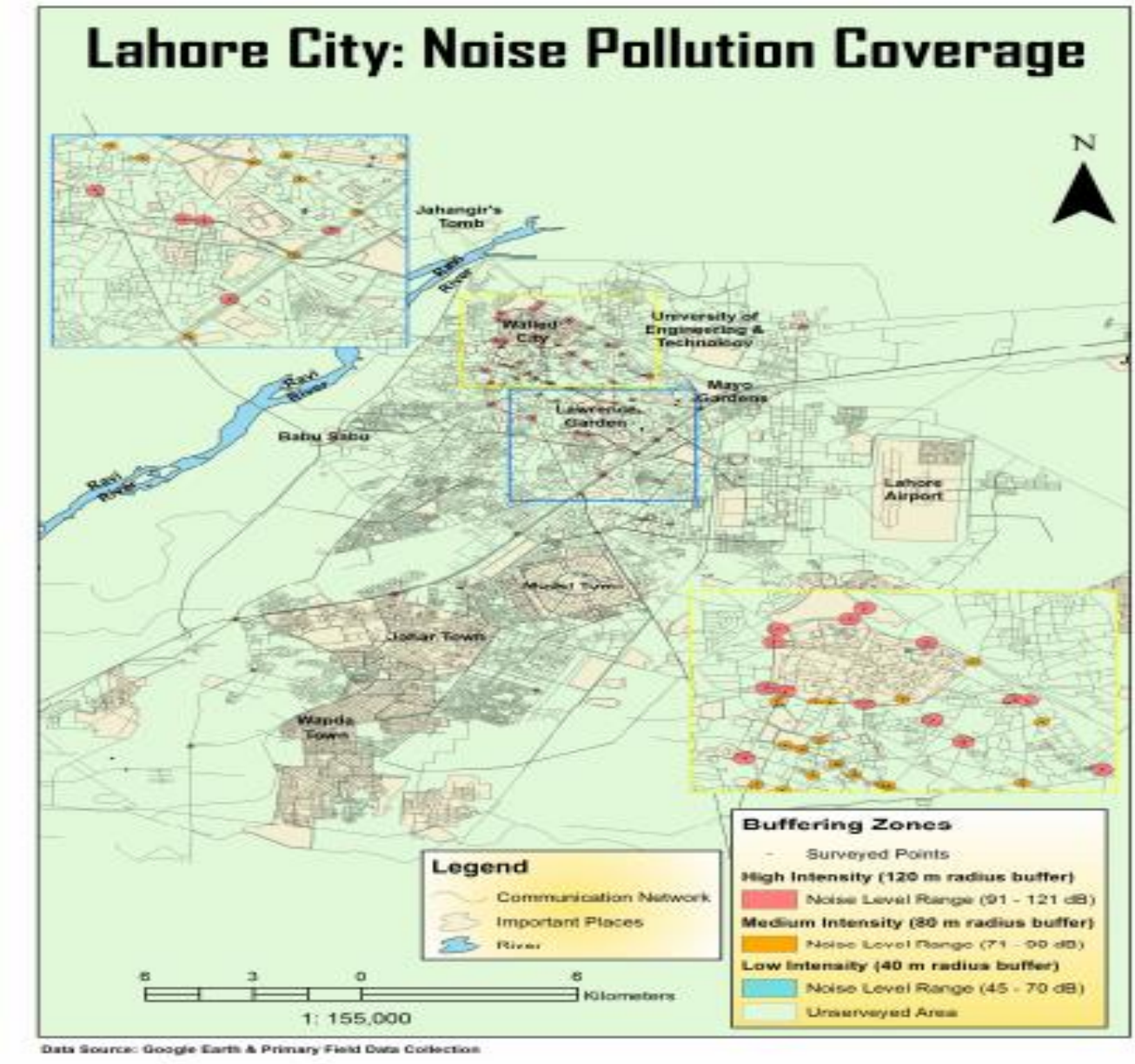
Ambient Air Quality

In the project area, Particulate Matter (SPM & PM10) and Oxides of Nitrogen (NOx), Sulphur Dioxide (SO2) and Carbon Monoxide (CO) are the major air pollutants. Traffic on road is the main source of air pollutants including NOx, SO2, CO, PM, HCs, smoke, etc. Factories and industries

are also contributing to the pollution in the district

Ambient Noise

A common form of noise pollution is from transportation, principally motor vehicles. Other sources are car alarms, office equipment, factory machinery, construction work, audio entertainment systems, loudspeaker etc.



Ground Water

The water table depth in the central part of the city has fallen below 130 feet (40 metres) approximately and is projected to drop below 230 feet (70 metres) in most areas by 2025. The total surface water diverted to Lahore is 6.02 million cubic metre per day (MCM/day) and is mainly

used for agricultural purposes. The Bambawala-Ravi-Badian-Deplapur (BRBD) Canal mainly feeds the command area of Upper Bari Doab Canal on the Pakistan side of the Pak-India border. The Upper Bari Doab Canal irrigates command areas of Lahore Branch, Canal, Butcher Khana distributary, Main Branch Lower and other smaller channels. The remaining flow of the BRBD Canal supplements Depalpur Canal. The Lahore aquifer is broadly viewed as a single contiguous, unconfined aquifer. Groundwater for drinking purposes is extracted from a depth of 120-200 meters (m). It is pumped for Lahore's domestic, industrial and commercial purposes. In order to deal with the vagaries of surface water supplies, more than 10,000 tube wells have been installed for agricultural purposes. The average annual rainfall of Lahore is 715 mm. However, its recharge to groundwater in urban areas is minimal due to urbanization. In general, groundwater discharge is higher than recharge, which is the main reason for the rapid depletion of groundwater in the city.

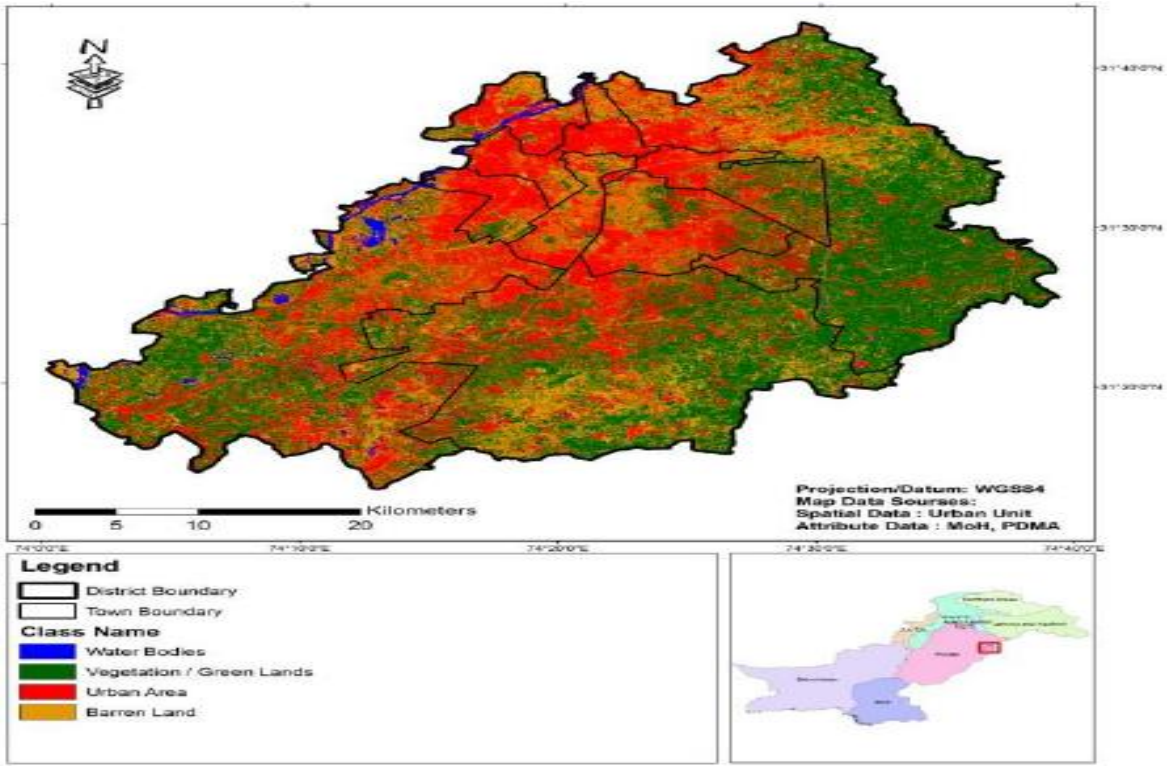
Geology

Lahore city is situated at an average elevation of 210 meters above mean sea level. Lahore city lies on the alluvial plain called Bari Doab. Doab is a local word for area between rivers. Bari Doab is a part of the Indo-Gangatic alluvial plain formed by the Indus River and its tributaries. It is bounded by Ravi and Chanab rivers in the northwest and west and by Sutlej River in the southeast. North eastern boundaries of Doab lie near the foothills of the Himalayan Ranges. The Bari Doab is covered by Quaternary alluvium which overlies semi-consolidated Tertiary rocks or Metamorphic and igneous rocks of Precambrian age. Except for a small area in the northeastern part of Doab where basement rock was encountered no information is available at present regarding the distribution of Tertiary and Precambrian rocks in the Doab. Probabilistic seismic hazard assessment recently carried out for Lahore area as part of the revision of Seismic Provisions of the Building Code of Pakistan shows that the Project area falls in Zone 2A.

Land Use

Limited and its surrounding area fall in industrial area. The growth and spread of the city is seen towards south-west direction. The reason is that the availability of well-constructed and connected roads provides means to residents for having residences far away from the main city center. This condition will have adverse repercussions in the area because of the allied difficulties connected to the urban sprawling, environmental issues, and transportation problems, lack of civic amenities, crime and associated social issues.

Land Use Map Lahore:



1. Ecological Environment

A detail of ecological account of the Project and Study Area is given below:

Flora

The area in which the project site is located was once covered with native vegetation, mostly consisting of trees like Kikar (Acacia nilotica) and Shisham (Dalbergia sissoo). With the onslaught of civilization and industrialization, this vegetation was cleared for agricultural, commercial or industrial land use purposes. The current ecological details of the area in general and study area in particular are given below:

Trees

A field study related to the identification of tree species in the study area was also conducted. A vast majority of trees were observed in the localities visited as well as open fields. These are Tali/Sheeshum (Dalbergia sissoo), Kikar (Acacia nilotica), Safeda (Eucalyptus cinerea), Neem (Azadirachta indica), Papaya (Carica papaya), Bottle Brush (Callistemone citrinus) and Borh (Ficus

bengalensis).

A tabular comparison is given hereunder to explicit frequency of each species in three zones of study area:

List of Trees Identified in the Project Area

Serial Number	Common Name	Scientific Name
1	Tali/Sheshum	Dalbergia sissoo
2	Kikar	Acacianilotica
3	Safeda	Eucalyptus cinerea
4	Neem	Azadirachta indica
5	Piple	Ficus religiosa
6	Papaya	Caricapapaya
7	Shree	Acaciagreggii

Grasses

A number of grass species were identified. These are Crow Foot Grass (Dactyloctenium aegyptium), Dabri Grass (Dichanthium annulatum) and Indian Dab (Cynadone dactylone).

Grasses in Study Area

Different types of grass species were also identified outside the project site during our visits to the nearer localities, these species include Dabri Grass (Dichanthium annulatum), Lesser Bulrush (Typha angustifolia) and Indian Dab (Cynadone dactylone).

Frequency (of occurrence) of these species in different zones of the study area is as under:

List of Grasses Identified in the Project Area

Common Name	Scientific Name
IndianDab	Cynadonedactylone
Dabri Grass	Dichanthium annulatum
LesserBulrush	Typhaangustifolia

Herbs and Shrubs

A large number of herbs and shrubs species were identified in the area. Among these species, the most dominant were Jangli Booti (Parthenium hysterophorus), Bathu (Chenopodium album) and Ak (Calotropis procera). Frequency of these species in different zones of the study area is as under:

List of Herbs and Shrubs Identified in and Around the Project Area

Common Name	Scientific Name
JangliButi	Partheniumhysterophorus
Puth canda	Achyranthesaspera
Bathu	Chenopodiumalbum
Ak	Calotropis Procera
Bhang	Canibus sativa

Medicinal Plants

Medicinal Plants within project site

A number of medicinal plants in the area were identified which are AK (Calotropis procera), Amaltas (Cassia fistula), Pilak, Jangli kashni and Itsit (Boerhavia diffusa).

List of Medicinal Plants Identified in the Project Area

Sr #	Study Area	
	Common Name	**Scientific Name**
	AK	Calotropis procera
	Amaltas	Cassia fistula
	Itesit	Boerhavia diffusa
	Ajwain	Hyoscyamus niger

Ornamental Plants

Ornamental Plants Project Site

During our ecological survey to the nearby localities, a number of ornamental plants were identified at some houses and Deras, which are listed in table below.

List of Ornamental Plants Identified in and Around the Project Area

Sr #	Study Area	
	Common Name	**Scientific Name**
1	Bottle Brush	Callistemone citrinus
2	Araucaria	Araucariaheterophylla
3	Bouginvillea	Bougainvilleaspectabilis
4	Milkwood pine	Alostonia scholaris

Vegetables

Vegetables in around and Project Site

No vegetables are grown in or around project site.

Vegetables in Study Area

Some important of these are Phool Gobhi/cauliflower (Brassica oleracea Ver. botrytis), Band Gobhi (Brassica oleracea Ver. capitate) Turnip, Raddish (Raphanus sativus), Carrot (Daucus carota), Bhindi, Tomato (Lycopersicum esculentum), Vegetable Marrow (Cucurbita pepo), Baingan, etc.

List of vegetables Identified in and Around the Project Area

Sr #	Study Area	
	Common Name	**Scientific**
1	Bangun	Solanum melongena
2	Bhendi	Abelmoschus esculentus
3	Karela	Momordica charantia
4	Phool Gobhi	BrassicaoleraceaVer. Botrytis
5	Raddish	Raphanus sativus
6	Tomato	Lycopersicum esculentum
7	Marrow	Cucurbitapepo

Agriculture

The soil of the area is quite suitable for all kinds of vegetation including fodder, orchards, vegetables and other seasonal crops. The pattern mainly consists of wheat-rice system, while other agriculture practices include the cultivation of sugarcane, Maize, etc.

Farm Traction Power

Tractor is the sole source of farm traction power. No farmer was found using animal traction power. There was significant variation in tractor ownership across farm size groups. However, more than

half of the farmers owned tractor while rest were hiring the services for land preparation.

Irrigation

The tube-wells and canal water are the main source of irrigation water for wheat, rice and other crops and fodder. Also, many farmers irrigate their fields with contaminated water of drain and also many studies have been conducted to assess the level of toxic heavy metals in the soil and vegetables irrigated by drain water and their ultimate impacts on human health. It has been highly recommended during these studies not to use the contaminated water of drains for agricultural practices. On the other hand plenty of ground water is easily accessible for agriculture use.

Fauna

The area provides healthy environment for the growth and reproduction of a diverse nature of fauna. A short description is given in the following paragraphs

Mammals

Mammals within project site

During our survey to the project site, some mammals were identified evidently while some were reported by the workers like Cats (Felis catus), Rats (Rattus rattus) and Squirrel (Sciurus carolinensis).

Mammals in Study Area

The wild and common or domesticated mammals found in the study area are Dogs (Canis familiaris), Cats, House Rats (Rattus rattus), Bats, Horses (Equus caballos), Donkeys (Equus africanus asinus), Mules, Buffaloes, Cows (Heracleum lanatum), Goats (Copra hircus) and Sheep.

List of Mammals Present in and Around the Project Area

Project Site		**Study Area**	
Common	Scientific	Common	Scientific
Cat	Felis catus	Cats	Felis catus
Rat	Rattus rattus	Dogs	Canis familiaris
Squirrel	Sciurus carolinensis	Cows	Heracleum lanatum
		Goats	Copra hircus
		Horses	Equus caballos
		Donkeys	Equus africanus asinus

Reptiles

Reptiles within Project Site

No reptiles were identified within the project site

Reptiles in Study Area

Above reptiles were also seen in study area in localities and field. The most common reptiles include Snakes, Pakistani Cobra (Naja naja karachiensis), Lizards, Varanis (Goh/large lizard), Spiders and Scorpions, etc.

List of Reptiles Present in and Around the Project Area

Common Name	**Scientific Name**
Lizards	
Spiders	
Scorpions	
Pakistani cobra	Naja naja karachiensis
Goh/large lizard	Varanis

Amphibians

A number of Amphibians found in the tract include Common Frog (Rana tigrina), Common Toad (Bufo bufo) and Tortoise (Chitra indica).

List of Amphibians Present in and Around the Project Area

Project Site		**Study Area**	
Common Name	ScientificName	Common Name	ScientificName
Common Frog	Ranatigrina	Common Frog	Ranatigrina
Common Toad	Bufo bufo	Common Toad	Bufo bufo
		Tortoise	Chitraindica

Different types of birds' species were identified within the project site. The bird's species identified in these areas include House Sparrow (Passer domesticus), House Crow (Corvus splendens), Common Mynah (Acredotheres tristis), Tatiri (Vanellus indicus), Cheel, Bagle, Bulbul (Pycnon tus cafer), Parrots (Psittacula krameri), Pigeons (Columbia livia), Dove (Stigmetopelia senegalensis), Surkhab, Ullu, etc. are also seen in the area.

List of Birds Present in and Around the Project Area

Sr #	Project Site		Study Area	
	Common Name	Scientific Name	Common Name	ScientificName
1	House Sparrow	Passerdomesticus	Parrots	Psittacula krameri
2	HouseCrow	Corvus splendens	HouseSparrow	Passerdomesticus
3	Common Mynah	Acredotheres Tristis	HouseCrow	Corvus splendens
4	Tatiri	Vanellus indicus	Common Mynah	Acredotheres tristis
5	Pigeons	Columbia livia	Tatiri	Vanellus indicus
6			Pigeons	Columbia livia
7			Dove	Stigmetopelia Senegalensis
8			Bulbul	Pycnon tus cafer
9			Cheel	

Wildlife Sanctuaries and Game Reservoirs

The Safari Zoo Park & Wildlife Park Lahore is present in the Lahore for the conservation of endangered species. However, no wild life sanctuary or game reservoir is located in the vicinity of the project area or in the project influenced area.

Rare or Endangered Species

There are no rare or endangered species in the study area.

3. Socioeconomic Environment

Human settlements are symbol of typical haphazard rural growth based on ill planned developmental procedures showing common indicators of all the unorganized procedure of rural settlement of the province. These localities were developed on need oriented basis. No bye-laws, rules and obligations necessary for human settlement, construction or expansion and infrastructure development were considered. These localities are also the picture of stereotype rural residential areas which lack basic amenities, improper roads, and poor drainage system, deteriorating hygienic and sanitary conditions causing bad effects on human health.

Objectives of the Study

The main objectives of socio- economic study of the project area were:

- To furnish appropriate information about the baseline socio-economic conditions
- To identify and assess significant social impacts of the Project activities on the surrounding area and people
- To propose suitable means for probable mitigation of the significant adverse social impacts

An Overview of Socio-economic Conditions

This section describes the status of overall socio-economic baseline conditions prevailing in the study area. It deals with various socio-economic and cultural aspects of the community including income, employment, professions, basic facilities, education and health, social structure, culture, women's status, traditions, ethnics, sectarian status and residential needs of the local people.

Area represents lacking some basic amenities of an urban area. Improper social structure, deprived status of youth and aged are common social factors in the area.

Analysis of Socio-economic Conditions

This section presents a locality-wise analysis of existing status of various socioeconomic parameters such as income, employment, basic facilities, education, health, recreation, migration, conflicts, ethnic status, role of women, professions, residential conditions, etc.

A) Sources of Income

The economy of Lahore has a diversified base spanning from telecommunication, information technology, manufacturing industry, engineering, pharmaceuticals, steel, chemicals and construction material. As a major urban center, the economy of Lahore has relatively prospered.

Lahore is hailed as the industrial belt of Pakistan and is home to the largest IT Park in Pakistan. It is the country's second largest economic hub and the commercial capital of Punjab. In 2008, the city was ranked with high efficiency to be classified as a gamma world city. Majority of the people are working as labors in industries, and many do their own common business (shopkeepers).

B) Basic Facilities

Basic facilities like electricity, roads, transport etc. are present in almost every area of the Lahore but are disorganized and mismanaged. Civic amenities like markets are not available in some of the slum areas.

C) Educational Facilities

Educational facilities up to master level are available in almost all the localities and are easily approachable. Lahore is Pakistan’s largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. Most of the reputable universities are public, but in recent years there has also been an upsurge in the number of private universities. The current literacy rate of Lahore is 64%.

The system is divided into five levels: primary (grades one through five); middle (grades six

through eight); high (grades nine and ten, leading to the Secondary School Certificate); intermediate (grades eleven and twelve, leading to a Higher Secondary School Certificate); and university programs leading to graduate and advanced degrees.

D) Medical Facilities

The proper health care facilities are present in the area for both male and female population.

E) Recreational Facilities

Lahore is the hub of cultural & religious recreational places. Many famous recreational places such as Badshahi Mosque, Shahi Qila, Tomb of Jahangir, Shalimar Garden, Minar-e-Pakistan, Lahore Zoo, Lahore Museum, Safari Park, Jallo Park, etc. are present for recreational activities. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals. Religious, ethnic, political and tribal conflicts do not exist among the people of the study area.

G) Types of Community

The main religion in Lahore is Muslim – mostly Sunni or Shia- which makes up 94% of the population. The remaining 6% are nearly all Christians. There are also a small number of minority religions such as Sikh and Hindu. The Lahoris are a cultural bunch of people celebrating many festivals around in the year – some religious, some historical and some are combinations of ancient and modern- even western – celebrations.

H) Types of Family

The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

I) Ethnic Status

The main castes and groups of the Lahore district are Arain, Jat, Rajput, Malik, Pathan, Mughal, Sheikh, Komboh and Gujjar. Besides, there are also village artisans, which include Lohars (blacksmiths), Tarkhan (carpenter), Kumhars (potters), Mochis (cobblers), Machhis (water-carries), barbers and weavers etc.

J) Status of Women Literacy

A vast majority of the females of the Study Area are illiterate which shows very low educational trend among females; however, young females have high literacy rate showing positive trend in female education.

K) Decision Making Authority

Majority of the females have no authority in decision-making process regarding their life. This shows non-participation of the females in decision-making process regarding the females and other issues.

L) Role of Women

Role of female is conventional and traditional. Most of the females are engaged in housekeeping. However, females also perform outdoor activities and duties. Females are supposed to be responsible to perform all the family activities and are involved in all types of family functions.

4.5.3 Quality of Life Values

If we specifically about the project area then majority of the people has to adopt seasonal occupation to supplement their income due to low-income level and inconsistent income opportunities. Majority of the people were working as labors, farmers and many do their own

common business (shopkeepers). A fair number of people work as laborers in the nearby cities. The locals of this are provided with basic facilities like electricity, roads, transport etc. but are disorganized and mismanaged. If we talk about educational facilities then education up to primary level are available in almost all the localities and are easily approachable. The proper health care facilities are not present in the area for both male and female population. Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life. The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

5. **Lab Reports of Environmental Analysis**

Testing of different parameters has been done by proponents. The copies of lab reports of different environmental parameters are given in annexure.

SITE SUITABILITY:

The present site for M/S AAA Chemical House is under the ownership of proponent. All commodities are at a suitable distance from project site as they will not impacted by the construction and operational activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of said project.

All facilities of infrastructure, electricity, roads, and communication facilities are present in current location. The project site is devoid of flora & fauna having significant importance.

IMPACTS AND THEIR MITIGATION MEASURES ENVIRONMENTAL

2 IRONMENTAL IMPACTS DUE TO PROJECT & THEIR MITIGATIONMEASURES

This section identifies the potential impacts; related with location, design, constructionand operation of the Project on the physical, ecological and socio-economic domains of the environment. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development. Strict environmental management will be observed during the project construction and regular operation phases. Legal requirements of the PEPA (amended 2012) and the PEQS will the rating standard for the activities. Compliance with the EMP and EMP, as per recommendations in this EIA report will be adhered to with full spirit.

The project proponent is filing with the EPA Punjab, written Affidavit and Undertaking onjudicial papers, that the project throughout its life will operate under EnvironmentalManagement Order. Under these conditions the project at its all stages including from construction to regular operation will go in compliance with the PEQS. The projectactivities will, therefore, neither adversely affects the population nor the environment around the project site. Evaluation of the anticipated impacts from the project activity and their mitigation measures are described below.

4.1 ENVIRONMENTAL PROBLEMS DUE TO INSTALLATION AT PRESENT LOCATION OF PROJECT

Environmental problems related to location of the project are mostly in the areas of physical setting, socioeconomic setting, ecological setting and special areas. Field survey revealed that the impacts of the project due to its location are mostly insignificant in nature. There is no disturbance in physical and socioeconomic and ecological settings as the land is barren and no specific crops are grown there. The project is located away from residential setting so there will no resettlement and relocation problems.

4.2 PROJECT DESIGN RELATED ENVIRONMENTAL PROBLEMS

The design unit has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards. Local aesthetic

value is another issue to be considered during project design. The proposed site iscomposed of the following major sections:

- The canopy over pumps (fore court)
- Offices and shops

- Drive ways: walkways; acceleration and deceleration lanes; and parking areas
- Oil/water interceptor
- Washrooms

Possible Impact	Impacts Magnitude	Proposed Mitigation Measures
Impact on excavated soil	Minor/Reversible	• Control construction especially during wet/rainy conditions • Landscaping • Compact loose properly • Dispose excavated loose properly
Compromising Safety and health of workers, neighbors, pedestrians and visitors	Minor/Long Term	• Fence off the site • Display warning signs of construction works. • Issue workers with safety appliances • Ensure safe access to the site through culverts. • Provide a first aid kit. • Avail pit latrine and bathing facilities
Traffic and Transport Impacts	Minor/Short Term	Construct acceleration and deceleration lanes. Deliver materials on need basis. The personnel on the ground should guide traffic movements. Damaged drainage should be repaired and maintained after construction.

Increased Human Activities – Increased Solid Waste Generation	Moderate/Long Term	• Place litter bins at the site. • Ensure that there are elaborate programmes of waste removal frequently. • Waste generated should be contained appropriate.
Impact on air quality	Moderate/Long Term	• Wet or cover dust generating activities.

Possible Impact	Impacts Magnitude	Proposed Mitigation Measures
		□ Provide PPE to the workers. □ Switch off vehicle engine and machinery when not in use

4.3 ENVIRONMENTAL PROBLEMS ASSOCIATED WITH CONSTRUCTION

The construction will also sometimes go round the clock, therefore, during all constructionactivities the followings will be the major pollutants/wastes or project related pollution aspects:

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
Dust emissions likely to occur during the demolitions, excavation of the top soil and loading and transportation of the construction waste.	Minor/Short Term	□ Watering all active construction areas when necessary. □ Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. □ Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.

		- Fast growing trees will be planted around theproject area to act as a wind breaker to reduce the particulate matter. - Provision of PPEs to workers
Hydrology and water quality degradation due to Storm water runoff from the site and excavation.	Minor/Short Term	- Installation of septic tank. - The proponent will prepare a hazardous substance control systems and emergency response plans that will include preparations for quick and safe clean up of accidental spills. - Oil absorbent material, taps and storage drums will be used to contain and control any minor releases of engine and other equipment oil.
Oil spills from machines to be used on site and vehicles.	Minor/Short Term	• The contractor will control the dangers of oil spills during construction by maintaining the machinery in specific areas designed for this purpose hence will not be a serious impact as a result of the construction.
Noise pollution due to the	Minor/Short	• Install portable barriers to shield

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
moving machines (mixers, tippers, communicating workers) and incoming vehicles	Term	compressors and other small stationary equipment where necessary. - Use quiet equipment (i.e. equipment designed with noise control elements). Install sound barriers for pile driving activity. - Limit pickup trucks and other small equipment, observe a common sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.
Workers accidents and hazards during construction.	Minor/Long Term but reversible	- Provision of appropriate and adequate Personal Protective Equipment (PPE) to employees. - Enforcement and proper use of PPE by all construction workers. - Provision of appropriate tools, equipment and machinery in sound workingconditions to employees. - Proper arrangement of lighting to reduce accidents. - Development of clear policies on treatment of injured personnel.

4.4 ENVIRONMENTAL PROBLEMS RESULTING FROM PROJECT OPERATION

Environmental problems relating to gaseous emissions, PM and noise (from stand by generator) during operation of the project on regular basis will be of minor significance as they will be operate during the power shut down only.

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
Waste Water	Moderate/Long Term	Treatment of water through septic Tank where oil interceptors will be installed prior to septic tank before discharge into the environment Discharge effluents should meet the effluent standards as PEQS.
Air and Noise pollution	Minor/Short Term	Proper maintenance of facility equipments Proper maintenance of transporting vehicles. Operations should only be carried out only during 0800hrs-1700hrs.
Solid waste generation	Moderate/Long Term	• Sale of recyclables and reusable materials to minimize waste for disposal; Establishing a waste generation and collection register for tracking the

Possible Impact	Impact Magnitude	Proposed Mitigation Measures
		disposal of waste. Adequate collection and storage of waste on site and safe transportation to the disposal sites and disposal methods at designated area shall be provided. Installation of receptacles that enhance segregation of waste at source as provided forLegal Notice
Storage Tank & Pipeline Leakage	Minor / Short Term	• Design of pipeline to ANSI Code, which includes the safety and loss prevention features. • Pipeline material to be manufactured to API standard, which specifies yield strength and pressure testing. • Pressure testing of tanks and pipelines will be conducted.

		• Welding of Tanks to be performed to APIstandard with specific inspection procedures.
Occupational accidents and hazards	Minor/Long Term	• Necessary health and safety rules shall be enforced by the management to ensure that all staff members adhere to these standards and are thus safe. • Covers for refuse containers and appropriate personal protective equipments to be used by workers shall also be provided by the proponent. • First Aid kits will be provided and staff members trained in first aid administration. • Clear signage will be posted alerting of possible danger situations.

4.5 POSITIVE IMPACTS OF THE PROPOSED PROJECT

4.5.1 Positive Impacts during Construction Phase

4.5.1.1 Employment Opportunities

One of the main positive impacts during projects construction phase will be the availability of employment opportunities especially to casual workers and several other specialized workers. Employment opportunities are of benefit both economically and in a social sense. Apart from casual labor, semi skilled and unskilled labor, formal employees are also expected to obtain gainful employment during the period of construction.

4.5.1.2 Improving growth of the economy

Through the use of locally available materials during the construction phase of the project including cement, concrete, steel, timber, sand, ballast electrical cables etc, the project willcontribute towards growth of the economy by contributing to the gross domestic product. The consumption of these materials, fuel oil and others will attract taxes which will be payable to the government hence increasing government revenue while the cost of these raw materials will be payable directly to the producers.

4.5.2 Positive Impacts during Operational Phase

4.5.2.1 Employment opportunities

Employment opportunities are one of the long term impacts of the project that will be realized after construction and during the operation and maintenance whereby skilled staffwill be recruited. These will also involve other sources of employment such as direct service provision.

4.5.2.2 Increase in revenue

There will be positive gain for the revenue system arising from the services rendered by the operations. Such an established facility will provide an opportunity for taxation of the recovered oil increasing the country revenue.

4.6 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

As described above the worth mentioning wastes will be sewage and solid waste in the plant in the form of waste paper/bottles etc of the project. In order to enhance environmentthe following measures will be adopted:

(a) Solid waste & effluent management

It is expected there will be a generation of both solid and liquid wastes. Solid wastes are likely to consist of paper, plastic containers and organic waste from foodstuffs eaten by employees. The proponent will address solid waste in the following ways:

- Rain water disposal will be done through adequate system to be provided at all levels of the project building.
- Sewage will be discharged to the main sewerage system; after its treatment through septic tank and also getting the permission from the competent authority.
- Sale of recyclables and reusable materials to minimize waste for disposal.
- Contracting a licensed waste handler to collect and dispose of the waste.
- Establishing a waste generation and collection register for tracking the disposal ofwaste.

- All hazardous chemicals will be stored in original containers for ease
- ofidentification and handling.
- Information on use and handling of hazardous substances from the manufacturer‟ shazard data sheets will be obtained and communicated to concerned workers.
- Appropriate PPE will be provided, and usage at all times ensured, to the workershandling hazardous substances.
- An inventory register will be kept and updated as appropriate.

(b) Fire Hazards/ explosions mitigation

The risk of fire and explosions emerged to be of paramount concern to the neighbors of the proposed project. The following measures will be put in place to reduce the likelihood of fires and explosions and to considerably manage such situations in case of occurrence;

- The fuel storage tanks to be installed have undergone thorough calibration, pressurechecks, and leakage tests and have been passed as safe for use by an accredited company.
- Installation of the storage tanks will also be done by an accredited company to the standards specified in the Petroleum Act which highlights the methods of storage of petroleum products.
- Fire extinguishers, fire hydrants and fire alarms will be provided at convenient locations within the facility. These will be regularly inspected and maintained by a reputable fire security company.
- Fire drills will be conducted at least biannually to ensure that workers are conversant with the action to take in the event of fire or explosions.
- Fire awareness materials will be placed in strategic locations within the facility to educate the workers and customers on what to do in the event of fire.
- An elaborate emergency response plan will be developed to address the risks associated with the facility's operations.
- Leak detection devices will also be installed at appropriate areas to warn on leakages that are likely to trigger fires. Workers will be trained on handling accidental spillage of flammable substances that may also trigger fires.

- No smoking signs will be displayed as appropriate and measures taken against
- those not adhering to this order.

(c) Alternative source of Energy

Electricity will be used from WAPDA however the facility should have silenced stand-by generators to be used during power blackouts. These generators should be serviced regularly to avoid air pollution.

(d) Spill Prevention

Creating and implementing a spill prevention control and countermeasure plan is required by the Environmental Protection Agency to prevent the discharge of oil and spills. An SPCC plan identifies proactive measures to prevent a spill from occurring or reaching the environment. In addition to meeting EPA regulations, and SPCC plan help prevent slips, trips and falls from occurring within work environment.

Operating procedures that prevent spills

Employees are trained to implement spill prevention practices for work with and around petroleum products sources. This section of plan outlines best practices, recommendations and training procedures such as:

- Storage instructions (i.e., do not store petroleum products sources near catch basins or floor drains)
- Management practices (i.e., have supervision during the loading and unloading ofpetroleum products)
- Product recommendations (i.e., use pads, drip pans and funnels when transferringpetroleum products from a portable container)
- Layout maps (i.e., facility map that denotes location and contents of each container, tank, transfer station and piping)

Control measures to prevent a spill from reaching the environment

This section of the plan identifies the types and locations of spill-containment productsin order to quickly control a spill. By maintaining stocked spill kits at spill-prone locations that can increase the likelihood those responders will be able to handle a spill before it becomes reportable. It also is important to keep

a combination of absorbent products stocked and onsite, such as booms, pads and socs. A Spill Kit including absorbent materials is stored nearby to facilitate cleanup response if a spill occurs.

Countermeasures to contain clean up and mitigate the effects of an petroleum products spill that reaches the environment

When a spill is not prevented from reaching the environment, quick-response countermeasures need to be in place. Within this section of the plan, facilities will identify proper evacuation policies, authorized employees for cleanup and contact information.

(e) Health and safety

- PPEs will be provided at all stages of project cycle to all workers and it will be ensuredthey use them at all time.
- A policy on health and safety at the workplace will be developed.
- All the employees shall be trained on safety and health.
- A health and safety audit will be conducted annually as required by the occupationalhealth and safety department.

Environmental Management and Monitoring Program

3 ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

This EMP describes the mitigation and management measures to address the environmental issues during construction, its regular operation and decommissioningphases of the proposed project.

3.1 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The objectives of the EMP are as follow:

- To outline functions and responsibilities of responsible persons.
- To state standards and guidelines, which are required to be achieved in term of environmental legislation
- To outline mitigation measures and environmental specifications which are required to beimplementation for all phase of the project in order to minimize the extant of environmental impacts and to manage environmental impact associated with the proposedproject.
- To prevent long term or permanent environmental degradation
- To identify training requirement at various levels.

3.2 INSTITUTIONAL CAPACITY

Project Proponent will be responsible for Monitoring and Evaluation, but Environment consultant (of the proponent) will responsible to monitor EMP implementation in thefield and reporting to the Project Proponent. The Project Proponent will integrate monitoring reports in the main quarterly reports of the project. District Office of the EPA at the project area will monitor the overall activity at the site.

3.3 TRAINING SCHEDULE

In order to effectively operate the EMP all the staff to be engaged in this activity should be trained extensively.

The person to monitor gaseous emissions, PM and noise levels should be

extensively trained to handle his job capably. Training program should include use of monitoring

instruments, data generation, processing, interpretation, recording and presentation. Training of the workers should be done on quarterly basis.

3.4 SCOPE OF ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides mitigation and management measures for the following phases of the project:

5.4.1 Construction Phase

This section of EMP provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required within the construction phase are specified. These specifications will form part of the contractdocumentation and therefore, the contractor will be required to comply with the specifications to the satisfaction of the project Manager and Environmental Control Officer, in terms of the construction contract.

5.4.2 Operation and Mitigation Phase

This section of EMP provides management principles for the operation and maintenance phase of the project. Environmental actions, procedure and responsibilities are required from proponent within the operation and maintenance phase are satisfied.

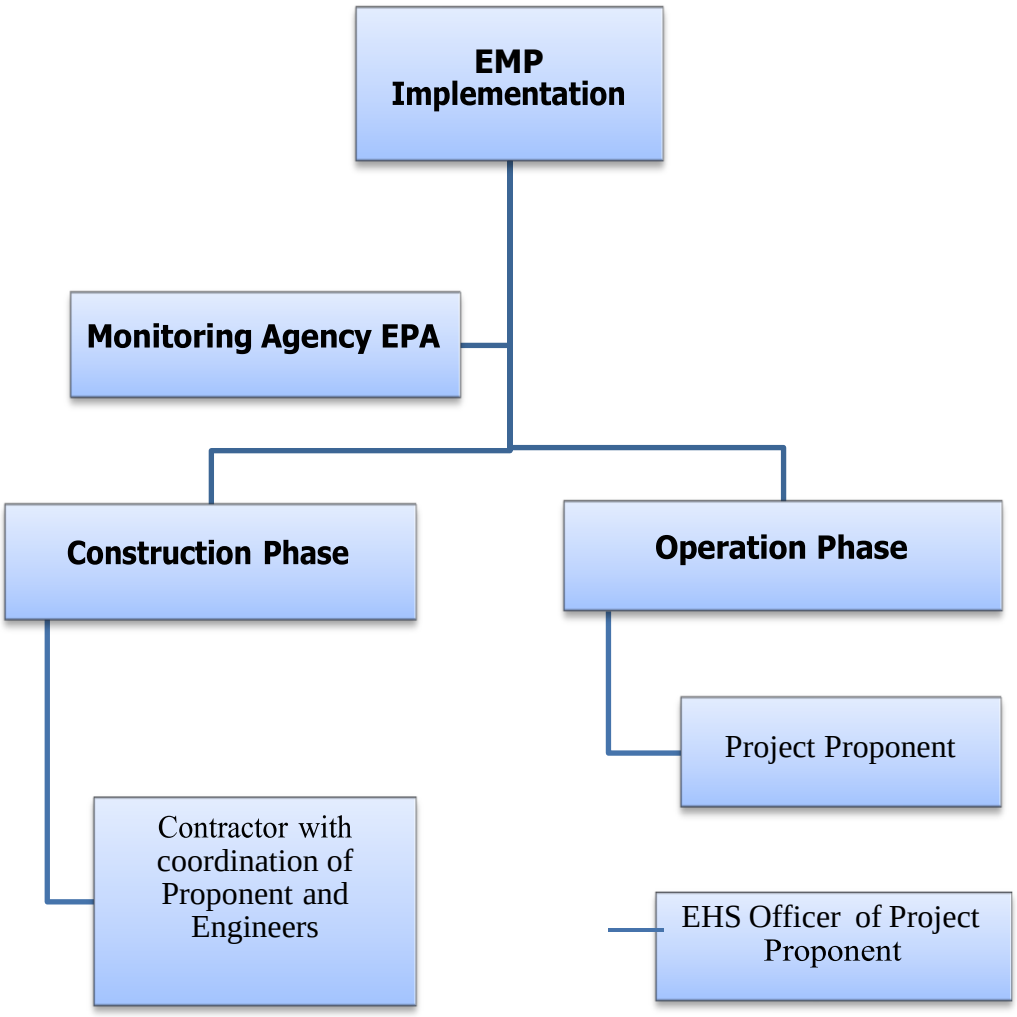
5.4.3 Decommissioning Phase

This section includes principles for the decommissioning phase of the project. Thissection of the EMP will be required to be revised and updated at the time of decommissioning.

The EMP is a dynamic document which will be updated as required on a continuous basis. Any amendments made, must be submitted to both the Environmental Officer and Project/Plant Manager for approval prior to implementation.

3.5 MITIGATION PLAN FOR CONSTRUCTION AND OPERATION PHASE

The mitigation measures for plant construction and operation are presented in table 5.1. The measures are organized under the following environmental aspects of the project activities during construction and operation phase.



5.5.1 Oregano-gram for implementation Environmental Management Plan (EMP)

Environmental Management Plan

Table 5.1: Environmental Management Plan

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
Construction Phase					
1.	**Air Quality** • Dust resulting from construction work • Use of heavy machinery can generate exhaust anddust emissions – Smoke from burning of waste materials or burning of firewood in the labor camp	– Compliance with prescribed PEQS to control air pollution	– Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions shouldbe taken to limit pollution from dust and other windblown materials. – Periodic maintenance and management of all the construction machinery and vehicles – Waste burning will not be allowed.	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

2.	**Water Quality** • Run-off water from construction area – Drainage of wastewater on ground can	– Control of groundwater or surface water pollution from construction activities	□ Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater/surface water □ Furthermore, septic tanks will need to be constructed which will be cemented to prevent the groundwater contamination □ Proper disposal of waste material on	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	contaminate the soil and groundwater – Inappropriate disposal of waste. – Open sewerage water disposalon land can contaminate ground water and cause generation of mosquitoes and various other insects in the area. • Leakage of oiland		dumping sites to avoid leachate generation and contamination of groundwater/surface water – Prohibit illegal dumping of waste – The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s.		

	chemical materials from construction activity				
3.	**Waste** • Construction waste from construction activities • Domestic	– Proper & safe handling and disposal of construction related waste – Compliance with applicable waste	– Ensure prevention of inappropriate disposal of waste material – Conduct separate collection of construction and domestic waste to promote recycling and re-use – Dispose non-recyclable and	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	waste from workers camp	management rules for hazardous and non-hazardous waste disposal – Implementation of waste management plan	hazardous waste material properly according to waste management rules – Proper disposal of waste on agreed site as per agreed method. The area tobe leveled and contoured after disposing excess material. No waste or debris will be thrown in thenearest canal water or other water bodies – Contractor will prepare waste management plan related to construction activities; get its approval from site engineer and ensure its full implementation.		
4.	**Noise** • Noise caused by construction machinery and vehicles used for mobilization of construction	– Compliance with prescribed PEQS to control Noise pollution	– The contractor will strictly follow the PEQS for ambient noise – Control noise through control ofworking hours and selection of less noisy equipment. – Prohibit use of pressure horns – Provision of	During Construction Phase by Contractor with coordination of Proponent staff	Site Supervisor

	equipment and workers.		acoustic enclosures (hood and shrouds) on generator – Proper maintenance of vehicles and construction equipment. – Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery – The personal protective equipment		

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			(PPE) will be provided to the construction workers and its usagewill be made mandatory		
5.	Materials Management	– Safe and secure environment for construction workers	– Stockpiles shall not be situated such that they obstruct natural water pathways – Stockpiles shall not exceed 2m in height unless permitted by ConcernedEngineer on site – If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by theconstruction of low brick walls around their bases – All substances required for vehicle/ machinery maintenance and repair must be stored in sealed containers until they can be disposed of /removed from the site – Hazardous substances / materials are to be transported in sealed containers or bags	Contractor with coordination of proponent and Engineer	Site Supervisor

			– Spraying of insecticide shall not takeplace under windy conditions		
6.	Staff Conduct	– Timely completion of project activities	– The Contractor must monitor the performance of construction workers to ensure that point relayed during	Contractor	Site Supervisor

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			their induction have been properly understood and being followed		
7.	Leakages/ spills/ Paints/ Used oil	– Compliance with standards set forth by "Guide Lines for Oil Spill Waste Minimization and Management" issued by International Petroleum Industry Environmental Conservation Associate	– Contractor will apply strict rules on his workers and labor to ensure that no spill or leakages are caused – All fuels, oils and bitumen will bestored appropriately, with concrete padding and bunding for containmentin case of leakage – Proper maintenance of vehicles and machinery – Chemical waste will be disposed off in approved disposal site. – All fuel tanks, chemicals including, paints, pesticides or other hazardous substances will be properly marked to highlight their content – PPE will be enforced to use during the handling and application of chemicals – Used oil/ oil rags will be disposed through approved recyclable waste vendors	Contractor	Site Supervisor

			– The contractor will employ the general criteria for oil and leakage at construction sites, as per standards		
8.	Workers Health & Safety	– Prevention of any possibility of	– Provision of Personal Protective Equipment to the workers	Contractor	Site Supervisor

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		work site accident /impact on worker‟s health	– Provision of first aid box at work siteto cope with emergency situation – Safety training to the workers – Safe driving training to the drivers – Adequate safety signs on site – Provide training regarding proper handling and use of chemicals/ paints – Install fire extinguishers at fire handling places – Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads – Any loss of public/ private property will be compensated by the contractor – Regular checks should be carried out to ensure a contractor‟s is following safe working procedures and practices.		

9.	Socio-economic Impacts	– Prevention of conflicts among locals and makethe project socially acceptable – Empowerment of locals to possible extent – Increase in	– Contractor,,s activities and movement of staff to be restricted to designated construction areas – The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time – Lighting on the construction site shall be pointed downwards and away from oncoming traffic.	Contractor with coordination of proponent staff	Site Supervisor

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		employment and business opportunities for locals.	– The site must be kept clean tominimize the visual impact of site – Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbors – Noisy activities must be restricted to the times given in the Project Specification or General Conditions of contract – The Contractor are responsible for ongoing communication with those people that are interested in / affectedby the projects – Employ local residents as much aspossible – Promote communication between external workers and local people (e.g. join local events).		
10.	Clearance of site from extra / surplus material and	– Restoration of site to a similar condition prior tothe	– Timely removal of waste from thesite to avoid congestion at work place. – Construction waste should be collected and	Contractor	Site Supervisor

	construction equipment	commencement of the work or to a condition agreed with the project management and	disposed separately from other waste. – Care will be taken during handling and disposal of waste. – Contaminated soil (if generated) due to accidental spills will be removed		

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
		landscaping of the site	and transported to suitable site for disposal. – Avoid mixing of hazardous waste with non-hazardous waste. – Safe transportation of construction equipment from the site. – The contractor must ensures that all structure, equipment, materials and facilities used or created on site for/or during construction activities are removed. – Empty/available space will becovered with grassy lawns. – Use of native vegetation as a part of landscape. Ornamental plant species like		

			roses, jasmine, and seasonalflowers can be used in proposed landscaping, which is a common practice in this part.		
Operational Phase					
1.	**Air Quality** – Exhaust gas from vehicles used for mobilization of equipment	– Compliance With Emission gas standards, Ambient air quality (PEQS) standards, Prevention of air pollution in surrounding area;	– Relevant legislative and PEQS design requirements will be adhered to where appropriate. – Access routes will be maintained to minimize traffic dust. – Vehicles and machinery will be regularly maintained and fitted with appropriate exhaust systems and devices.	EHS officer of Project Proponent	Project Manager

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			– Maintenance activities requiring purging of gas will be minimized and conducted under favorable meteorological conditions (to facilitate rapid atmospheric dispersion). – Install standard leak detectors for hazardous area installations. – Any detected leaks will be repaired as a high priority.		
2.	**Water Quality** – Storm water and run-off – from vehicle and plant washing – Rainwater drainage – Leakages of petroleum products and chemical	– Compliance with Wastewater standards of PEQS	□ Chemical storage areas, vehicle workshop areas and project components will have bunding and/or other containment measures to capture any spills or leaks. □ Plant components will be regularly maintained to minimize the risk of leaks developing. □ An emergency spill response kit will be housed on site. □ Installation of septic tanks with petroleum products separators, so any wastewater produced complies with wastewater	EHS officer of Project Proponent	Project Manager

	materials		standards of PEQS □ Storage of petroleum products and chemical material in appropriate tank with retaining wall and method to prevent permeation into ground		
3.	**Waste**	– Compliance with	– Implementation of waste	EHS officer of	Project Manager

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	– Waste (containers, waste from tanks, soils, metals and other material) – Waste oil from equipment etc. – Sewage and garbage from workers	waste management rules – Management of waste, especially hazardous waste – Prevention of inappropriate waste disposal	management program consisting of reduce, reuse and re-cycling of materials – Systematic collection and protectedstorage of waste – All bonding material and dunnage from transport vehicles and unloading areas is to be collected andtransported off the site to designated disposal areas. – Collect and transport general refuse to local govt. approved disposal sites. – Collect, where practicable taking into account health and hygiene issues, allfood wastes for disposal off site. – Where practical, wastes (e.g., scrapmetal) will be segregated and reused/recycle – All petroleum products and chemical wastes (bunding as per regulatory guidelines) will be stored and handled in accordance with the PEQSand Fire Safety regulations.	Project Proponent	

			– Records of all controlled wastes stored, and removed from site will bemaintained. – Safety and response training will be provided for all personnel. – Materials and equipment for		

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
			responding to hazardous spill incidents will be provided and maintained. Hazardous waste must be treated under related regulations.		
4.	**Noise & Vibration** – Noise and vibration from generators etc. – Noise from vehicles – Noise from different Equipments	– Compliance with prescribed PEQS to control Noise pollution	– Enhancing the management in and out of the speed limit for vehicles, a ban on vehicle horns, shorten the vehicles entrance residence time as much as possible to reduce automobile noise and exhaust and its impact on the surroundingenvironment. – Green belts around the project area, peripheral and internal areas. – Growing of tall tree species, greenbarrier, can have good noise reduction effect. – Installation of low noise/ low vibration type equipment – Proper maintenance of equipments – Adequate enclosure of equipment to reduce noise – Provision of PPEs to workers like ear	EHS officer of Project Proponent	Project Manager

			muffles – Ensure use of PPEs by workers		
5.	**Work environment (including work safety)**	– Prevention measures against labor accidents and health	**Labor accidents** – Prepare a manual for labor accident prevention including safety education and training	EHS officer of Project Proponent	Project Manager

Sr. No.	Project Component/ Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
	– Labor accidents – Diseases caused by air pollutants, water pollutants, and noise from theoperation – Fire Hazards	problems	– Provide workers with appropriate protective equipment – Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads – Keep lifting devices well maintained and perform maintenance checks as appropriate – Use equipment that protects against electric shock **Environment Pollution** – Observe related standards and provide workers with appropriate facilities.		

			Fire Hazards – Installing fire extinguishers in fire handling places – Installing fire fighting equipmentslike; ▪ Fire Water Monitors ▪ Fire Water Hydrants ▪ Mobile Foam Trolleys ▪ Fire water Hydrants with Pumper Connections ▪ House Cabinet – Developing 0fire fighting organization and implementing fire drills		

3.6 ENVIRONMENTAL MONITORING PROGRAM

It will be in the fitness of the things to operate this project under the Environmental Management Plan (EMP). The EMP will ensure that even all type of pollutants from project is within the prescribed limiting values of the PEQS. Thus the environment and human health around the project will be safeguarded.

Regular monitoring of all the significant environmental issues is essential to check the compliance status of EMP.

The main objective of the monitoring will be;

- To verify the results of the environmental study with respects to the proposed project.
- To estimate the trends of concentrated values of the issues, which have been identified as critical and then planning the mitigating measures.
- To assess the efficiency of pollution control mechanism.
- To ensure that any additional parameters, other than those identified in the EIA report, donot turn critical after the commissioning of proposed project.

Table 5.2: Recommended Activities of Environmental Monitoring

Parameter/Receptor	Location	Monitoring Mechanism	Monitoring and Reporting Frequency
Water Quality	▪ Drinking Water ▪ Waste Water	Discrete grab sampling and laboratory testing of water samples.	▪ Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. ▪ Discharges from the construction sites should be tested for temperature, pH and turbidity. ▪ Treated effluent discharges from the worker‟s camp to be tested for pH, TSS and BOD.
Dust Emissions	▪ Tracks along the roads during construction period.	Ambient Particulate Matter Monitoring.	▪ Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage.
Noise Levels	▪ Camp sites, ▪ Selected locations along the access.	Noise meter	▪ Monthly during the construction and operational stage.

Stack emission	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoringsystem. Monitoring of ambient air quality.	▪ Monthly monitoring of air pollution parameters including PM_{10}, NO_X, SO_X, CO, Hydrocarbons during the construction period, and quarterly monitoring of PM_{10}, NO_X, SO_X, CO, VOCs during the operation stage.

3.7 EQUIPMENT MAINTENANCE DETAILS

The storage facility will have a sizeable inventory of equipment that will be purchased from specialized vendors. Such equipment includes product pumps, a compressor, a stand-by power generator, emergency stop switch etc.

3.8 ENVIRONMENT MANAGEMENT COST

The total cost for the environmental management is estimated as 12 Lac Pak Rupees both during construction and its regular operation. The estimations are as followings;

Table 5.3-Environment Management Cost

Environmental Component	Quantity	Amount PKR
(i) Tree Plantation	1000	400,000
(ii) Health and Safety Measures and Provision of PPEs	L.S.	200,000
(iii) Air and Water Quality & Noise Monitoring	L.S.	300,000
(iv) Environmental Trainings	L.S	300,000
Total Environmental Management and Monitoring Cost		**12,00,000**

3.9 LANDSCAPING (PLANTING PITS FOR TREES AND SHRUBS)

Excavation for planting shall include plant pits and planting beds. The minimum depths of plant pits or beds shall be measured from finished the grade. Plants beds and pits shall be tested for drainage before planting by filling with water twice in succession. Conditions permitting the retention of water in planting the beds or pits for more than 24 hours shall be brought to the attention of the Architect. If rock, underground construction, obstructions, tree roots or other obstructions are encountered in the excavation of plantpits, alternate locations may be select by the architect. The contractor shall be responsible for all damages resulting from any neglect and failure to comply with this requirement.

Following excavation planting pits, the pits shall be back filled with the sweet soil mixture as specified. Three day prior to planting, the pits shall then be filled with water for consolidation of soil. The dimensions of the panting pits are as follows:

a) Trees: 3x3x3

b) Shrubs: 2x2x2

c) Hedges: trenching 2wide x 2 deep of required length.

d) Creepers and vines: 2wide x 2 deep of required length.

e) Edges and flowers beds: fill flower box with sweet soil as per the Architect‟s drawings. For seasonal flowers, the beds are to have the minimum of 12” sweet soil and 4” manure.

f) Perforated drain pipe shall be placed as shown on the drawings.

g) Drain rock shall be placed and compacted in plants as shown on the drawings.

h) Planting mixture shall be placed as directed by the Architect‟s representative.

5.9.1 Plant Preparation

The contractor shall be responsible for the preparation of the lawn area and planting lawn. The lawn areas are to be brought up to within 4”of the existing grades with sweets petroleum products in accordance with elevation and contours on the Architect‟s drawing.

Sweet soil shall be placed in the lawn areas and raked. All stones in excess of 1” in diameter and all rubbish soil shall be removed.

Cover the sweet soil with 4” of well decomposed organic manure and mix into top 4” of the

topsoil. Additional sweet soil shall be deposited as may be required to correct all settlement and erosion up to the date of acceptance at the substantial completion Inspection. The prepared surface shall be free from all rivulets, crusting and caking. The sub grade soil shall be sacrificed to a 12" minimum depth and brought to a true and uniform grade before dumping and spreading of sweet soil.

The lawn bed shall be fine graded to remove all ridges and depressions. Surface irregularities resulting from this or other operations shall be leveled to prevent the depressions. Grades shall be adjusted to assure that the grades, after nature settlement and light rolling, will be 1" below adjoining grade of any paved areas.

Rolling shall be done in two directions at right angles to each others. The roller shall be a water blast and roller weighing not more than 200 pounds, not less 150 pounds. Rolling shall be in such a manner so as to eliminate the necessity for walking on the finishing grades.

Should there be a time laps for any reason after final bed preparation, immediately before planting, the ground shall be restored, as necessary, to lose friable condition. Extreme care shall be taken during planting to ensure that no change shall occur in the finish grade.

5.9.2 Irrigation and Under-Drainage

Irrigation system and under-drainage must be installed prior to lawn planting.

5.9.3 Lawn Planting

No lawn shad be planted when temperatures are above 90° F or if the ground is in a muddy condition/ or other conditions that are unsuitable in area.

The sweet soil surface shall be moistened with a fine spray immediately before planting. The lawn shall be planted according to acceptable standards practice in order to ensure a completely healthy grass cover. The planting procedures shall be approved by Architect‟s representative at site.

5.9.4 General Landscape Protection

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plants become damage or injured, they shall be treated or replaced at the discretion of the architect.

Protection shall also include all temporary protections fences and barriers, all signs and all

other work incidental to proper maintenance.

5.9.5 Clean Up

After completion of all work, all debris, rubbish and surplus materials shall be removed from the site and Contractor expense. The site shall be left clean, represent able and to satisfaction of the Architect.

5.9.6 Substantial Completion Inspection

The Architect shall inspect all work for Substantial Completion upon written request of the contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection. Upon completion and re-inspection of all repairs or renewals necessary, in judgment of the Architect, the Architect shall certify in written to employer and the contractor as to the substantial Completion of the work. The Employer‟s maintenance shall begin from the time of acceptance of work of Substantial Completion.

5.9.7 Coordination

The Contractor shall be responsible to coordinate all construction and planting schedules and to advise in writing to the Architect.

Mitigation and Impact Assessment

4 MITIGATION AND IMPACT ASSESSMENT

4.1 PROBLEM AND ITS OCCURRENCE

On the basis of the findings of the EIA, it is concluded that the project will not pose any adverse impact on the local population and the environment. A proper management plan shall be prepared in case of any accident like;

- Leakages from tanks may occur, if the liquid leaks it will quickly evaporate and form a relatively large cloud of gas which will drop to the ground, as it is heavier than air.
- Tanks can explode if involved in a fire.
- Any health hazard to workers/other persons during construction or operation phase.

4.2 WAYS OF ACHIEVING MITIGATION MEASURES

6.2.1 Changing in Planning and Design

(a) Storage plant will be designed to appropriate standards and be properly installed and commissioned by competent persons.

(b) The installation/construction of piping, instruments and the plant will be carried out by an accredited Company.

(c) The materials used for the construction of the filling shed must be non- inflammable material.

(d) The filling shed must be open-sided for good ventilation.

(e) Plant must be fitted with adequate safety and monitoring control devices and operated by skilled persons.

(f) Any amendments made, must be submitted to concerned authorities for approval prior to implementation.

6.2.2 Improved Monitoring and Management Practices

There will be a suitable program of monitoring and maintenance. There will be proper firefighting and health and safety plan. Any improvement in monitoring and management practices shall be addressed to concerned authorities.

6.2.3 Compensation in Money Terms

There is no monetary compensation involved in the project or during the process of land acquisition as the land is already owned by the Project Proponent.

6.2.4 Replacement, Relocation and Rehabilitation

There will be no any matter of replacement, relocation and rehabilitation as the proposed site is already owned by the project proponent. There will not be any let regarding safety factors as applicable from time to time for such buildings on all accounts.

Stakeholders Consultation

STAKEHOLDER CONSULTATION

This section describes the regulatory policy, planning and current practices of project proponent pertaining to the stakeholder engagements and outcomes of stakeholder consultation process initially done as part of the IEE/EIA report. The feedback from communities and other stakeholders directly or indirectly affected by the project is collected so that it may be used to adjust and improve the project's design, planning, implementation and help the implementation structure ensuring that the project is both environmentally and socially sound. The consultation process was carried out in accordance with the requirements of the Punjab Environmental Protection Act and Government of Pakistan on public consultation.

The objectives of this process were;

- To disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders,
- To gather information on relevant issues so that the feedback received could be used to address these issues at an early stage of the project,
- To determine the extent of the negative impacts of different project activities and suggest appropriate mitigation measures.

7.2 IDENTIFICATION OF STAKEHOLDERS

There are two types of stakeholders, i.e.

a. Primary stakeholders
b. Secondary stakeholders

7.2.1 Primary Stakeholders

The primary stakeholders are the initial stakeholders, such as affected persons, general public and women residing in the project area. Accordingly, the consultations / focus group discussions were made with all primary stakeholders for sharing of information about the proposed project and expected impacts and understanding about the concerns by category of stakeholders.

7.2.2 Secondary Stakeholders

The secondary stakeholders are the representatives of Government Departments/Agencies involved in the planning, design, implementation and operation of the project, including various government departments such as District Administration, EPA, WAPDA, Forest, and other relevant departments.

7.3 STAKEHOLDER ENGAGEMENTS PLANNING

A two fold stakeholder engagement is planned and carried out for the proposed project as following:

(a) Stakeholder Consultation during the Preparation of EIA Report:

The consultation with the primary and secondary stakeholders has been conducted initially during the preparation of the IEE/EIA report, details of which have been given in the subsequent paragraph at 10.4.

2.2. STAKEHOLDER CONSULTATION PROCESS

The overall strategy for stakeholder's consultation is as follows:

a. Table - 9.1: Process of Stakeholder Consultation

Stakeholders	Purpose of Consultations	Methodology	Stage
Primary Stakeholder	• Information gathering and data collection. • Information sharing about the project (disclosure) • Opinion seeking (concerns and expectations) • Grievance redress	• Focus Group Discussions • Household surveys • Formal and informal Community meetings	• Base line Study Impact Assessment
Secondary Stakeholder	• Participation in the development process • Information gathering • Authentication and validation of the development processes • Verification of the record	• One on one meetings • In-depth interviews	• During the EIA preparation • On need basis during the project implementation and

Stakeholder consultation for this project was planned during the preparation of EIA report. In first step during the scoping, which has already taken place, consisted of meetings with individuals, groups, relevant organizations and government departments, which are in some way linked to the project and therefore considered stakeholders. The meetings were conducted to inform stakeholders about the project and how it may affect their lives/activities, and to record their concerns, whether real or

perceived. Through the use of various tools the study team tried to involve the stakeholders in active decision-making. The results of this exercise are described below, where mitigation measures have been developed addressing the pertinent stakeholder concerns.

2.3. PRIMARY STAKEHOLDERS CONSULTATION

Apart from gathering of quantitative data through household survey of the area of influence of the project and survey of local community to share the information about the project and record their concerns/ feedback associated with this project. In this context, nearest community shared their view point regarding the assessment especially procedure for entering their concerns/ grievances, employment opportunities, and implementation of the project.

9.5.1. Topics for Discussion

The topics discussed in the consultations were:

- Employment and livelihoods of communities.
- Fire Safety from Depot
- Contractor's camp and access
- Environmental issues during construction and operation of project

9.6 PROPONENT

All possible impacts and mitigation measure related to the project were discussed with the proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environment friendly.

9.7 THE RESPONSIBLE AUTHORITY

The M/S Lahore Polypropylene Industries Pvt Limited shall be the responsible authority to take all measures prior to start the project and during operation.

9.8 OTHER DEPARTMENTS AND AGENCIES

For the impact analysis detailed with the management, local community, educational institutes, health institutes, hospitals and NGOs. All issues were discussed related to implementation of the project. Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area.

Environmental Experts & Other Departments Discussion:

When Discussion has been made with Environmental researchers & students and other concerned departments. They were very much interested for this project to be installed in the Lahore District. As it will provide employment opportunity to locals.

Public Consultations:

The consultations were made with the local community to share the information about the project and record their concerns/ feedback associated with project.

7.4.1 Concerns Regarding the Project:

During the field survey, people were asked about their views regarding the said Project. In general, local community has positive attitude towards this said Project that this will help to improve the development of the area.

7.4.2 Major Stakeholders identified

In the Project Area, all the possible stakeholders were identified during the survey. Following is the list of potential stakeholders in the Project Area

- Local residents Teachers
- Shop owners
- Office Workers Laborers
- Pedestrians
- Mosque users.
- Transport users
- Environmental Experts
- Responsible authority & other departments

Issues Discussed

Following issues were discussed during the stakeholder ‘s consultation:

- Overall activities of the project and their possible impacts.
- Possible impacts on natural vegetation, flora and fauna
- Possible mitigation measures;
- Beneficial factors and involvement opportunities of the local people in the set of activities of Project; and
- Management of traffic during construction and operational phase of the project.

7.5.1 General

Majority of stakeholders appreciated the project and taken it as a necessary step towards the current situation of waste problems. Few people had some reservations regarding the emissions of gases.

7.5.2 Environmental

Few people were concerned about the gaseous air emissions due to the operation of the furnace. Some people also show their apprehension regarding noise pollution due to loading and unloading of billets and raw scraps, respectively.

7.5.3 Socio Economic

Expectations about employment opportunities and community development were extremely high among all stakeholders

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

.

Consultation Areas:

1. Mouza Nehla

List of people consulted

Sr. No.	Name of Respondent	Education Status	Age	Occupation
1	Irfanullah	Primary	38	Driver
2	Saeed Rasool	Nil	35	Labor
3	Nabeel awan	Intermediate	28	Employee
4	Syed Nasir Khan	B.A	40	Employee
5	Waqif Shah	Middle	32	Shopkeeper

6	Hikmat Shah	Matric	37	Guard
7	Gul khan	Matric	34	Worker
8	Gul Sher	Intermediate	28	Shopkeeper
9	Astam Khan	Intermediate	26	Salesman
10	Muhammad Umer	Graduation	25	Medical Wrap

Awareness Regarding the Project

Out of total 40 respondents, 56% knew about the project whereas 44% were not aware of the project planning and implementation.

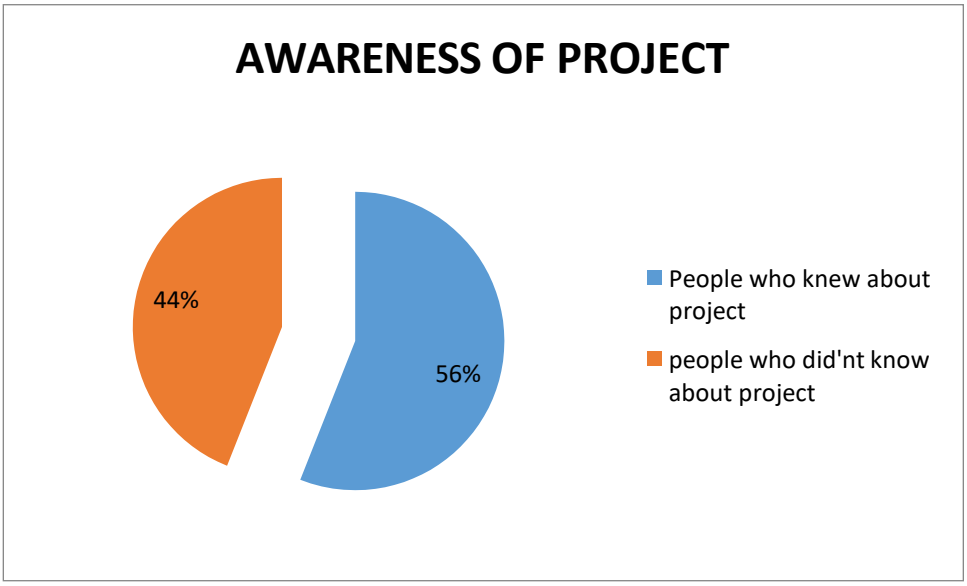


Figure 6-6: Awareness of project

Acceptability of the Project

Majority of the respondents, 99% favored the construction of the project keeping in view its importance. People had following comments regarding project:

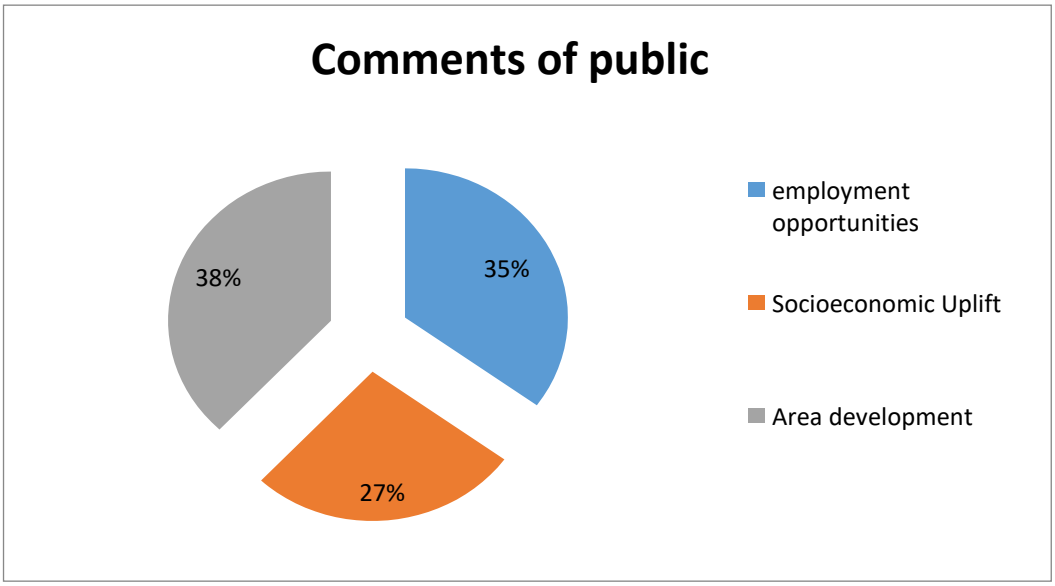


Figure 6-7: Comments of public

Concerns and solutions:

COMPONENTS	CONCERNS	SOLUTIONS
Environmental Enhancement	Trees should be planted to avoid any impact	• Trees will be planted along boundary of project • Indigenous tress around the facility should be planted
Socio-Economic Uplift	Workers should be hired from local community	• Proponent has considered hiring labor from local community to enhance the socio-economic condition of the area as this aspect is included in the scope of the project.
Fire Hazard	Accidental fire could pose potential hazard to local people	• Installation of Fire Alarms & Fire extinguisher's • Installation of Smoke Detectors.

Stakeholders Consultation

S #	Participant	Designation	Concerns/Remarks
Responsible Authority			
Other Departments			
1	Muzzamil Hussain	BI local govt	• There is no endangered/indigenous species • However, plantation should be done to enhance environment • Project is away from population no fire hazard exists
Proponent's Environment Management Team			
1	Proponent and Environment Management Team	M. Shehzad	• Local employment will be ensured during construction phase • Tree plantation will be done to make project environment friendly • Fire safety measures should be esnured • Quality will be ensured
Environmental Practitioners and Experts			
1	Saif	PhD. Environment	• Health and safety arrangements must be provided • All type of waste should be managed to avoid nuisance
Affected and Wider Community			
1	Mr. Khurram	NGO (Parho Barho Punjab)	• Local employment should be ensured • Proponent shall work for betterment of community

Emergency Response Plan and Evacuation/Exit Plan

5 EMERGENCY RESPONSE PLAN

5.1 OBJECTIVE OF EMERGENCY RESPONSE PLAN

Emergency preparedness helps to minimize the human suffering and economic losses that can result from emergencies. It should be understood that the size and density of projects, as well as their access and location, have a bearing on the degree of planning necessary for emergencies. It is therefore strongly recommended that the constructor ensure that amember of staff on site assist in developing the emergency response plan.

5.2 SCOPE OF EMERGENCY RESPONSE PLAN

This plan assesses risk, assign role and responsibilities and give the major steps to be followed in any emergency situation. Its increases understandings of workers and officials in handling different emergency situations which may occur at project area.

5.3 EMERGENCY SITUATIONS

Following emergencies may occur at workplaces:

- fire
- fuel spillage
- gas leaks
- explosions
- injury from machinery and equipment
- fall, climbing accident
- emergency as a result of environmental conditions (e.g., heat, cold, wet, snow, wind, lightning, bushfires, floods) emergencies requiring evacuation
- hazardous substances and chemical spills
- internal emergencies such as loss of power or water supply and structural collapse
- serious injury events or medical emergencies
- bomb threats

- civil disorder or criminal acts such as robberies and shootings

5.4 GENERAL EVACUATION PROCEDURE

It is not always necessary to evacuate a unit/plant during an emergency. A power outage, for instance, does not necessarily call for evacuation of a unit. The overall safety of the unit must first be evaluated: lighting, hazardous materials, ventilation systems, and other hazardous operations. If the unit can be safely occupied, evacuation is not necessary.

In the case of evacuation the workers in the effected zone receive instructions from their supervisor or designated person. As per instruction the workers will immediately leave their places of duty and assemble at the assembly point.

- Area supervisor should roll call the employees to ensure all are out of danger zone.
- On receiving first information of emergency situation the administrative head should contact the Security Officer to ensure that alarm system is activated or not.
- After assessing the emergency situation Security Officer or designated person instruct through telephone to initiated the emergency response procedure and call the responsible personnel at site.
- Administrative Head may also call the external help like fire brigade, police, bomb disposal squad, ambulance etc. and communicate with them.
- Security Officer after consulting the Administrative Head may order the evacuation of workers from affected area.

  If evacuation is ordered, follow these procedures:

- Stay calm, do not rush, and do not panic.
- Safely stop your work.
- Gather your personal belongings if it is safe to do so.
- If safe, close your door and window, but do not lock them.
- Use the nearest safe stairs and proceed to the nearest exit. Do not use the elevator.
- Wait for any instructions from emergency responders.
- Do not re-enter the building or work area until you have been instructed to do so by the emergency responders.

5.5 FIRE EMERGENCY RESPONSE PLAN

a) Purpose

To minimize loss and injury, any type of fire, indoor or outdoor, should be reported to the fire department by calling given emergency contact number. Should there be a building fire, all building occupants are to be evacuated for their personal safety. Fire extinguishers have been provided within the building to extinguish small fires

b) Scope:

All employees are to be aware of the fire emergency plan and take prompt actionaccording to the following procedure:

c) Procedure

i) BE PREPARED

Know the location of the fire exits, fire alarms, and fire extinguishers in you workplace. Familiarize yourself with the procedures below and participate in fire extinguisher training so that you are prepared in case of a fire. ‰

ii) IF YOU DISCOVER A FIRE

If you see or hear a fire, or smell smoke, pull the closest fire alarm. ‰

iii) TAKE IMMEDIATE ACTION AND DIAL EMERGENCY NUMBER Dial 1122 or any emergency response number given by management, from a safe locationand give the operator all the pertinent facts. When the operator answers, give thefollowing information:

- YOUR NAME
- PHONE NUMBER
- LOCATION THAT YOU ARE CALLING FROM
- Give the precise nature of the fire, (i.e.: car fire, chemical fire, electrical fire, outdoor grass fire, building fire, fuel fire).
- Tell operator which entrance the fire truck should enter and describe our location.
- Indicate whether there are any injuries, number and extent of those injuries.

- DO NOT HANG UP until given permission to do so by the operator.
- Dispatch an employee to the entrance to guide the fire truck to the fire are

d) Use of Existing Equipment

You might try to put out the fire, if it is small enough, using existing equipment – use your best judgment (if trained and confident)

In the event that the fire is small enough to be extinguished by a fire extinguisher, fire extinguishers have been placed around the building and are identified. Become aware of the fire extinguisher locations and familiar with accessibility. If the fire does not go out or

spreads after attempting to extinguish flames, leave the area immediately and close all doors on your way. ‰

e) Evacuation

If the fire is clearly out of control, notify all others in danger, YELL "FIRE" and evacuate all personnel from the building to the designated assembly station outside the building and

help others in doing so. Leave buildings by the nearest safe exit. All employees, guests and visitors are to proceed to the designated assembly station in the employee parking area and ensure that their names are on a list of those who are out of the building. This list will be prepared by a designated fire response personal. Material Safety Data Sheets are to be taken by the responsible person and made available to the fire department, as required. All personnel are to wait outside the building as directed by the Fire Department. You are to re-enter the building only after the fire department has given permission to do so.

f) If your clothes catch fire

- Stop whatever you are doing.
- Drop to the ground.
- Roll to smother the flames.
- If someone else"s clothes catch fire, have them stop, drop and roll.
- Try to smother the flames with a piece of clothing. ‰

g) Using an Extinguisher

- Pull the safety pin at the top of the extinguisher

- Aim the nozzle/hose at the base of the flames
- Squeeze or press the handle
- Sweep from side to side at the base of the fire until it is out

h) Know your Extinguisher

- Type A (green triangle) – use for paper and wood
- Type B (red square) – use for flammable liquids such as gas, oil, paint
- Type C (blue circle) – use for electrical fires involving wires or appliances‰

I) Notify Management

The manager, if not on-site, is to be notified immediately. Emergency numbers should be posted on an emergency contact list.

j) Responsibility

Fire supervisors are responsible to ensure everyone is out of the building and directed to the specified assembly station for a roll cal. Supervisors are to ensure that senior management has been notified of the fire, if not on location.

k) Fire Fighting Plan

A detailed fire fighting plan is mentioned in layout plan attached with this report as appendix. List of fire fighting equipments is described in table below.

Table 8.1: List of Fire Fighting Equipment

Equipment	Quantity	Location
Fire HYDRNATS 1000 USGPM	04	As shown on drawing
HOSE CABINET	06	As shown on drawing
MOBILE FORM TROLLEY (MFT) 450 US GALLON	02	As shown on drawing
FOAM MONITOR	02	As shown on drawing
PORTABLE FIRE EXTINGUISHERS,ABC DRY CHEMICAL POWDER 6KG,NIPPON PAN-20 SD DCP 08		1 no warehouse
		1 no Control room
		1 no Generator and Switch Room

		2 no Office Building
		1 no Gate House
		2 no Gantry
PORTABLE FIRE EXTINGUISHERS, CARBON DI OXIDE 5KG, NIPPON NC-7. CO_2	06	1 no warehouse
		1 no Substation house
		2 no: Office building
		1 no: Invoice room
		1 no :Control room
FIRE EXTINGUISHERS,ABC DRY CHEMICAL POWDER 50KG(TROLLY MOUNTED)	2	1 in gantry & 1 in pump room
SAND BUCKETS WITH STAND	9	3 no: Pump house
		3 no: gantry
		3 no warehouse

5.6 SPECIAL FIRE EMERGENCY RESPONSE AND FIRE-PROTECTION PRECAUTIONS

- **"Joint Code of Practice"** includes fire protection measurements and compliance with the regulations and requirements is to tackle with fire emergency in power generation facility.
- **Fire-Resistant Materials**- To ensure the stability of a power generation facility in the event of a fire, the supporting structure and ceilings must be resistant to fire. The characteristic "fire resistant" must be defined in the applicable standards. However, this means that the requirements to be met by fire resistant parts can easily differ from one country to the next, depending on the standards applied. The same holds true for the inspection procedures specified for verification.
- **Fire Compartments** Fire can also spread via the outer facade if windows have been shattered by the heat so it is perfectly appropriate to use fire resistant glazing, Partition walls, ceilings must be fire resistant and made of noncombustible materials.
- **Doorways** should at least be sealed with tightly closing, fire-retardant doors; any other openings required in the walls must be sealed in an equivalent manner.
- **Partition walls** in corridors should reach right up to the structural ceiling.
- **Smoke vents** must be installed at the top of all stairwells; internal stairwells must be

equipped with a mechanical, automatically activated ventilation system connected to an emergency power supply. If a fire breaks out, excess pressure must be generated in the stairwells to prevent the ingress of smoke.

- **Ventilation and Air-Conditioning Systems**- Ventilation and air-conditioning systems must be installed in such a way that fire or smoke cannot be transmitted to stairwells and other floors or fire compartments.
- **Fire Fighting**- Fire extinguishers, fire-fighting water to every point on floor and an automatic sprinkler system is the most effective protective measure for fighting and controlling a fire.

Supportive Services

One electrician, one mechanic and four general workers (for salvage operations) will be arranged to ensure the necessary services to unaffected areas continue and removal of any equipment etc. which may be affected by the incident.

Conclusion and Recommendation

6 CONCLUSION AND RECOMMENDATIONS

In the light of this Environmental Impact Assessment some recommendations are made:

- Idea of sustainable development should be applied during the operational phase of the project
- Environmental Management Plan should be implemented in its true sense and should be revised in case of any change of process
- Project management should give due weight-age to Health, Safety and Environment. An unbiased conclusion is drawn on the basis of the findings of EIA, which states thatthe proposed installation of Proposed project will not pose any irreversible adverse impacts on surrounding environment and population but it may enhance the standard of living of native people. Therefore, it is recommended to the competent authority may please be issue Environmental Approval for the construction and operation of the project.

References

REFERENCES

Listed below are some of the documents, reports and other references consulted during the preparation of this report:

1. Information and data provided by project proponents;

2. Project Pre-feasibility Study Report;

3. Technical Design Data related to the project.

4. Information gathered through discussions with the project related persons of the project proponent;

5. Information collected from the Technical documents of various suppliers of machinery/equipment.

6. Punjab Environment Quality Standards for Ambient Air

7. Punjab Environment Quality Standards Noise Levels

8. Punjab Environment Quality Standards for Drinking Water

9. Pakistan Environmental Protection Act, 1997;

10. The Punjab Environmental Protection (Amendment) Act 2011 covers aspects related to:

    The protection, conservation, rehabilitation and improvement of the environment and the prevention, control of pollution and promotion of sustainable development;

    Establishing complete regulatory and monitoring bodies, policies, rules, regulations and national environmental quality standards; and

11. Environment-related Laws in Pakistan and the Province of Punjab

12. Government of Pakistan, Pakistan Environmental Protection Agency, Policy and Procedures for Filing, Review, and Approval of Environmental Assessment, 2022

13. Workplace safety and health act 2011

Terms of References

TERM OF REFERENCES

1. The Consultant is required to carry out an Environment Assessment Study of the Project as required under section 12 of Pakistan Environmental Protection Act 1997/ Punjab Environmental Protection Act 2012.

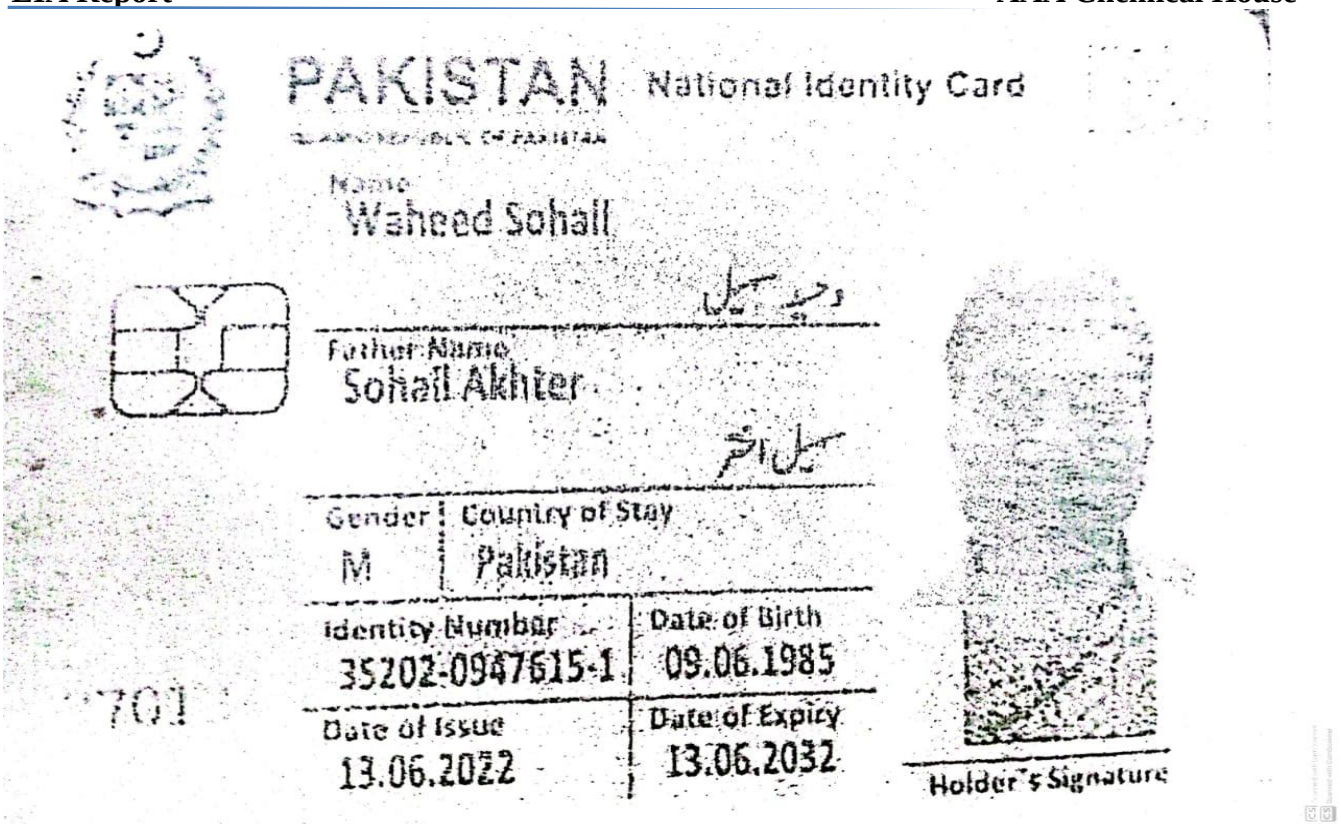
2. The Study should be comprehensive and should cover all aspects which are envisaged under the relevant national and provincial‟s laws & regulations including but not limited to:

- Identification and recommendation for suitable solution/treatment/mitigation measures of emissions and effluents such as wastewater and sludge etc in accordance with Punjab Environmental Quality Standards (PEQS).
- Identification and recommendation for suitable solution/treatment/mitigation measures of petroleum products hazardous waste, organic compounds, steam, flue gases, particulate matter and chemical compounds harmful for the environment and other substances leading to air, noise, water and soil pollution in accordance with PEQS.

3. The Study should be acceptable to the relevant national and/or provincial authorities (relevant authorities) in Punjab.

LIST OF EIA STUDY TEAM WITH QUALIFICATION AND POSITION IN TEAM.

Name	Qualification	Position in the EIA/IEE Team
Shahid Iqbal	MSc (Environmental Science) PU Lahore	Project Incharge And Supervisor
Ali Naeem	MSc (Environmental Engineering) UET-Lahore	Team Leader and Coordinator (Author of the Report)
Muhammad Gulzaib Afzal	B.sc Environmental Engineering (UET Lahore)	Environmental Engineer
Sadaqat Ali	LLB (Islamia University Bahawalpur)	Research Associate (Author of the Report)



PAKISTAN National Identity Card

Name
Waheed Sohail

وحید سہیل

Father Name
Sohail Akhter

سہیل اختر

Gender	Country of Stay
M	Pakistan

Identity Number	Date of Birth
35202-0947615-1	09.06.1985

Date of Issue	Date of Expiry
13.06.2022	13.06.2032

Holder's Signature

35202-0947615-1

Khar General of Pakistan

گمشدہ کارڈ ملنے پر قریبی لیٹر بکس میں ڈال دیں